

18.

SCHEDULE OF MITIGATION AND MONITORING MEASURES

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

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

- > Pre-Commencement Phase;
- > Construction Phase;
- > Operational Phase; and
- > 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 Project. The proposals for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as Appendix 4-4 of this EIAR. The tabular format in which the below information is presented can be further expanded upon during each Proposed Project 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 Project 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 Project to ensure that all required monitoring is completed.

It is intended that the CEMP will be updated where required prior to the commencement of construction to include all mitigation and monitoring measures, planning conditions and/or alternative monitoring and mitigation measures 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 Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Project					
Pre-Construction Phase					
MM1	Pre-Construction Drainage	EIAR Chapter 4, 9 Appendix 4-3, 4-4, 9-1	Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) shall be appointed to oversee the keyhole and extraction works. The ECoW shall be experienced and competent, and shall have the following functions and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application: › Attend the Site for the setup period when drainage protection works are being installed and be present onsite during the remainder of the forestry keyhole felling works. › Prior to the commencement of works, review and agreement of the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing, water crossings and onsite storage facilities for fuel, oil and chemicals . › Be responsible for preparing and delivering the Environmental Tool Box Talk (TBT) to all relevant parties involved in Site operations, prior to the commencement of the works. › Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness. › Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures. › Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements:		

			- Surface water samples shall be collected upstream and downstream of the keyhole felling at suitable sampling locations. - Sampling shall be taken from the stream / riverbank, with no in-stream access permitted. - The following minimum analytical suite shall be used: pH, EC, TSS, BOD, Total P, Ortho-P, Total N, and Ammonia. - Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions. - Prepare and maintain a contingency plan. - Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed. - Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW.		
MM2	Tree Felling Drainage	EIAR Chapter 4, 9 Appendix 4-3, 4-4	To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities. - The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. - All roads and culverts will be inspected prior to any machinery being brought on Site to commence the felling operation. No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings. - Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt traps will be constructed to ensure collection of all silt within felling areas. These temporary silt traps will be cleaned out and backfilled once felling works are complete. This ensures there is no residual collected silt remaining in blocked drains after felling works are completed. No direct discharge of such drains to watercourses will occur from within felling areas. - 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.		

			› All silt traps will be sited outside of buffer zones and have no direct outflow into the aquatic zone. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of away from all aquatic zones. › All new collector drains will taper out before entering the aquatic buffer zone to ensures the discharging water gently fans out over the buffer zone before entering the aquatic zone. › Machine combinations, such as mechanical harvesters or chainsaw felling will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. › Mechanised operations will be suspended during and immediately after heavy rainfall. › Where brash is required to form brash mats, it is to be laid out at harvesting stage to prevent soil disturbance by machine movement. › Brash which has not been pushed into the soil may be moved within the Site to facilitate the creation of mats in more demanding locations. › Felling of trees will be pointed directionally away from watercourses. › Felling will be planned to minimise the number of machine passes in any one area. › Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible. › Harvested timber will be stacked in dry areas, and outside any 50m watercourse buffer zone. Straw bales and check dams to be emplaced on the down gradient side of timber storage sites. 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 removing of natural debris deflectors will be avoided.		
MM3	Waste Management	EIAR Chapter 4 Appendix 4-3	Prior to the re-commencement of construction work at the Site, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.		

MM4	Construction Environmental Management Plan	EIAR Chapter 4 Appendix 4-3	The requirement for a CEMP to be prepared in advance of any construction works commencing on any wind farm development site and submitted for agreement to the Planning Authority is now well-established. The procedures for the implementation of the mitigation measures outlined in the CEMP and their completion is audited by way of a CEMP Audit Report.		
MM5	Upgrade of Existing Founded Access Road		For upgrading of all existing founded access roads the following will apply: › Excavation of the access road will take place to a competent stratum beneath the peat, removing all peat and soft clay and backfilled with suitable granular fill. › Benching of the excavation will be required between the existing section of access road and the widened section of access road where the depth of excavation exceeds 500mm. › Access roads will be finished with a layer of capping/surfacing material across the full width of the road. › For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability		
MM6	Upgrade of Existing Floating Road to Founded	Appendix 4-3 Appendix 8-1	1. Existing floating access roads construction will consist of › Prior to any upgrading works, peat probing, hand shear vane testing and full-scale proof load testing will be carried out along each of the existing floating roads. › Prior to commencing upgrade works movement monitoring posts will be installed in areas where the peat depth is greater than 2m and will be placed at 10m intervals along these sections. › The surface of the existing access road will be graded/tidied up prior to the placement any additional material. › Stone delivered to the floating road construction will be end-tipped onto the constructed floating road. To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road will be tipped over at least a 10m length of constructed floating road.		

			› The construction of these access roads will be inspected on a daily basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.		
MM7	Upgrade of Existing Floating Road to Founded	Appendix 4-3	Upgrading of existing floating access road will consist of: › Prior to any upgrading works, peat probing, hand shear vane testing and full-scale proof load testing will be carried out along each of the existing floating roads. See 'Peat Stability Assessment Report' in Appendix 8-1 of the EIAR for details. › Prior to commencing upgrade works movement monitoring posts will be installed in areas where the peat depth is greater than 2m and will be placed at 10m intervals along these sections. › The surface of the existing access road will be graded/tidied up prior to the placement any additional material. › Stone delivered to the floating road construction will be end-tipped onto the constructed floating road. To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road will be tipped over at least a 10m length of constructed floating road. › The construction of these access roads will be inspected on a daily basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.		
MM8	Construction of new Floating Road (BMEP Site)	Appendix 4-3	› Prior to commencing road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m and will be placed at 10m intervals along these sections. › Prior to any upgrading works, peat probing and hand shear vane testing will be undertaken along the route of the track. › To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating track will be tipped over at least a 10m length of constructed floating road. › Where it is not possible to end-tip over a 10m length of constructed floating road then dumpers delivering stone to the floating track will carry a reduced stone load (not		

			greater than half full) until such time as end-tipping can be carried out over a 10m length of constructed floating road		
MM9	Upgrade of Floating Road (BMEP Site)	Appendix 4-3	› Prior to commencing floating track construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m. › Prior to any upgrading works, peat probing and hand shear vane testing will be undertaken along the route of the track. ›		
MM10	Temporary Drainage Works	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Prior to the commencement of construction works (new road/hardstand, turbine foundation installs or upgrade of existing roads) the following key temporary drainage measures will be installed: › 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.		
MM11	Pre- Construction Drainage	EIAR Chapter 4, 9 Appendix 4-3, 4-4	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 as the construction works develop across the Site, as works in all areas will not commence simultaneously. Drainage and associated 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.		

			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 appropriate distance from watercourses. Buffer zones around the existing natural drainage features have informed the layout of the Subject Development and are indicated on the drainage design drawings. Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. Existing artificial drains in the vicinity of existing Wind Farm 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 post treatment, check dams will be added to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.		
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MM12	Pre- Construction Drainage	EIAR Chapter 4, 9 Appendix 4-3, 4-4	To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities. › All relevant measures, best practice methods and requirements set out in Ch. 9: Hydrology and Hydrogeology of the EIAR will be adhered to including Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines. › The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. › All roads and culverts will be inspected prior to any machinery being brought on Site to commence the felling operation. No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings. › Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt traps will be constructed to ensure collection of all silt within felling areas. These temporary silt traps will be cleaned out and backfilled once felling works are complete. This ensures there is no residual collected silt remaining in blocked drains after felling works are completed. No direct discharge of such drains to watercourses will occur from within felling areas. › 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. › All silt traps will be sited outside of buffer zones and have no direct outflow into the aquatic zone. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of away from all aquatic zones. › All new collector drains will taper out before entering the aquatic buffer zone to ensures the discharging water gently fans out over the buffer zone before entering the aquatic zone. › Machine combinations, such as mechanical harvesters or chainsaw felling will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance.		
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			➤ Mechanised operations will be suspended during and immediately after heavy rainfall. ➤ Where brash is required to form brash mats, it is to be laid out at harvesting stage to prevent soil disturbance by machine movement. ➤ Brash which has not been pushed into the soil may be moved within the Site to facilitate the creation of mats in more demanding locations. ➤ Felling of trees will be pointed directionally away from watercourses. ➤ Felling will be planned to minimise the number of machine passes in any one area. ➤ Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible. ➤ Harvested timber will be stacked in dry areas, and outside any 50m watercourse buffer zone. Straw bales and check dams to be emplaced on the down gradient side of timber storage sites. ➤ 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 removing of natural debris deflectors will be avoided.		
Construction Phase					
MM13	Road Construction	EIAR Chapter 4 Appendix 4-2 PSMP	To provide access within the Wind Farm Site and to connect the proposed turbines and associated infrastructure existing roads will need to be upgraded. The road construction preliminary design has taken into account the following key factors; ➤ Buildability considerations ➤ Maximising use of existing infrastructure ➤ Minimising excavation arisings ➤ Peat stability ➤ Serviceability requirements for construction and wind turbine delivery and maintenance vehicles ➤ Requirement to minimise disruption to peat hydrology.		
MM14	Road Construction	EIAR Chapter 4	The existing forest track will be upgraded by laying a new surface dressing on the existing section of roadway where necessary. The new forest track will be designed as 'Build On-Top		

		Appendix 4-2 PSMP	Embankment Roads' (Floating Roads) in accordance with the COFORD (2004) 'Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads'. Floating roads minimise the impact on peat, particularly peat hydrology, and significantly reduce the volumes of peat requiring management as there is no excavation required and no peat arisings are generated.		
MM15	Health and Safety of Borrow Pit	EIAR Chapter 4 Appendix 4-2 PSMP	Upon removal of the rock from the borrow pits, it is proposed to reinstate the borrow pits using excavated peat and spoil. Once reinstatement is complete, the perimeter of the borrow pits will be permanently secured with a stock-proof fence erected around the borrow pit area to prevent access to these areas in the interest of health and safety. Appropriate health and safety signage will also be erected on this fencing and at locations around the fenced area.		
MM16	Blasting on Site	EIAR Chapter 4, 12 Appendix 4-3 CEMP	The blast engineer will arrange for the necessary quantity of explosive to be brought to site to undertake a single blast. The management of explosives on-site and the actual blasting operation will be agreed in advance with and supervised by An Gardaí Síochána. The blast engineer sets the explosives in place in the boreholes, sets the charges, and fires the blast. A properly designed blast should generate rock of a size that can be loaded directly into a mobile crusher. The same method is used for processing the rock generated from a blast, as would be used to process rock generated by rock breaking. Generally, the drilling rig will recommence drilling blast holes for the next blast as soon one blast finished. The potential impacts and control measures associated with noise and vibration from this extraction method are assessed in Chapter 12: Noise and Vibration. Any blasting will be carried out in accordance with the <i>Guidance on the Safe Use of Explosives in Quarries</i> (Safety and Health Commission for the Mining and Other Extractive Industries, 2002)¹ and the British Standard BS 5228-1:2009+A1:2014 <i>Code of practice for noise and vibration control on construction and open sites – Noise</i>². Blasting will only be carried out after notifying any potentially sensitive receptors.		

¹https://www.hsa.ie/eng/Publications_and_Forms/Publications/Mines_and_Quarries/Guidance%20on%20the%20Safe%20Use%20of%20Explosives%20in%20Quarries.pdf

²<https://www.thenbs.com/PublicationIndex/documents/details?Pub=BSI&DocID=305965>

MM17	Borrow Pit	EIAR Chapter 4, 8 Appendix 4-3 CEMP	The excavated rock from the borrow pits will be used in the construction of the infrastructure elements (turbine bases, roads, etc.) at the Wind Farm Site. The Contractor will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be placed safely. It is proposed to construct cells within the borrow pit (BP3) for the placement of the excavated peat and spoil. This is to allow for the safe placement and grading of the peat and spoil using dumper trucks and excavators. It also eliminates the need to construct above ground retaining structures which may have an unnecessary visual impact and increase the development footprint of the proposed wind farm. The design and construction commitments for the borrow pits are detailed below. 1. Peat and overburden will be removed and stored within the void at the existing borrow pits. The rock within the proposed borrow pit footprint will be removed by blasting. 2. It is proposed to construct the borrow pits so that the base of the borrow pits are below the level of the adjacent section of access road. 3. Slopes within the excavated rock formed around the perimeter of the borrow pits will be formed at stable inclinations to suit local in-situ rock conditions. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance. 4. The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock, in line with best practice guidelines. 5. BP3 will be constructed with individual cells divided by an in-situ rock buttress which will be inspected and approved by the Project Geotechnical Engineer. See Drawing P24-234-0602-0006 of the PSMP in Appendix 4-2 of the EIAR for the location of the rock buttress. 6. 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. The contractor excavating the rock will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be reinstated safely.		
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			7. The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required. 8. The surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit. The surface of the placed spoil will have a maximum grade of 5°. 9. An interceptor drain will also be installed around the perimeter of the borrow pit. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction, and also when reinstated. 10. Temporary control of groundwater within the borrow pit will be required. A temporary pump and suitable outfall locations will be required during construction. 11. A settlement pond will be constructed at the lower side/outfall location of the borrow pit and is shown on the drainage drawings. 12. The acrotelm will be placed with the vegetation part of the sod facing the right way up (where practicable) to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pit. 13. Supervision by the Project Geotechnical Engineer is required for the development of the borrow pit. 14. All the above-mentioned requirements will be implemented by the Contractor during construction.		
MM18	Watercourse Crossing	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-4	Watercourse crossings will be constructed to the specifications of the Office of Public Work (OPW) bridge design guidelines '<i>Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945</i>', and in consultation with Inland Fisheries Ireland (IFI).		
MM19	Watercourse Crossings within the BMEP Site	EIAR Chapter 6, 9	The proposed BMEP works only includes 1 no. round of deforestation in comparison to the Do-Nothing Scenario in which the BMEP Site would be felled and replanted several times. Where temporary crossings cannot be avoided, the following measures will be applied:		

		Appendix 4-3	› No instream works will be undertaken. › No watercourse will be interfered with and temporary bridge construction will ensure that water flow will not be impeded and conveyance of increased water flow resulting from above normal rainfall. › Movement of fish will not be impeded. › Crossings points will be constructed at right angles to the water flow. › On sloping ground, temporary bridges to be constructed in a 'Hump Back' fashion. This will reduce the risk of silt flowing down the wheel ruts and directly entering the stream/drain being crossed. › Any run-off will be diverted onto a buffer strip at a suitable point well above the stream. › The machine track leading to the bridge will be very well brashed and ruts that can act as water channels down to the stream will not be allowed to develop › Bridging logs will be placed from top of bank to top of bank to ensure that the natural stream banks are left intact. › The temporary watercourse crossings will be removed following the completion of the works.		
MM20	Culvert Crossings	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-4	All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.		
MM21	Drainage Design Principals	EIAR Chapter 4, 9	The key principles of drainage design that will be implemented and adhered to as part of the Prospective Development are as follows:		

		Appendix 4-3, 4-4	› Keep clean water clean by intercepting it where possible, upgradient of works areas, and divert it around the works areas for discharge/recharge to ground. › Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line treatment and discharge to ground via infiltration drains and infiltration areas. › There is no direct hydraulic connectivity from proposed construction areas to natural watercourses or drains connecting to downstream watercourses. › Maintain the existing hydrology/hydrogeology of the Site. › Re-routing existing local drainage pathways as required. › 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. There will be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at a minimum of 50m and 100m distance from streams and lakes respectively.		
MM22	Interceptor Drains	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the Site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The 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. The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike. Where the drains are to be removed, they will be backfilled with the material from the diversion dike. Interceptor drains may have to be retained in certain locations, for example where roadways are to be installed on slopes, to prevent the roadways acting as conduits for water that might infiltrate the roadway sub-base. In these cases, interceptor drains would be maintained in localised areas along the roadway with culverts		

			under the roadway, which would allow the intercepted water to be discharged to vegetation filters downgradient of the roadway. Similarly, in localised hollows where water is likely to be funnelled at greater concentrations than on broader slopes, interceptor drains and culverts may be left in situ following construction. The velocity of flow in the interceptor will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the channel is non-erosive. On steeper sections where erosion risks are greater, a geotextile membrane will be added to the channel. Interceptor drains will be installed horizontally across slopes to run in parallel with the natural contour line of the slope. Intercepted water will travel along the interceptor drains to 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		
MM23	Swales	EIAR Chapter 4, 9 Appendix 4-3, 4-4	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 sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the Site and prevent it reaching natural watercourses.		
MM24	Check Dams	EIAR Chapter 4, 9 Appendix 4-3, 4-4	The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams will restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam. The check dams will be installed as the interceptor drains are being excavated. Check dams may also be installed in some of the existing artificial drainage channels on the Site, downstream of where drainage swales connect in. The check dams will be installed at regular intervals along the interceptor drains to ensure the bottom elevation of the upper check dam is at the same level as the top elevation of the next		

			down-gradient check dam in the drain. The centre of the check dam will be approximately 150mm lower than the edges to allow excess water to overtop the dam in flood conditions rather than cause upstream flooding or scouring around the dams. Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events.		
MM25	Level Spreaders	EIAR Chapter 4, 9 Appendix 4-3, 4-4	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 are not likely to contribute further to water ingress to construction areas of the Site. The water carried in interceptor drains will not have come in contact with works areas of the Site, 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 in order 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 slope drain will be used to transfer the water to a suitable location. 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 4m and a maximum length of 25m, 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.		
MM26	Piped Slope Drain	EIAR Chapter 4, 9 Appendix 4-3, 4-4	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 1.5m, 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 Prospective 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.		
MM27	Vegetation Filters	EIAR Chapter 4, 9	The selection of suitable areas to use as vegetation filters was determined by the size of the contributing catchment, slope, and ground conditions. Vegetation filters are not used in isolation for waters that were likely to have higher silt loadings. In such cases, silt-bearing water had already passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.		

		Appendix 4-3, 4-4			
MM28	Stilling Ponds (Settlement Ponds)	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Stilling ponds will be used to attenuate runoff from works areas of the Prospective Development during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Prospective Development during the operational phase.. 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 at each required location as two separate ponds in sequence, a primary pond and a secondary pond. 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 primary stilling pond will reduce the velocity of flows to less than 0.5 metres per second to allow settlement of silt to occur. Water will then pass from the primary pond to the secondary pond via another rock apron. The secondary stilling pond will reduce the velocity of flows to less than 0.3 metres per second. Water will flow out of the secondary 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 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. 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. 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. All material excavated during pond construction will be used locally for landscaping and berm construction around these ponds. 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.		
MM29	Siltbuster	EIAR Chapter 4, 9 Appendix 4-3, 4-4	A “siltbuster” or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas, if necessary, prior to its discharge to stilling ponds or swales. The unit stills the incoming water/solids mix and routes it upwards between a set of inclined plates for separation. Fine particles settle onto the plates and slide down to the base for collection, whilst treated water flows to an outlet weir after passing below a scum board to retain any floating material. The inclined plates dramatically increase the effective settling area of the unit giving it a very small footprint onsite and making it highly mobile. The Siltbuster units are now considered best practice for the management of dirty water pumped from construction sites. The UK Environment Agency and the Scottish Environmental Protection Agency have all recommended/specified the use of Siltbuster units on construction projects.		
MM30	Silt Bags	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the Site. The water will flow, via a pipe, from the stilling ponds into the silt bag. 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 bags will ensure that there will be no loss of silt into the stream. The dewatering silt bag, when full (approximately four tonnes of silt), will be removed from Site by a waste contractor with the necessary waste collection permit, who will then transport the silt bag to an appropriate, fully licensed waste facility.		

MM31	Sedimats	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag 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 to the full width of the outfall to ensure all water passes through this additional treatment measure.		
MM32	Silt Fences	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50m buffer zone of a stream, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Prospective 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 '<i>Control of Water Pollution from Linear Construction Projects</i>' published by Construction Industry Research and Information Association (CIRIA, No. C648, 1996). Up to three silt fences may be deployed in series. All silt fencing will be formed using Terrastop Premium or equivalent silt fence product. Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.		
MM33	Hydrocarbon Interceptor	EIAR Chapter 4, 9 Appendix 4-3, 4-4	A hydrocarbon (or petrol) 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 Prospective Development (i.e., construction compounds and substation compound).		

MM34	Transverse Drains (Grips)	EIAR Chapter 4, 9 Appendix 4-3, 4-4	On sections of access road, transverse drains ('grips') are constructed within the surface layer to divert runoff into swales or roadside drains. These drains can run perpendicularly from edge to edge of the road and are most commonly used on steeper gradients to prevent surface water from flowing down the centreline, thereby reducing the risk of erosion and protecting the road structure.		
MM35	Cable Trench Drainage	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Cable trenches are typically constructed in short, controlled sections, thereby minimising the amount of ground disturbed at any one time and minimising the potential for drainage runoff to pick up silt or suspended solids. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences. This approach will also be adopted where new cable trenching sections are required, and replacement/upgrade of cable trenching is required. To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the up-gradient side of the trench and is temporarily sealed/smoothed over, using the back of the excavator bucket. Should any rainfall cause runoff from the excavated material, the material is therefore collected and contained in the downgradient cable trench. Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Prospective Development, would be transported to one of the on-site designated peat and spoil management areas or used for landscaping and reinstatement of other areas elsewhere on-site. 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.		
MM36	Site Drainage Management	EIAR Chapter 4, 9	Preparative Site Drainage Management All materials and equipment necessary to implement the drainage measures will be brought on-site in phases as they are required during the construction phase. A sufficient number of straw		

		Appendix 4-3, 4-4	bales, clean drainage stone, terram, stakes, etc. will be kept on-site at all times to implement the drainage design measures as necessary. Pre-emptive Site Drainage Management The works programme for the groundworks part of the construction phase of the Prospective Development will also take account of weather forecasts, and predicted rainfall. Large excavations, large movements of overburden or large-scale overburden or soil 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.		
MM37	Site Entrances	EIAR Chapter 4, 15	The Prospective Development will continue to be accessed via the existing site entrance off the N15 National Road to the west of the Wind Farm Site. This entrance will facilitate general construction access and delivery of abnormal loads to the Wind Farm Site. Appropriate sightlines have been established to the north and south of the entrance for the safe egress of traffic.		
MM38	Traffic Management	EIAR Chapter 4, 15 Appendix 15-2	The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users. It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, usually at night, to avoid disruption to work and school-related traffic Prior to the Traffic Management Plan being finalised, a full dry run of the transport operation along the potential routes will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan for agreement with the relevant Authorities. All turbine deliveries will be provided for in a Traffic Management Plan which will be finalised in advance of oversized load deliveries, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. Such a Traffic Management Plan is typically submitted to the relevant		

			Authorities for agreement in advance of any abnormal loads using the local roads, and will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.		
MM39	Concrete Pouring	EIAR Chapter 4, 9, 10, 11 Appendix 4-3	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. Before leaving the Site, washing of the delivery truck will be minimised and restricted to designated wash out areas. This wash-out area is proposed for continued use during the construction of the Prospective Development. Wash out will be restricted to the concrete lorry's chute only. 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. Concrete lorries will be washed out fully at the off-site batching plant, where facilities are already in place. Concrete wash-out areas are covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site to an appropriately authorised facility as necessary. Any residual solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste by an appropriately authorised waste collector for disposal at an authorised waste facility. Alternatively, a Siltbuster-type concrete wash unit or equivalent³ may be used.		
MM40	Dust Suppression	EIAR Chapter 4, 5, 10, 11	In periods of extended dry weather, dust suppression may be necessary within the Wind Farm Site, along haul roads, proposed new site roads, and proposed upgrades to existing site roads, to prevent dust from becoming a nuisance. If necessary, water will be taken from stilling/settlement ponds in the Wind Farm Site drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and temporary construction compounds		

³ (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/)

			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. › 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 by the Ecological Clerk of Works (ECoW) 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 of excavated material will be minimised by coordinating excavation, placement of material in peat and spoil management areas. › 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 Wind Farm Site proposed new entrance will be checked weekly for damage/potholes and repaired as necessary. › The transportation of construction materials from locally sourced quarries for the Prospective Development will be covered by tarpaulin where necessary. › If necessary, excavated material will be dampened prior to transport to the peat and spoil management areas. › 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 Prospective Development to reduce the amount of emissions associated with vehicle movement. › Groundworks (i.e., works with potential to create dust) associated with proposed turbines will be fully supervised by an ECoW. › The ECoW will regularly monitor adjacent Annex I habitat for signs of degradation.		
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			➤ The ECoW will have power to halt construction works if required.		
MM41	Vehicle Washing	EIAR Chapter 4, 9, 10, 11	Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. It is not anticipated that vehicle or wheel washing facilities will be required as part of the construction phase of the Prospective Development as the majority of site roads are existing facilitating regular or frequent deliveries to the Wind Farm Site (e.g. with steel or concrete). Site roads are well finished with compacted hardcore, hence 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 Prospective Development.		
MM42	Waste Management	EIAR Chapter 4, 10, 11, 15	The waste management plan (WMP) is located within the CEMP which outlines the best practice procedures during the construction phase. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Prospective Development. Disposal of waste will be a last resort. The WMP was updated in line with the EPA's 2021 document '<i>Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects</i>' (EPA, 2021)⁴. The WMP has been prepared to outline the main objectives that are to be adhered to facilitate the preparation of a more detailed WMP prior to the construction phase of the Prospective Development. The WMP will be in place throughout the construction and decommissioning phases of the Subject Development. The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.		

⁴ EPA 2021 [Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects](https://www.epa.ie/publications/circular_economy/resources/CDWasteGuidelines.pdf). Available at: https://www.epa.ie/publications/circular_economy/resources/CDWasteGuidelines.pdf

			The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.		
MM43	Construction Timing	EIAR Chapter 4, 7	It is estimated that the construction phase of the Prospective Development will take approximately 12 months from commencement of civil works to the full commissioning of the wind turbines. The commencement of works where the removal of vegetation is required, or where works take place in sensitive breeding habitats will be scheduled to occur outside the bird breeding season (1st March to 31st August) to avoid any potentially significant effects on nesting birds. Construction may commence from September to March so that construction activities are ongoing by the time the next bird breeding season comes around and can continue throughout the bird breeding season. Construction activities will be carried out during normal daytime working hours (i.e., 0700 – 1900hrs Monday to Saturday). However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine components along public routes it could be necessary on occasion to work outside of these hours. Any such out of hours working will be notified in advance to the Local Authority.		
MM44	Peat Stability	EIAR Chapter 4 Appendix 4-3	Excessive loading of insitu peat ➤ No further construction of floating roads on the Wind Farm Site is to be carried out. Given the potential risk associated with floating road construction alternative methods of construction shall be adopted. ➤ No loading of insitu peat. The instability recorded on site in all cases can be contributed to various degrees to excessive placed construction loading onto the insitu peat surface. Identifying body of weak peat in proximity to proposed works		

			› Confirmatory re-testing and assessment in zone of influence in advance of construction works. The peat failure of 12 November 2020 occurred due to an unforeseen body of very weak peat adjacent to the working area. Further confirmatory re-testing to be completed immediately prior to works recommencing in each area of site to ensure no change in ground conditions. Accidental excessive loading of insitu peat during construction › Site supervision and permit to work with respect to peat stability. All construction on site shall be managed and controlled by the construction management team to ensure that all activities have been appropriately assessed with respect to peat stability and related health and safety. Identifying areas of potential weak peat in advance of works completion of works › Monitoring of ground movement and constructed works. In order to monitor the performance of the constructed works within the peat areas, and any further construction works to be carried out, a series of monitoring points shall be established throughout the site. › Proof testing of floating roads. Full-scale proof load tests to be carried out on floating roads to verify their capacity under the design loads for the construction traffic and for largest loading to be experienced by the road. Degradation of work due to inclement weather › Construction and weather conditions. Restrictions on work during or after periods of heavy or sustained rainfall. Heavy intense rainfall can result in degradation of the works resulting in localised instability, and in extreme cases can trigger large-scale peat failure.		
MM45	Construction of Turbine Base	EIAR Chapter 4, 8	The turbine base will be founded on competent founding strata which will require excavation through peat and any soft subsoils. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur.		

			The formation material will have to be approved by an engineer as meeting the turbine manufacturer's requirements. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will be raised with Clause 804 (Cl804) or similar hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e. compacted with seven passes using 12 tonne roller). Drainage measures will be installed to protect the formation by forming an interceptor drain around the perimeter of the base which will be pumped to an adjacent settlement pond.		
MM46	Peat Stability	EIAR Chapter 4, 8 Appendix 4-2, 4-3	With respect to minimising any adverse impacts on peat stability, the following procedures will be followed during construction of turbine bases, hardstanding areas and met mast foundation in relation to excavations in peat: › All excavated peat and spoil to be stored in appropriately designed locations, such as within the existing borrow pits and the proposed extension to the borrow pit. No material will be side cast on the peat slopes. › All excavations within peat will be adequately supported or peat slopes will be battered to a safe slope inclination typically of 1(v): 3(h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required. › Excavations will be kept reasonably free from water at all times. Water will be prevented from being impounded within excavations by either using drainage channels cut into the excavation face or by pumping. › Where water is channelled or pumped from an excavation then this water will be fed into an established watercourse or drainage ditch following suitable treatment.		
MM47	Peat Stability	EIAR Chapter 4, 8 Appendix 4-2, 4-3	Upgrading of Existing Founded Access Roads will be constructed using the following measures which attempt to minimise any adverse impact on peat stability. › Access road construction will be to the line and level requirements as per design/planning conditions. › For upgrading of all existing founded access roads the following will apply:		

			- Excavation of the access road will take place to a competent stratum beneath the peat, removing all peat and soft clay and backfilled with suitable granular fill. - Benching of the excavation will be required between the existing section of access road and the widened section of access road where the depth of excavation exceeds 500mm. - Access roads will be finished with a layer of capping/surfacing material across the full width of the road. - For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability. For upgrading of existing access roads previously constructed using a floated construction technique the following will apply: - Daily monitoring of these monitoring posts will be undertaken while works are ongoing in specific areas. - The existing floating roads will be incrementally removed by pulling back the engineering fill material and base layer, before constructing the new road using the excavate and replace/partial displacement method. - The roads will be built incrementally, with peat removed before being backfilled with coarse rock sourced from the borrow pit where the peat is relatively shallow (<2m). The lateral extent of excavation will be limited to 3m (effective reach of an excavator) before being backfilled. The excavator will work from the road at all times and will not track or operate directly on the peat surface. - Rock fill from the borrow pit will be transported to the roads and berm using A25 dumpers, with the coarse rock tipped onto the constructed section of road before being used to backfill the excavation. Rock will not be end tipped directly from dumpers into the excavation. - Where areas of deeper or weaker peat are encountered, the partial displacement method is proposed. This removes the peat down to the stable		
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			depth of excavation but will leave a layer of peat in place at the base of the excavation. ○ Coarse boulders (>0.5m, with no fine material) will be used in the base of the excavation and will be pushed into the base of the weaker peat to the solid stratum below the peat. This displaces the peat upwards, filling the voids between the coarse boulder fill. › The finished road will have a minimum running width of 5m, with wider sections on bends and corners. › The construction of access roads in areas of deep peat (greater than 3m) will be inspected on a daily basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.		
MM48	Construction Management Targets	Appendix 4-3	The key site objectives are as follows: › Using recycled materials if possible, e.g. excavated stone and overburden; › Ensure sustainable sources for materials supply where possible; › Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and having emergency measures in place; › Avoidance of vandalism; › Keeping all watercourses free from obstruction and debris; › Correct implementation of the sustainable drainage system (SuDS) drainage design principles; › Keep impact of construction to a minimum on the local environment, watercourses, and wildlife; › Correct fuel storage and refuelling procedures to be followed; › Good waste management and housekeeping to be implemented; › Air and noise pollution prevention to be implemented; › Monitoring of the works and any adverse effects that it may have on the environment. Construction Methods and designs will be altered where it is found there is an adverse effect on the environment; › Comply with all relevant water quality legislation listed throughout this document; and,		

			Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the Site is kept in place at all times.		
MM49	Hygiene on Site	Appendix 4-3	- A risk assessment and method statement will be provided by the Contractor prior to commencing works. - Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected. - A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. This area will contain a washable membrane or hard surface. - Stockpile areas will be chosen to minimise movement of contaminated soil. - Stockpiles will be marked and isolated. - Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore. - The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material. - An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans. Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following: - Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it. - Decontamination will only occur within designated wash-down areas. - Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches. - All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas.		

MM50			>		
MM51	Refuelling on Site	EIAR Chapter 4, 8, 9, Appendix 4-3	All refuelling will be carried out outside designated watercourse buffer zones. 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 used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage. The following mitigation measures are proposed to avoid release of hydrocarbons at the Site: > Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. > All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site. > On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. > Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis. > Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area when not in use > Only designated trained operatives will be authorised to refuel plant on-site; > 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; > Fuels stored on the Wind Farm Site will be minimised; > Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity;		
MM52	Spill Control Measures	Chapter 8,9	The following steps provide the procedure to be followed in the event of such an incident: > Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.		

		Appendix 4-3	› If applicable, eliminate any sources of ignition in the immediate vicinity of the incident. › Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill. › If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats. › If possible, clean up as much as possible using the spill control materials. › Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited. › Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action. › The ECoW will inspect the Site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.		
MM53	Concrete and Cement on Site	Appendix 4-3	The following mitigation measures are proposed to avoid release of cement leachate from the Site: › No batching of wet-concrete products will occur on site. 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; › Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. 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 will be undertaken at lined concrete washout ponds; › Weather forecasting will be used to plan dry days for pouring concrete; and, › The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and, › At proposed turbine foundations, sand blinding, DPM, and lean-mix blinding are used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. The concrete cures within 72hrs.		

			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. Before leaving the Site, washing of the delivery truck will be minimised and restricted to designated wash out areas. There is an existing wash-out area on site, located southeast of T10 along the site access road. This wash-out area is proposed for continued use during the construction of the Prospective Development. Wash out will be restricted to the concrete lorry's chute only. 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. A temporary lined impermeable containment area exists on site for use during construction, and was built using straw bales and lined with an impermeable membrane. Concrete lorries will be washed out fully (i.e. beyond just the chute) at the off-site batching plant, where facilities are already in place. During the construction phase, concrete wash-out areas are covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site to an appropriately authorised facility as necessary. Any residual solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste by an appropriately authorised waste collector for disposal at an authorised waste facility.		
MM54	Air Pollution from Construction	EIAR Chapter 10 Appendix 4-3	The risks of pollution arising from concrete deliveries will be further reduced by the following: ➤ Concrete trucks will not be washed out on-site but will be directed back to their batching plant for washout. ➤ Remaining site roads will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be needed. The final wearing course for the roads will not be provided until all turbine foundations have been poured. No concrete will be transported around the Wind Farm Site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine foundations 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 truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed. ➤ The arrangements for concrete deliveries to the Wind Farm Site will be discussed with suppliers before work starts, agreeing 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 Wind Farm Site.		
MM55	Hydrological Receptors	EIAR Chapter 9 Appendix 4-3	The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures to be properly installed and operate effectively. The buffer/setback zone will: ➤ Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment; ➤ Avoid 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.		
MM56	Archaeological Management	EIAR Chapter 14 Appendix 4-3	➤ A buffer zone of 10m will be established around the potential Cultural Heritage feature within the Western block prior to the commencement of clear-felling in this area. The buffer will comprise durable post-and-wire fencing with 'Keep Out' signage. ➤ A walk-over survey of the BMEP Site (both Eastern and Western blocks) will be carried out post-clear-felling but prior to any other works such as stump flipping or drain blocking. ➤ The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as additional buffer zones, etc, deemed necessary.		

			➤ Archaeological monitoring under licence from the NMS of any further peat removal required as part of the construction stage of the Prospective Development will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. ➤ Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. ➤ A walk-over survey of the BMEP Site (both Parcel 1 and Parcel 2) will be carried out post-clear-felling but prior to any other works such as stump flipping or drain blocking. ➤ The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as additional buffer zones, etc, deemed necessary. ➤ A second phase of walk-over survey will be carried out after stump flipping to ensure that any potential finds, features or deposits, if present, can be recorded and any other mitigation required can be implemented.		
MM57	Noise Control	EIAR Chapter 5, 12 Appendix 4-3	The contract documents will specify that the Contractor undertaking the works will be obliged to take specific noise abatement measures and comply with the recommendations of British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise. To ameliorate any potential noise impacts that may present during the construction phase, a schedule of noise control measures has been formulated in accordance with best practice guidance. The following list of measures will be considered, where necessary, to ensure compliance with the relevant construction noise criteria: ➤ Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted; ➤ Establishing channels of communication between the contractor/developer, Local Authority and residents;		

			› Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive properties as practical within the site constraints, and; › 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, turbine component deliveries) it could occasionally be necessary to work out of these hours. Where rock breaking is employed in relation to the proposed borrow pit locations or other locations across the Site, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities: › 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. Air overpressure from a blast is difficult to control, however, because of its variability much can be done to reduce the effect. A reduction in the amount of primer cord used, together with the adequate burial of any that is above the ground, can give dramatic reduction to air overpressure intensities especially in the audible frequency range. Most complaints are likely to be received from an area downwind of the blast site, and therefore, if air blast complaints are a continual problem, it would be advisable to postpone blasting during unfavourable weather conditions if possible. As air blast intensity is a function of total charge weight, then a reduction in the total amount of explosives used can also reduce the air overpressure value. Further guidance will be obtained from the recommendations contained within BS 5228: Part 1 and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 in relation to blasting operations.		
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			The methods used to minimise impacts will consist of the following: › Restriction of hours within which blasting can be conducted (e.g. 09:00 – 18:00hrs). › The firing of blasts at similar times to reduce the ‘startle’ effect. › On-going circulars informing people of the progress of the works. › The implementation of an onsite documented complaints procedure. › The use of independent monitoring for verification of results. › Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence. Control measures as summarised below that will be employed onsite: › 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. › 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 as appropriate. › During the course of the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Table 12-1 of Chapter 12 using methods outlined in British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.		
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MM58	Management of Bird Species/ Habitats	EIAR Chapter 7 Appendix 4-3	› Construction works will not take place in the vicinity of the most recent hen harrier nest site until the forestry canopy closes at this location, to ensure no short-term loss of nesting habitat. › Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). › A pre-construction bird survey at the Wind Farm Site will be organised to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. This will include surveys targeted towards hen harrier and long-eared owl (further details are provided in Appendix 7-7 of the EIAR). There will be a particular emphasis on nesting hen harrier, especially in proximity to the known previous nest sites. › Construction phase surveys will be conducted, including a dedicated breeding hen harrier survey (further details are provided in Appendix 7-7 of the EIAR). If winter roosting or be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022; NatureScot, 2022; or other relevant literature). No works shall be permitted within the buffer until it can be demonstrated that the birds are no longer dependent on the roost/nest. The most recent NatureScot guidance (NatureScot, 2022) suggests a disturbance distance of 300-750m for hen harrier during the breeding season, while the Forestry Commission of Scotland (2006) recommends 500-1000m. The appropriate disturbance buffer will depend on the scale and duration of the works occurring at the time, as well as the connectedness/sightlines to the nest site, and the time of year. If breeding hen harrier are identified, a suitably qualified Ecological Clerk of Works (ECoW) will be appointed to conduct an assessment to determine the construction restrictions required to avoid disturbance to the pair or their young, or damage to habitat depended on by the pair of their young. Taking a precautionary approach, the assessment will begin with a potential disturbance buffer of 500-1000m around the breeding area, depending on the particulars of the nest location, to be determined by the ECoW. The ECoW will monitor the response of the hen harrier and adapt the disturbance buffer if necessary. › The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed		
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			for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context. › During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. › Silt fences will be installed as an additional water protection measure around existing watercourses.		
Decommissioning Phase					
MM59	Decommissioning	EIAR Chapter 4 Appendix 4-6	The Decommissioning Plan will be updated prior to the end of the operating period in line with decommissioning methodologies that may exist at that time and will be agreed with the competent authority prior to the commencement of decommissioning of the wind farm. The potential for effects during the decommissioning phase of the Meenbog Wind Farm has been fully assessed in the EIAR.		

MM60	Decommissioning	EIAR Chapter 4 Appendix 4-6	› In decommissioning the Meenbog Wind Farm, the wind turbines will be disassembled in reverse order to how they were erected. The turbines will be disassembled with a similar model of crane that was used for their erection. The turbine components will be separated and removed offsite. The turbine materials will be transferred to a suitable recycling or recovery facility. 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 unnecessary environmental emissions such as noise, dust and/or vibration. › The underground electrical cabling connecting the turbines to the onsite 110kV substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.		
EIAR Chapter 5: Population and Human Health					
Pre-construction Phase					
MM61	Human Health	EIAR Chapter 5	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 and local residents will be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum.		
MM62	Traffic and Transport	EIAR Chapter 5	A Traffic Management Plan (TMP) has been developed in order to minimise any potential effect on the local population during the construction phase of the Proposed Project due to traffic.		

		Appendix 15-2			
Construction Phase					
MM63	Human Health	EIA Chapter 5 Appendix 4-3	The Prospective Development will be constructed in accordance with all relevant Health and Safety Legislation, including: › Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); › Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); › S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and › Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). › A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage. › All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Wind Farm Site where uncontrolled access is not permitted. › Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase of the Wind Farm Site.		

			› The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Wind Farm Site are made aware of the location of lines before they come on to Site. › Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. › When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site. › 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) (Amendment) Regulations 2021'⁵. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. The scale and scope of the Prospective Development necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'. The PSDP appointed for the construction stage shall be		
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⁵ Health & Safety Authority (2013) Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/construction/guidelines_on_the_procurement_design_and_management_requirements_of_the_safety_health_and_welfare_at_work_construction_regulations_2013_updated_.pdf

			required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Review previously identified hazards and identify any new hazards arising from the design or from the technical, organisational, planning or time related aspects of the project; › Where possible, eliminate the hazards or reduce the risks; › Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan; › Ensure that the work of designers is coordinated to ensure safety; › Organise co-operation between designers; › Prepare a written Safety and Health Plan; › Prepare a safety file for the completed structure and give it to the client; and › Notify the Authority and the client of non-compliance with any written directions issued. The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; › Compile and develop safety file information. › Reporting of accidents / incidents; › Weekly Site meeting with PSCS; › Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: › Induction of all Site staff including any new staff enlisted for the project from time to time; ○ Toolbox talks as necessary; ○ Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;		
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			○ Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance; ○ 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.		
MM64	Noise and Vibration	Chapter 5, 12 Appendix 4-3	Best practice measures for noise control will be adhered to on-site during the construction phase of the Prospective Development including, but not limited to; › Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted; › Establishing channels of communication between the contractor/developer, Local Authority and residents; › Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive properties as practical within the site constraints, and; › 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, turbine component deliveries) it could occasionally be necessary to work out of these hours.		
MM65	Major Accidents and Natural Disasters	EIAR Chapter 5, 8, 9, 16 Appendix 4-3	The Prospective Development has been designed and will be built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.		

			The Prospective Development will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation.		
Operational Phase					
MM66	Health and Safety	EIAR Chapter 5	The following mitigation measures will be implemented during the operation of the Prospective Development to ensure that the risks posed to staff and landowners remain imperceptible throughout the operational life of the Prospective Development; ➤ Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. The doors will only be unlocked as required for entry by authorised personnel and will be locked again following their exit. ➤ Staff associated with the Prospective Development will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, 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 wind farm. These signs include: ○ 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.		

			➤ The Onsite 110kV Substation, which is operated by EirGrid is locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. ➤ Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following: ○ Six-month service – three-week visit ○ Annual service – six-week visit ○ Weekly and daily visits as required. ➤ 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. Access for emergency services will be available at all times.		
MM67	Shadow Flicker	EIAR Chapter 5	<u>Screening Measures</u> In the event of an occurrence of shadow flicker exceeding guideline threshold values of 30 minutes per day at residential receptor locations, mitigation options will be discussed with the affected homeowner, including: ➤ Installation of appropriate window blinds in the affected rooms of the residence; ➤ Planting of screening vegetation; ➤ Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation. If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator. <u>Wind Turbine Control Measures</u> If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed, wind turbine control measures will be implemented.		

			Wind turbines can be fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm. The shadow flicker control units will be added to any required turbines. A shadow flicker control unit allows a wind turbine to be programmed and controlled using the wind farm's Supervisory Control and Data Acquisition (SCADA) system to change a particular turbine's operating mode during certain conditions or times or even turn the turbine off if necessary. All predicted incidents of shadow flicker can be pre-programmed into the wind farm's control software. The wind farm's SCADA control system can be programmed to shut down any particular turbine at any particular time on any given day to avoid excessive shadow flicker occurrences at properties which are not naturally screened or cannot be screened with measures outlined above. Where such wind turbine control measures are to be utilised, they need only be implemented when the specific combined circumstances occur that are necessary to give rise to the shadow flicker effect in the first instance. Therefore, if the sun is not shining on a particular day that shadow flicker was predicted to occur at a nearby property, there would be no need to shut down the relevant turbines that would have given rise to the shadow flicker at the property. Similarly, if the wind speed was below the cut-in speed that caused the turbine rotor to rotate and give rise to a shadow flicker effect at a nearby property, there would be no need to shut down the relevant turbines that otherwise would have caused shadow flicker. In order to ensure that the model and SCADA system is accurate and working well a site visit will be carried out to verify the system. The shadow flicker prediction data will be used to select dates on which a shadow flicker event could be observed at one or multiple affected properties and the following process will be adhered to. <i>Recording the weather conditions at the time of the site visit, including wind speeds and direction (i.e. blue sky, intermittent clouds, overcast, moderate breeze, light breeze, still etc.).</i> <i>Recording the house number, time and duration of site visit and the observation point GPS coordinates.</i>		
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			3. Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation. 4. In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded. 5. The data will then be sent to the wind farm operational team to confirm that the model and SCADA system are working. 6. Following 12 months of full operation of the Proposed Project a report can be prepared for the Local Authority describing the shadow flicker mitigation measures used at the wind farm and confirming the implementation and successful operation of the system. This method of shadow flicker mitigation has been technically well-proven at wind farms in Ireland and also in areas outside Ireland that experience significantly longer periods of direct sunlight. In order to demonstrate how the SCADA control system can be applied to switch off particular turbines at the relevant times and dates, In this case, the relevant turbine(s) would be programmed to switch off for the time required to reduce daily shadow flicker to below the guideline limit of 30 minutes. The SCADA control system would be utilised to control shadow flicker in the absence of being able to agree alternative mitigation measures with the relevant property owner. Where a shadow flicker mitigation strategy is to be implemented, it is likely that the control mechanisms would only have to be applied to a turbine to bring the duration of shadow flicker down to the 28-minute post-mitigation shadow flicker target.		
MM68	Interference with Communications Systems and EMF	EIAR Chapter 5, 15	Interference with domestic transmitters can be overcome by the installation of deflectors or repeaters.		
Decommissioning Phase					
MM69	Decommissioning Phase	EIAR Chapter 5,4	The wind turbines proposed as part of the Prospective Development are expected to operate for a period of 25 years. Following the end of this period, the wind turbines may either operate for a further period or be replaced with a new set of turbines, subject to planning permission being obtained, or the Subject Development may be decommissioned fully. The Grid		

			Connection infrastructure will remain in place as it will form part of the national electricity grid under the control of EirGrid. The works required during the decommissioning phase are described in Section 4.11 in Chapter 4: Description of the Prospective Development. 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 will be implemented during the decommissioning phase also. A Decommissioning Plan has been prepared as part of the EIAR and is included as Appendix 4-7. This Decommissioning Plan follows the most up to date NatureScot guidance. By its nature, the Decommissioning Plan is a working document and, in accordance with the NatureScot guidance, an updated decommissioning plan will be agreed with the local authorities three months prior to decommissioning the Subject Development.		
EIAR Chapter 6 Biodiversity					
Pre-construction					
MM70	Ecological Receptors	EIAR Chapter 6 Appendix 6-4	Given that mobile species may migrate into the Site over time, a pre commencement walkover survey will be undertaken to ensure that any faunal species that may migrate into the Site over time are appropriately considered during the construction phase, and any unforeseen impacts are adequately mitigated. Otter Whilst no otter breeding or resting places were recorded on the Site during the surveys undertaken, a pre commencement survey for otter will be undertaken in advance of construction to ensure that the species is treated appropriately, should it migrate into the Site. Invasive Alien Species Notwithstanding the above, a detailed IAS survey will be undertaken prior to commencement to update the surveys previously undertaken. This will identify any invasive alien species listed on the First Schedule of the S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024. The locations of any such species will be recorded and their locations		

			mapped. Should any be located within or adjacent to the footprint of the Prospective Development, the measures set out in the Invasive Species Management Plan (ISMP) that is included as Appendix 6-4 will be adhered to. In addition, this sets out site hygiene biosecurity measures that will be adhered to at all times.		
Construction Phase					
MM71	Erosion Associated with Aquatic Species	EIAR Chapter 6, 9	Measures to prevent significant effects on watercourses include but are not limited to; ➤ Avoidance of Watercourses (with the exception of one culvert replacement) ➤ Control of surface waters through construction areas in accordance with a detailed drainage plan (Appendix 4-4) ➤ Silt fences and bags ➤ Settlement ponds ➤ Level Spreaders and vegetation filters ➤ Timing of sensitive works to avoid periods of high rainfall ➤ Monitoring and maintenance plan – construction phase ➤ Tree felling in line with DAFM Guidance Documents ➤ Specific mitigations to control waters on the Site during felling operations ➤ Application of felling buffers around watercourse.		
Operational Phase					
MM72	Key Ecological Receptors	EIAR Chapter 6 Appendix 6-4	Whilst no significant effect on these KERs is predicted as a result of the operation of the Prospective Development, Mitigation is set out in Chapter 9 of the EIAR to avoid and minimise any operational impacts on a precautionary basis. These measures are fully described in the drainage plan and associated drawings that are provided in Appendix 4-3 to the EIAR.		
MM73	Blanket Bog Enhancement	Appendix 6-4	Block direct connection between the peatland habitat enhancement area and the watercourse to the north. Any collector artificial drains (interceptor drains) that provide connection to the watercourse will be blocked to prevent run off of suspended solids or other pollutants. These measures will take the form of peat dams where there is no flow (as is the case in the vast majority of drains/furrows) and check dams if any flowing drains are encountered. The		

			enhancement works will then commence upslope at the highest point and work systematically downslope towards the natural watercourse. Given the topography and small size of drains and furrows, it is likely that surface smoothing will be the main action undertaken. However, if it becomes apparent, following felling, that additional drain blocking is required.		
MM74	Soil Erosion	Appendix 6-4	The following supplementary mitigation measures will be employed during felling works. These will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses. They comprise best practice methods which are set out as follows: › Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. › All machinery will be operated by suitably qualified personnel. › Checking and maintenance of roads and culverts will be on-going through any felling operation. 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. › Machines will traverse the parcels along specified off-road routes (referred to as racks). The location of racks will be chosen to avoid wet and potentially sensitive areas. › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. › 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 spoil repository 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 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. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites. - 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. - 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.		
MM75	Tree Felling and Brash Management	Appendix 6-4	- The felling of standing trees in harvest blocks will be undertaken by a timber harvesting machine. Extraction of the logs to the forest road will be carried out using a forwarder. - Low ground pressure machinery will be used. - These machines will traverse the parcel along specified routes ('racks'), over brash mats comprised of deposited branches, off-cuts from tree stems and tops of trees. This is to distribute machine weight and to provide further soil protection from compaction, rutting and erosion. As it fells trees and progresses into the harvest block, the harvester will collect the brash produced by the felling and delimbing of individual trees, and place it in front of the machine, in advance of it moving further forward along the rack. These brash mats will also be used by the forwarder, as it will stay on the racks as it traverses the parcel. Both machines may travel over the same section of the rack several times. Therefore, racks will be monitored and fresh brash will be gathered by the forwarder and applied to racks to ensure that they remain effective. - The harvester machine will cut standing trees within the harvest block using a combined chainsaw and grapple (referred to as a 'harvester head') located at the end		

			of a hydraulic boom. This head fells each tree and then strips (or ‘delimbs’) the stem of branches. ➤ The merchantable timber will be crosscut into sawlog and pulpwood log products of various lengths from 1.6-5.5 m. ➤ These logs will be temporarily deposited on either side of the brash-protected rack from where the harvester will operate and over which, the harvester and the forwarder will travel as they traverse the harvest block. The racks will be generally parallel to each other throughout the harvest block, spaced so that the harvester can fell those trees within its reach on both sides. The location of racks will avoid any wet and potentially sensitive areas of the site, and machines will not travel within the aquatic or other exclusion zones of this harvest block. ➤ Felled timber along the racks will be subsequently collected by the forwarder, which uses a hydraulic grapple arm to load timber into a receiving bunk in its powered trailer. Once the bunk is full, the forwarder will traverse the site along a rack to a stacking bay located beside the forest road, where it will then offload the timber to form (or add to an existing) timber stack, for collection by the haulage truck. At no stage will the forwarder exceed its design capacity and traverse overloaded across the site. In areas of blanket bog enhancement, all timber and brash will be removed from site and stumps will be either flipped, mulched or tamped down to smooth the surface as described in the following sections. In the remaining areas for hen harrier habitat enhancement, stumps will be cut as close to the surface as possible, timber removed from site, and brash windrowed.		
MM76	Potential Effects on Bats	EIAR Chapter 6	Noise and lighting restrictions: Operational noise associated with the Prospective Development will primarily comprise noise generated by wind turbines and substation infrastructure (e.g. transformer hum and associated cooling systems). These sources generally operate outside the ultrasonic frequency range used by bats for echolocation and navigation. Lighting will be avoided wherever possible. Where artificial lighting is required during construction, directional lighting will be used to prevent light spill onto woodland edges, forestry margins and other linear features used by bats for commuting and foraging. This will		

			be achieved through the use of directional lighting accessories, such as hoods, cowls, louvers and shields, to direct light only to the intended area (Stone, 2013). During operation, as part of the Prospective Development, lighting will be designed to prevent upward and lateral light spill to minimise light trespass and avoid illumination of surrounding habitats. Lighting design will comply with the Institution of Lighting Professionals Guidance Note GN08/23 – <i>Bats and Artificial Lighting at Night</i> (ILP, 2023). In addition, the Applicant commits to the Dark Sky Ireland Lighting Recommendations, which require that lighting is used only where necessary, directed only to the area requiring illumination, minimised in intensity, and of an appropriate spectral composition, with warm white light sources (≤ 2700 K) used where feasible. Aviation lighting will be limited to that required for safety and regulatory compliance. Vegetation buffers around turbines In accordance with NatureScot (2021) and Northern Ireland Environment Agency (NIEA, 2021) guidance, a minimum buffer of 50 m will be maintained between turbine blade tips and habitat features used by bats, including treelines and woodland edges. A 50 m buffer between turbine blade tip and the nearest habitat feature has therefore been adopted, based on a turbine configuration (blade length 66.5 m; hub height 90 m; maximum tip height 156.5 m). Buffer distances were calculated using the Natural England / NatureScot methodology and have been incorporated into the turbine layout (Plate 6-1). The resulting vegetation-free buffer zones form part of the embedded design of the wind farm and will be maintained throughout the operational life of the wind farm as part of the Prospective Development. These buffers are a key component of the design approach to managing bat collision risk. Blade feathering Guidance from the Northern Ireland Environment Agency (NIEA, 2021) and NatureScot (2021) is adopted as best practice and recommends that, in addition to buffers applied to key habitat		
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			features, wind turbines implement blade feathering when wind speeds are below the cut-in speed of the turbine. Blade feathering will be implemented as a standard operational measure for the Prospective Development, with turbine blades feathered below the cut-in wind speed. This represents standard turbine operation and is expected to be implemented automatically through the turbine control system.		
EIAR Chapter 7 Birds					
Pre-Construction Phase					
MM77	Birds	EIAR Chapter 7 Appendix 7-8	› A pre-construction bird survey at the Wind Farm Site will be organised to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. This will include surveys targeted towards hen harrier › Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). Any requirement for construction works to run into the subsequent breeding season following commencement will be informed by pre-construction bird surveys. This will include a dedicated breeding hen harrier survey		
Construction Phase					
MM78	Birds	EIAR Chapter 4, 6, 7, 9, 12 Appendix 3-4	› Construction works will not take place in the vicinity of the most recent hen harrier nest site until the forestry canopy closes at this location, to ensure no short-term loss of nesting habitat. › Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). › The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context. › During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be		

			considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. › Silt fences will be installed as an additional water protection measure around existing watercourses. › If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g., Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the birds are no longer dependent on the roost/nest.		
Operational Phase					
MM79	Soil Erosion	Appendix 6-4	The following supplementary mitigation measures will be employed during felling works. These will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses. They comprise best practice methods which are set out as follows: › Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. › All machinery will be operated by suitably qualified personnel. › Checking and maintenance of roads and culverts will be on-going through any felling operation. 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. › Machines will traverse the parcels along specified off-road routes (referred to as racks). The location of racks will be chosen to avoid wet and potentially sensitive areas. › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. › 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 spoil repository 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 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. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites. › 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. › 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.		
MM80	Tree Felling and Brash Management	Appendix 6-4	› The felling of standing trees in harvest blocks will be undertaken by a timber harvesting machine. Extraction of the logs to the forest road will be carried out using a forwarder. › Low ground pressure machinery will be used. › These machines will traverse the parcel along specified routes ('racks'), over brash mats comprised of deposited branches, off-cuts from tree stems and tops of trees. This is to distribute machine weight and to provide further soil protection from compaction, rutting and erosion. As it fells trees and progresses into the harvest block, the harvester will collect the brash produced by the felling and delimbing of individual trees, and place it in front of the machine, in advance of it moving further forward along the rack. These brash mats will also be used by the forwarder, as it will stay on the racks as it traverses the parcel. Both machines may travel over the same section of the rack		

			several times. Therefore, racks will be monitored and fresh brash will be gathered by the forwarder and applied to racks to ensure that they remain effective. › The harvester machine will cut standing trees within the harvest block using a combined chainsaw and grapple (referred to as a 'harvester head') located at the end of a hydraulic boom. This head fells each tree and then strips (or 'delimbs') the stem of branches. › The merchantable timber will be crosscut into sawlog and pulpwood log products of various lengths from 1.6-5.5 m. › These logs will be temporarily deposited on either side of the brash-protected rack from where the harvester will operate and over which, the harvester and the forwarder will travel as they traverse the harvest block. The racks will be generally parallel to each other throughout the harvest block, spaced so that the harvester can fell those trees within its reach on both sides. The location of racks will avoid any wet and potentially sensitive areas of the site, and machines will not travel within the aquatic or other exclusion zones of this harvest block. › Felled timber along the racks will be subsequently collected by the forwarder, which uses a hydraulic grapple arm to load timber into a receiving bunk in its powered trailer. Once the bunk is full, the forwarder will traverse the site along a rack to a stacking bay located beside the forest road, where it will then offload the timber to form (or add to an existing) timber stack, for collection by the haulage truck. At no stage will the forwarder exceed its design capacity and traverse overloaded across the site. In areas of blanket bog enhancement, all timber and brash will be removed from site and stumps will be either flipped, mulched or tamped down to smooth the surface as described in the following sections. In the remaining areas for hen harrier habitat enhancement, stumps will be cut as close to the surface as possible, timber removed from site, and brash windrowed.		
MM81	Hen Harrier Enhancement	Appendix 6-4	It is proposed to permanently remove ~108 hectares of forestry and to create more biodiverse upland habitats suitable for foraging hen harrier. This measure ensures the provision of high-quality replacement peatland habitat to offset the loss of onsite habitat through disturbance/displacement related avoidance. The actions required to achieve this are tree felling, furrow and drain blocking, and revegetation. Furrow and Drain Blocking		

			Drains/furrows will be blocked where they provide hydrological connection to downstream watercourse to prevent any negative effects on downstream watercourses as a result of felling works. These measures should be complete before large scale construction works (i.e., turbine erection) begins. Revegetation After tree felling and timber removal, revegetation will be allowed to occur. Revegetation should be underway before large scale construction works (i.e., turbine erection) begins. The progress of revegetation should be monitored by an ecologist using relevés. Creation of Patchy Scrub Areas of patchy willow and birch scrub will be allowed to revegetate naturally to provide structural diversity and maximise establishment success. Scrub may only be allowed to cover a maximum of 30% of the enhancement area in total. If scrub exceeds 30% coverage, it will be removed using a mulching head, as described in Section 4. If scrub cover is less than 10%, scrub patches will be planted using a mix of bare-root saplings and 2-3year old potted trees.		
Decommissioning Phase					
MM82	Ornithology	EIAR Chapter 7	A Bird Monitoring Programme with the objective of monitoring the ornithological community at the Wind Farm Site during decommissioning works has been prepared It includes for pre-commencement and decommissioning monitoring to identify sensitive nests or roosts in proximity to the works. This will include surveys suitable hen harrier habitat.		
EIAR Chapter 8 Land, Soils and Geology					
Construction Phase					
MM83	Felling	EIAR Chapter 8	All felling operations will be completed in line with the Forest Service's published policy and will be subject of a Limited Felling Licence (LFL). The Forest Service policy requires replacement or replanting on a hectare for hectare basis for the footprint of the infrastructure developments.		
MM84	Excavation and Disturbance of Peat and Subsoil	EIAR Chapter 4, 8	<u>Wind Farm Site</u> The following recommendations and best practice guidelines for the placement of peat and spoil in identified spoil management areas and in landscaping will be adhered to during the construction of the Prospective Development :		

		Appendix 4-2	› The placement of peat within the peat cell will require the use of long reach excavators; › The surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat/spoil will be carried out as placement of peat within the peat cell progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat; › The acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up (where practicable) to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the placement areas. › Supervision by the Project Geotechnical Engineer is required for the development of the peat cell.		
MM85	Wastewater Disposal	EIAR Chapter 4, 8 Appendix 4-2	› 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 site on completion of the construction works; › Welfare facilities are also present at the existing onsite substation (constructed as part of the Existing Development). Wastewater is stored in an underground tank and is removed by a licenced contractor. These facilities will also be used during the construction of the Prospective Development; › Water supply for the site offices and other sanitation will be brought to Wind Farm Site and removed after use, to be discharged at a suitable off-site treatment location; and, › No water or wastewater will be sourced on the Wind Farm Site, nor discharged to the Wind Farm Site.		
MM86	Erosion of Exposed Subsoils and Peat	EIAR Chapter 8 Appendix 4-3	› Soil/subsoil removed from the excavation locations will be used for landscaping, placed/spread locally alongside the excavation or will be stored in the designated peat and spoil management areas. › Temporary drainage systems will be required to limit runoff impacts during the construction phase. › In forestry areas, brush mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brush mat renewal will take place when they become heavily used		

			and worn. Provision will be made for brush mats along all off-road routes, to protect the soil from compaction and rutting.		
MM87	Peat, Soils and Subsoils during Felling	EIAR Chapter 8 Appendix 4-3	➤ 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 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.		
MM88	Excavation of Proposed Borrow Pits	EIAR Chapter 8 Appendix 4-3	The following mitigation measures are prescribed in relation to the excavation and reinstatement of the borrow pits: ➤ Peat and overburden will be removed and stored within the void at the existing borrow pits; ➤ Slopes within the excavated rock formed around the perimeter of the borrow pits will be formed at stable inclinations to suit local in-situ rock conditions. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance; ➤ The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term; ➤ Rock buttresses will be constructed within BP3, founded on in-situ rock to create individual cells. The cells will be opened in sequence and filled as needed;		

			› A rock buttress to form cells within the borrow pit will be required to ensure access for trucks and excavators. This will be formed by leaving in place an upstand of intact rock as the borrow pit excavation is progressed; › 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. The contractor excavating the rock will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be reinstated safely; › The surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit.; › Surface water and groundwater drainage controls will be implemented at the borrow pits › The development of the borrow pit will be supervised by the Project Geotechnical.		
MM89	Peat Instability and Failure	EIAR Chapter 8 Appendix 4-3	The key mitigation with regard peat stability risk was the completion of robust, multidisciplinary site investigations which informed a comprehensive peat stability risk assessment. The peat stability analysis completed by FT was undertaken following the principles in the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (PLHRAG, 2nd Edition, Scottish Government, 2017). The PSA (FT, 2026) provides a number of mitigation/control measures to reduce the potential risk of peat failure, summarised below; Excessive loading of in-situ peat No construction of new floating roads is to be carried out at the Wind Farm Site, although some of the existing floating roads will be used for the completion of the Prospective Development following proof load testing of the roads. No loading of in-situ peat. The instability recorded on site in all cases can be contributed to various degrees to excessive placed construction loading onto the in-situ peat surface. Identifying body of weak peat in proximity to proposed works Confirmatory re-testing and assessment in zone of influence in advance of construction works. Further confirmatory re-testing to be completed immediately prior to works recommencing in each area of site to ensure no change in ground conditions. Accidental excessive loading of in-situ peat during construction		

			Site supervision and permit to work with respect to peat stability. All construction on site shall be managed and controlled by the construction management team to ensure that all activities have been appropriately assessed with respect to peat stability and related health and safety. Identifying areas of potential weak peat in advance of works completion of works Monitoring of ground movement and constructed works. In order to monitor the performance of the constructed works within the peat areas, and any further construction works to be carried out, a series of monitoring points shall be established throughout the site. Proof testing of floating roads. Full-scale proof load tests to be carried out on existing floating roads to verify their capacity under the design loads for the construction traffic and for largest loading to be experienced by the road. Degradation of work due to inclement weather Restrictions on work during or after periods of heavy or sustained rainfall. Heavy intense rainfall can result in degradation of the works resulting in localised instability, and in extreme cases can trigger large-scale peat failure. Construction of stabilising berm downslope Downslope of the junction between the spur road to T01 and T02/04 a berm will be constructed downslope of the existing floating road, due to the relatively low ODF values recorded when a crane load is applied. Berm designed in accordance with Eurocode 7 design requirements.		
MM90	Peat Stability	Appendix 4-2	Other mitigation measures regarding peat stability are including but not limited to; › No construction of new floating roads is to be carried out, although some of the existing floating roads will be used to complete the Prospective Development works. Given the potential risk associated with floating road construction alternative methods of construction will be adopted and are detailed in the PSA. › No loading of in-situ peat. › Spoil Management – All excavated peat and spoil will be stored in designated locations such as the existing borrow pits (BP1 and BP2) and the proposed extension to BP3 or in the peat cell at T18. No material will be side cast on peat slopes for either temporary or permanent storage. › Monitoring of ground movement and constructed works. › Confirmatory testing and assessment in zone of influence in advance of construction works is to be completed.		

			- Site supervision and permit to work with respect to peat stability. All construction on site will be managed and controlled by the construction management team to ensure that all activities have been appropriately assessed with respect to peat stability and related health and safety. Procedures will be put in place to clearly demonstrate how this has been achieved which are detailed in the PSA. - Proof testing of floating roads. Full-scale proof load tests to be carried out on floating roads to verify their capacity under the design loads for the construction traffic and for largest loading to be experienced by the road. - A berm will be constructed downslope of the T01/T01 junction which will involve the excavation of peat and the placement of rockfill. - Construction and weather conditions. Restrictions on work during or after periods of heavy or sustained rainfall as recorded from weather station located on site, or from Met Eireann weather forecasts. - Following periods of heavy intense rainfall, the site will be inspected prior to resumption of construction works by a competent person to ensure that all drainage is working, and critical areas with respect to stability are stable with no signs of ground movement.		
MM91	Construction of Roads within the BMEP Site	Appendix 4-2, Appendix 6-4	Construction of a section of floating track on the BMEP Site: (a) Any works will be subject to the mitigation measures given below, or any other such related requirements. (b) Confirmatory testing as per bullet (7) below will be undertaken along the route of the track prior to construction commencing, including inspection, peat probing and hand shear vane testing. (c) Full-scale proof load testing as per bullet (9) below will be undertaken following construction of the new floating track. No loading of in-situ peat (sidecasting): The remaining works on the Wind Farm Site and the BMEP Site will be carried out without placing of any arisings or loading on to the in-situ peat. Placing of any load particularly onto the downslope margin of any works within peat will be avoided. It is recommended that the tracking of construction machinery onto the in-situ peat is kept to a minimum and limited to the installation or maintenance of site drainage using appropriate low ground pressure plant. In the event that construction machinery has to track onto the in-situ peat then the peat shall be inspected and assessed by a		

			competent person to avoid excessive loading. If the competent person is in any doubt as to the suitability of the peat for tracking of machinery, no tracking of machines onto the peat should take place. › The definition of excessive loading shall be determined by the competent person and will take into account the nature and type of loading and the nature and type of the in-situ peat and general ground conditions. › Where required the assessment will include visual inspection and appropriate testing of in-situ peat with respect to depth and strength to full peat depth. For example, thin peaty soil (less than 0.5m thick) over mineral soil would not represent a notable risk of peat instability. The results of the assessment, pending satisfactory findings, shall be completed prior to any works commencing. A record of all such assessments shall be maintained. › The above excludes areas of landscaping that will be required around hardstands and alongside roads, where peat will be used to 'dress' cut and fill slopes and areas of disturbed ground. Spoil Management; All excavated peat and spoil to be stored in appropriated designed locations, such as within the existing borrow pits (BP1 and 2) and the proposed extension to the borrow pit (BP3). No material will be sidecast on the peat slopes for either temporary or permanent storage (excluding landscaping requirements).		
MM92	Peat Stability	Appendix 4-2, 6-4	Procedures that provide an auditable chain of command shall be put in place to clearly demonstrate that peat stability and related health and safety have been assessed in the construction management. › For any construction activity where peat stability and related health and safety have been assessed, then a permit to work shall be issued to the construction operative by the appropriate personnel. › No construction works will be started until a permit to work has been issued to the construction operative by the appropriate personnel. Construction of berm downslope of T01/T04 Junction will involve the excavation of peat and placement of rockfill. › Excavation of peat and immediate backfill with rockfill. › The lateral extent of excavation will be limited to 3m (effective lateral reach of an excavator) before being backfilled. Rock fill from the on-site borrow pits will be		

			transported to the berm using A25 dumpers, with the coarse rock tipped onto the constructed section of berm before backfilling. Material will not be end-tipped into the excavation. ➤ No material will be side cast or stored on the peat surface during the construction of the berm. Where the sides of the peat are spalling or squeezing then the stability of the peat will be maintained by controlled displacement of the very weak peat with coarse rockfill and boulders pushed down onto the underlying glacial till to form a stable base ➤ Monitoring will be required both upslope and downslope of the berm during the construction works. ➤ A detailed method statement for these works will be prepared prior to construction commencing. ➤ Following periods of heavy intense rainfall, such as 10mm/hr, >25mm in a 24-hour period, or >50% of monthly average in a 7-day period and in following 24 hours, no groundworks may take place, and any ongoing works should be restricted to hardstanding areas. ○ When periods of heavy intense rainfall are predicted then works will be ceased in advance and any construction works in critical areas with respect to stability are secured in advance.		
Operational Phase					
MM93	Site Road Maintenance	EIAR Chapter 8	➤ Use of aggregate from authorised quarries for use in road and hardstand maintenance.		
MM94	Site Vehicle/Plant Use	EIAR Chapter 4, 8 Appendix 4-4	➤ Vehicles used during the operational phase will be refuelled off site before entering the Proposed Project site; ➤ It is not envisioned that fuels will be stored on-site during the operational phase; ➤ 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 Construction and Environmental Management Plan (CEMP) (see Appendix 4-3).		

		Appendix 4-5			
MM95	Use of Oil in Transformers	EIAR Chapter 4, 8 Appendix 4-4	› The electrical control building (at the substation) will be banded appropriately to the volume of All transformers in the turbines and substation areas will be banded to 110% of the volume of oil used in each transformer/substation; and, › An emergency plan for the operational phase to deal with accidental spillages will be contained in the CEMP (Appendix 4-3).		
Decommissioning Phase					
MM96	Decommissioning Phase	EIAR Chapter 8	› The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of reduced magnitude. › Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. › 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.		
EIAR Chapter 9 Water					
Pre-Construction Phase					
MM97	Temporary Drainage Works	EIAR Chapter 4, 9 Appendix 4-4	Pre-commencement Temporary Drainage Works Prior to the commencement of construction works (new road/hardstand, turbine foundation installs or upgrade of existing roads) the following key temporary drainage measures will be installed: › All existing land and 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 interceptor drains will be installed upgradient of the works areas;		

			- Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; 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					
MM98	Watercourses	EIAR Chapter 9	Mitigation measures for the new proposed steel and timber footbridge crossing associated with the amenity proposals are detailed below: - The proposed crossing will comprise a clear-span steel and timber footbridge. No permanent structures will be located within the watercourse channel and the existing bed and banks will remain undisturbed; - All drainage and sediment-control measures will be installed prior to commencement of works in the vicinity of the watercourse; - Construction activities will be undertaken from the banks where practicable and no plant or machinery will enter the watercourse; - Plant and equipment will not be permitted to track across the channel; - Access to the opposite bank will be required that avoids disturbance of the bed and banks; - Any excavated material will be stored outside the watercourse buffer and protected from erosion. - Appropriate sediment-control measures, including silt fencing will be installed down-gradient of works areas. - Refuelling, plant maintenance and material storage will be undertaken in designated areas away from the watercourse. - Spill kits will be maintained on site and emergency response procedures implemented in the event of an accidental release. The following mitigation measures will be implemented with respect to upgrade of the crossing at T14 and the new box culvert: - In-stream works will be undertaken during low-flow conditions and during the time period as recommended by IFI;		

			› Where required, the works area will be isolated from the watercourse using over-pumping, fluming or other appropriate flow management measures; › Temporary flow management measures will be monitored throughout the works to ensure uninterrupted downstream flow and to prevent scour, erosion or sediment mobilisation; › Where the box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse; › Sediment and erosion control measures will be installed prior to commencement of works and maintained throughout construction; › Excavated material and stockpiles will be stored away from the watercourse and protected from runoff; › Refuelling, plant maintenance, and chemical storage will be undertaken in designated areas away from the watercourse; › Spill kits will be available on-site and all personnel will be trained in spill response procedures. › Plant and machinery entering the site will be inspected to ensure they are free from leaks and in good working order; › Concrete works will be managed to prevent cementitious material or wash water entering the watercourse; › Disturbed channel banks and riparian areas will be reinstated and stabilised immediately following completion of works; › Regular environmental inspections will be undertaken to ensure compliance with water quality protection measures; and, › Any pollution incident will be reported and remedial action implemented immediately.		
MM99	Use of the Siltbuster	EIAR Chapter 9	Measures employed to prevent overdosing and potential chemical carryover: › The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; › Continued monitoring and water analysis of pre and post treated water by means of an in-house 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).		
MM100	Surface Waters	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-4 Appendix 4-5	Mitigation by Avoidance The key mitigation measure to be implemented during the construction phase is the avoidance of sensitive hydrological features where possible, by application of suitable buffer zones (i.e. 50m to main watercourses). The majority of the Prospective Development is located outside of the delineated 50m natural watercourse (river and stream) buffer zones. Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the hydrological buffer zones. The silt fences will be installed as single, double or triple silt fences depending on the space available and the anticipated loading. Further details on silt fences are included in the CEMP (Appendix 4-3 of the EIAR). The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures to be properly installed and operate effectively. Mitigation by Design: The drainage measures associated with the Prospective Development are proportionate to the works that are intended in each area. The Prospective Development drainage replicates what works well from the Existing Development drainage layout i.e. use of interceptor/collector drains, silt fencing, silt traps, settlement ponds and routing treated drainage downstream via the existing forestry drainage network. › Source controls: ○ Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems. ○ Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas.		

			› In-Line controls: ○ Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. › Treatment systems: ○ Temporary sumps and ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems. It should be noted that for the Prospective Development, an extensive network of forestry and agricultural drains already exist, and these will be integrated and enhanced as required and used within the Prospective Development drainage system. The key elements being the upgrading and improvements to existing water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.		
MM101	Tree Felling	EIAR Chapter 9	Tree felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, including the specific guidelines listed below, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment. › Forestry Standards Manual (Forest Service, 2015) › Forest Protection Guidelines (Forest Service, 2002) › Forest Operations and Water Protection Guidelines (Coillte, 2013) › Forestry and Water Quality Guidelines (Forest Service, 2000b) › Forestry and the Landscape Guidelines (Forest Service, 2000c) › Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018) › Coillte Planting Guideline SOP › Code of Best Forest Practice (Forest Service, 2000) <u>Mitigation by Avoidance:</u>		

			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”. The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures to be properly installed and operate effectively. The buffer/setback zone will: › Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment; › Avoid 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. <u>Mitigation by Design:</u> Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows: › Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; › All machinery will be operated by suitably qualified personnel; › Checking and maintenance of roads and culverts will be on-going through any felling operation. 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; › Machines will traverse the Site along specified off-road routes (referred to as racks); › The location of racks will be chosen to avoid wet and potentially sensitive areas; › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there		
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			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 spoil repository 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. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites; › Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; › Refuelling or maintenance of machinery will not occur within 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.		
MM102	Groundwater Levels during Excavation Works	EIAR Chapter 9	The extraction of bedrock at the proposed borrow pits will follow the current international best practice. This protocol will be employed to mitigate the potential effects of explosives on groundwater quality during blasting operations.		
Operational Phase					

MM103	Release of Wastewater	EIAR Chapter 9	A sealed underground holding tank for effluent (wastewater) from the substation building has been installed. The tank shall be routinely emptied by a licensed contractor. A level sensor has been installed in the tank which shall be linked to the on-site SCADA system. If the level of the tank contents rise to a predetermined 'high' level a warning shall appear on the overall SCADA system for the wind farm and automatic notification shall be sent to the facility manager. A suitably permitted waste contractor will be engaged, in relation to the servicing and de-sludging of the wastewater holding tank on site. There will be no discharge of wastewater to ground at the Site, and therefore there is no potential to impact groundwater or surface water quality.		
Decommissioning Phase					
MM104	Decommissioning Phase	EIAR Chapter 9	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.		
EIAR Chapter 10 Air Quality					
Construction Phase					
MM105	Exhaust Emissions	EIAR Chapter 10 Appendix 4-4	› Prospective 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 will produce 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 (onsite). › Machinery will be switched off when not in use to limit exhaust emissions from idling. › 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 facility will be local to the Site to reduce the emissions associated with vehicle movements. - Aggregate materials for the construction of the wind farm infrastructure will be predominantly sourced onsite, and locally sourced if required, which will further reduce potential emissions. - A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3).		
MM106	Exhaust Emissions: Transport to and from the Site	EIAR Chapter 10	- Aggregate materials for the construction of the wind farm infrastructure will be predominantly sourced onsite, and locally sourced if required, which will further reduce potential emissions. - 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. - Waste material will be transferred from the Site to a licensed /permitted 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. - A CEMP will be in place throughout the construction phase (see Appendix 4-3).		
Operational Phase					
MM107	Dust Emissions: Prospective Development Infrastructure	EIAR Chapter 10	- 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 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.		

MM108	Dust Emissions	EIAR Chapter 10	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 dust emissions that arise		
Decommissioning Phase					
MM109	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 prescribed for the construction phase of the Prospective Development will be implemented during the decommissioning phase thereby minimising any potential effects. The potential for effects during the decommissioning phase of the Prospective Development has been fully assessed within the EIAR.		
EIAR Chapter 11 Climate					
Construction Phase					
MM110	Greenhouse Gas Emissions	EIAR Chapter 11	› 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 construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. › 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. Please see Chapter 15 Material Assets for details. › It is intended to obtain the materials for the construction of the Prospective Development from the onsite borrow pits.		

			› Areas of excavation will be kept to a minimum, placement of material will be in designated peat and spoil management areas (i.e. the onsite borrow pits, and peat cell at T18). › A Construction and Environmental Management Plan (CEMP) (Appendix 4-3) will be in place throughout the construction phase. › The CEMP (Appendix 4-3) includes a Waste Management Plant (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. ○ The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Prospective Development. Disposal of waste will be seen as a last resort. ○ Section 4.5.7 of Chapter 4 for the 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, ○ The MRF facility will be local to the Wind Farm Site to reduce the amount of emissions associated with vehicle movements. › It is intended to obtain the majority of aggregate materials for the construction of the Prospective Development from the onsite borrow pits (with some material being imported from local licenced quarries as needed). This will significantly reduce the number of delivery vehicles accessing the Site, thereby reducing the amount of emissions associated with vehicle movements. › Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.		
Operational Phase					
MM111	Greenhouse Gas Emissions	EIAR Chapter 11	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.		
Decommissioning Phase					

MM112	Decommissioning Phase	EIAR Chapter 11	Any cumulative 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 Prospective Development will be implemented during the decommissioning phase thereby minimising any potential cumulative effects.		
EIAR Chapter 12 Noise					
Construction Phase					
MM113	Construction Noise	EIAR Chapter 12	› Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted; › Establishing channels of communication between the contractor/developer, Local Authority and residents; › Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive properties as practical within the site constraints, and; › 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, turbine component deliveries) it could occasionally be necessary to work out of these hours. Where rock breaking is employed in relation to the proposed borrow pit locations or other locations across the Site, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities: › 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. Further guidance will be obtained from the recommendations contained within BS 5228: Part 1 and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 in relation to blasting operations. The methods used to minimise impacts will consist of the following. › Restriction of hours within which blasting can be conducted (e.g. 09:00 – 18:00hrs). › The firing of blasts at similar times to reduce the ‘startle’ effect. › On-going circulars informing people of the progress of the works. › The implementation of an onsite documented complaints procedure. › The use of independent monitoring for verification of results. › Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence.		
MM114	Wind Turbine Noise	EIAR Chapter 12	In the unlikely event that an issue with low frequency noise is associated with the Prospective Development, it is recommended that an appropriate detailed investigation be undertaken. Due consideration should be given to guidance on conducting such an investigation which is outlined in Appendix VI of the EPA document entitled ‘Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities ’ (NG4) (EPA, 2016). This guidance is based on the threshold values outlined in the Salford University document ‘Procedure for the assessment of low frequency noise complaints, Revision 1, December 2011’.		
Operational Phase					
MM115	Operational Phase (Noise)	EIAR Chapter 12	In the unlikely event that an issue with low frequency noise is associated with the Prospective Development, it is recommended that an appropriate detailed investigation be undertaken. Due consideration should be given to guidance on conducting such an investigation which is outlined in Appendix VI of the EPA document entitled ‘Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities ’ (NG4) (EPA, 2016). This guidance is based on the threshold values outlined in the Salford University document ‘Procedure for the assessment of low frequency noise complaints, Revision 1, December 2011’.		

MM15	Amplitude Modulation	EIAR Chapter 12	In the event that a complaint which indicates potential excessive amplitude modulation (AM) associated with the Subject Development, the operator will fully investigate the complaint in collaboration with the turbine manufacturer, through review of the meteorological periods and conditions during which the reported AM occurs. If an ongoing issue with excessive AM is identified, a mitigation strategy to reduce the level of AM will be implemented through engineering methods and/or curtailment of specific turbines. The operator may appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the IOA AMWG or subsequent revisions		
Decommissioning Phase					
MM116	Decommissioning Phase (Noise)	Chapter 12 Appendix 4-6	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 Decommissioning Plan (Appendix 4-6) that has been prepared for the Proposed Project.		
EIAR Chapter 13 Landscape and Visual					
Construction Phase					
MM117	Visual Effects	EIAR Chapter 13	In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible.		
MM118	Visual Effects	EIAR Chapter 13	General housekeeping measures, necessary for Health and Safety requirements, will ensure that the active construction areas will be kept tidy, mitigating localised visual impacts during the construction phase. A detailed description of the Prospective Development is included in Chapter 4 of the EIAR. The following sections assess the visual effects associated with the construction phase of the other (non-turbine) components of the Prospective Development.		

EIAR Chapter 14 Cultural Heritage					
Construction Phase					
MM119	Unrecorded Cultural Heritage Assets	EIAR Chapter 14 Appendix 4-3	› A buffer zone of 10m will be established around the potential Cultural Heritage feature within Parcel 2 prior to the commencement of clear-felling in this area. The buffer will comprise durable post-and-wire fencing with 'Keep Out' signage. › A walk-over survey of the BMEP Site (both Parcels) will be carried out post-clear-felling but prior to any other works such as stump flipping or drain blocking. › The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as additional buffer zones, etc, deemed necessary.		
MM120	Sub-surface Archaeology	EIAR Chapter 4 Appendix 4-3	› Archaeological monitoring under licence from the NMS of any further peat removal required as part of the construction stage of the Prospective Development will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. › Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. › A walk-over survey of the BMEP Site (both Parcel 1 and Parcel 2) will be carried out post-clear-felling but prior to any other works such as stump flipping or drain blocking. › The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as additional buffer zones, etc, deemed necessary.		

			A second phase of walk-over survey will be carried out after stump flipping to ensure that any potential finds, features or deposits, if present, can be recorded and any other mitigation required can be implemented.		
Operational Phase					
MM121	Landscape Effects	EIAR Chapter 14	- Archaeological monitoring under licence from the NMS of any further peat removal required as part of the construction stage of the Prospective Development will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. - Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. - A walk-over survey of the BMEP Site (both Eastern and Western blocks) will be carried out post-clear-felling but prior to any other works such as stump flipping or drain blocking. - The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as additional buffer zones, etc, deemed necessary. - A second phase of walk-over survey will be carried out after stump flipping to ensure that any potential finds, features or deposits, if present, can be recorded and any other mitigation required can be implemented.		
EIAR Chapter 15 Material Assets					
Material Assets - Traffic					

Construction Phase					
MM122	Delivery of Abnormal Loads	Chapter 15	The following are the main points to note for these deliveries which will take place after peak evening traffic: › The delivery of turbine components is a specialist transport operation with the transportation of components carried out at night when traffic is at its lightest and the impact minimised. › The deliveries will be made in consultation with the Local Authority and An Garda Síochána. › It is estimated that 153 abnormal sized loads will be delivered to the Site, comprising 51 convoys of 3 vehicles, undertaken over 51 separate nights. › These nights will be spread out over an approximate period of 11 weeks and will be agreed in advance with the relevant authorities. › In order to manage each of the travelling convoys, for each there will be two Garda escort vehicles that will stop traffic when required at the front and rear of the convoy of 3 vehicles. › There will also be two escort vehicles provided by the haulage company for each convoy.		
MM123	General Traffic Management	EIAR Chapter 15 Appendix 15-2	The Traffic Management Plan (TMP) will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the Prospective Development. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing onsite. The detailed TMP will include the following: › Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the 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 Donegal County Council in advance of deliveries of turbine components to the Wind Farm Site. Liaison with the relevant local authorities, TII and MMaRC and will be carried out where required regarding requirements such as delivery timetabling. The		

			programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Wind Farm Site. › Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the 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. › A Pre and Post Construction Condition Survey – Where required by the local authority, a pre-condition survey of roads associated with the Prospective Development can be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. › Liaison with the relevant local authority - Liaison with Donegal County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads section will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. › Implementation of temporary minor alterations to road network at critical junctions – at locations highlighted in Section 15.1.8. › Agreement of delivery routes – These routes will be agreed with Donegal County Council and adhered to by all contractors. › Delivery times of large turbine components - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. › Traffic management on L6554 – Temporary traffic management measures including signage and flagmen on short section of L6554 during tree felling associated with the BMEP.		
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			- Travel plan for construction workers – While the assessment above has assumed the worst case in 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 routes to / from the Site and identification of an area for parking. - 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 wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-3. - 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					
MM124	Decommissioning Phase	EIAR Chapter 15 Appendix 4-6	In the event that the Prospective Development is decommissioned after the 25 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 of the EIAR and Appendix 4-6 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, in accordance with Scottish Natural Heritage report (SNH) <i>Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms</i> (SNH, 2013).		
Material Assets - Other					
Construction Phase					
MM125	Electricity	EIAR Chapter 4, 15 Appendix 4-3	- The suitability of machinery and equipment for use near power lines will be risk assessed. - All staff will be trained on operating voltages of overhead electricity lines running over the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site will be made aware of the location of overhead electricity lines before they come on to Site. - Barriers will run parallel to overhead lines at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.		

			› When activities must be carried out beneath overhead lines, e.g., component delivery, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding overhead lines › 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) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to Health and Safety Plan. › Other Material Assets › 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. › The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.		
MM126	Water	EIAR Chapter 9, 15	› 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.		

			 The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.		
Operational Phase					
MM127	Telecommunications	EIAR Chapter 15 Appendix 15-4	In the event of interference occurring to telecommunications, the Guidelines (DoEHLG, 2006) acknowledge that '<i>electromagnetic interference can be overcome</i>' by the use of diverter relay links out of line with a wind farm. A signed Protocol Agreement between 2RN and the Applicant can be found in Appendix 15-4. The Protocol Agreement ensures that in the event of any interference occurring to television or radio reception due to operation of the Prospective Development, the required measures, as set out in the Protocol Agreement, will be carried out by the Applicant to rectify this. The Protocol Agreement ensures that the appropriate mitigation is carried out in the event of unanticipated broadcast interference arising to television or radio reception as a result of the Prospective Development. As outlined above, it is expected that the Enet link that would be impacted by the Wind Farm Site will be decommissioned within the next two years and should therefore not be impacted by the operation of the Prospective Development. Notwithstanding, the proposed 80m onsite met mast has been positioned to allow the link to be rerouted, if necessary, and without being impacted by any other proposed turbines. This provides a suitable mitigation measure in the event that the Enet link remains active when the Prospective Development becomes operational.		
MM128	Aviation	EIAR Chapter 15	The following IAA and DoD requests will be complied with should the Proposed Project be consented. DOD requests: <u>Irish Aviation Authority</u> 1. Agree an aeronautical obstacle warning light scheme for the wind farm development;		

			2. Provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location; and 3. Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection. <u>Department of Defence</u> 1. All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. 2. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near InfraRed (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. 3. Light intensity to be of similar value to that emitted in the visible spectrum of light.		
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18.2

EIAR Monitoring Measures

Table 18-2 Schedule of Monitoring Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Drainage Maintenance	EIAR Chapter 4, 9 Appendix 4-4	Reactive Site Drainage Management The final drainage design prepared for the Prospective Development prior to commencement of construction will provide for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist on-site. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained in so far as is possible. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time. In the event that works are giving rise to siltation of watercourses, the ECoW or supervising hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures such as those outlined above will be installed in advance of works recommencing. An inspection and maintenance plan for the drainage system on-site	Ongoing	Monthly	EnvCoW / Project Hydrologist

			will be prepared in advance of commencement of any works on the Prospective Development. Regular inspections of all installed drainage features will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist.			
MX2	Felling Operations		The following items will be carried out during pre-felling inspections and after: ➤ Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; ➤ Inspection of all areas reported as having unusual ground conditions; ➤ Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches will be identified. Ideally the pre-felling inspection will be carried out during rainfall; ➤ Following tree felling all main drains will be inspected to ensure that they are functioning; ➤ Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; ➤ Culverts on drains exiting the Site, if impeded by silt or debris, 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. Surface Water Quality Sampling	Ongoing	Daily	Project Hydrologist/ Project Ecologist

			Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The ‘before’ sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The “during” sampling will be undertaken once a week or after rainfall events. The ‘after’ sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e. where an impact has been shown). Criteria for the selection of water sampling points include the following: ➤ 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. Also, daily surface water monitoring forms (for visual inspections and field chemistry measurements) will be utilised at every works site near			
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			any watercourse. These will be taken daily and kept on site for record and inspection.			
MX3	Peat Stability		Confirmatory testing and assessment in zone of influence in advance of construction works is to be completed. The peat stability assessment within this report and the Ionic report have concluded that the Wind Farm Site and BMEP are safe and the remaining works can be completed safely in accordance with the recommendations and mitigation measures contained herein. Notwithstanding, the following confirmation testing and assessment will be carried out immediately in advance of construction. The confirmation testing and assessment is in addition to that already carried out in the peat stability assessment. ○ In advance of the construction of any remaining works, a zone of influence extending 50m minimum in all directions from the proposed works area will be re-inspected and assessed by a competent person in advance of any works. ○ Where deemed necessary by the competent person, the zone of influence will be extended to include any ground that is considered to be affected by the works. ○ The assessment within the zone of influence will include visual inspection and appropriate testing of in-situ peat with respect to depth and strength to full peat depth. The assessment will include but not be limited to recording morphology, vegetation cover, drainage, proximity of drains and natural watercourses. The results of the assessment will be considered by the designer. ○ The further confirmatory testing of in-situ peat with respect to depth and strength to full peat depth will comprise the following within the zone of influence and will be carried out immediately in advance of works commencing:	Ongoing	Pre-Construction	Project Geotechnical Engineer

			○ Peat depth determined at typically at 20m spacing using peat probes or alternatively using continuous depth profiling such as ground penetrating radar (GPR). ○ In-situ shear vane testing, or similar technique that measures the operational shear strength of the peat, typically at 20m spacing depending on the encountered peat condition. Testing also to be undertaken below the sections of floating road to be used as part of the Prospective Development. The use of the Geonor H10 field vane is recommended for this. ○ Spacing of probes and in-situ shear vane testing, or similar, to be reduced where areas of deeper peat are encountered. ○ A hydrological assessment carried out by appropriate experienced and competent person, which will include but not be limited to drainage, proximity of drains and natural watercourses will be carried out in advance of construction works. ○ The results of the assessment, pending satisfactory findings, will be completed prior to any works commencing. Works will only commence following a permit to work being issued. ○ A record of all such assessments will be maintained. ○ Site supervision and permit to work with respect to peat stability. All construction on the Wind Farm Site will be managed and controlled by the construction management team to ensure that all activities have been appropriately assessed with respect to peat stability and related health and safety. Procedures will be put in place to clearly demonstrate how this has been achieved, for example: ○ All works that may affect the stability of the Wind Farm Site will be routinely inspected and supervised on Wind			
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			Farm Site by appropriate personnel. Regular geotechnical inspection of the works associated with the Prospective Development will be undertaken by a suitably experienced geotechnical engineer. ○ The above procedure will be independently audited by a suitably competent and experienced person(s). The competent person shall have suitable professional qualifications and have experience of carrying out similar roles for construction projects in peatland. ○ All persons involved in the assessment of peat stability on the Wind Farm Site will have sufficient expertise, competency, and experience for the tasks to which they have been assigned. ○ Proof testing of floating roads. Full-scale proof load tests to be carried out on floating roads to verify their capacity under the design loads for the construction traffic and for largest loading to be experienced by the road. A suggested outline methodology is given below. ○ Rolling load test for all floating roads. Tests to be carried out using a fully laden dump truck with sufficient load to mimic the load of the mobile crane. The weight of any truck should be recorded at a weighbridge. Typical test procedure as follows: ○ Condition and deflection of the floating road observed visually as the truck travels continuously over the floating road at a constant low speed. ○ The performance of the floating road will be qualitatively classified as Good, Fair or Poor based on the condition of the road and the observed deflection under the weight of the truck. ○ The results of the proof testing shall be analysed by the designer and any mitigation measures, which may include replacement with founded road on competent			
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			strata, to be incorporated into the design. All tests will be carried out under controlled conditions to ensure that the road is not adversely damaged and that instability does not occur. - Excavation works will be monitored by the Project Geotechnical Engineer. - Construction and weather conditions. Restrictions on work during or after periods of heavy or sustained rainfall as recorded from weather station located on the Wind Farm Site, or from Met Eireann weather forecasts. Heavy intense rainfall can result in degradation of the works resulting in localised instability, and in extreme cases can trigger large-scale peat failure. - Following periods of heavy intense rainfall, the Wind Farm Site will be inspected prior to resumption of construction works by a competent person to ensure that all drainage is working, and critical areas with respect to stability are stable with no signs of ground movement			
MX4	Otter	EIAR Chapter 6 Appendix 4-3	Whilst no otter breeding or resting places were recorded on the Site during the surveys undertaken, a pre commencement survey for otter will be undertaken in advance of construction to ensure that the species is treated appropriately, should it migrate into the Site.	Once	As required	Project Ecologist
MX5	Invasive Species	EIAR Chapter 6 Appendix 4-3	A pre-commencement invasive species survey of the construction footprint will be undertaken by a qualified ecologist to determine if any invasive species have established on the site since the undertaking of the previous surveys. The treatment and control of invasive alien species if recorded will follow guidelines issued by the National Roads Authority – The Management of The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020).	Once	As required	Project Ecologist
Construction Phase						

MX6	Drainage Management	EIAR Chapter 4, 9 Appendix 4-3, 4-4	Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the velocity of flow in the channel and reduce the likelihood of erosion occurring in the future. Silt traps will be inspected weekly during the construction phase of the Prospective Development and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. The frequency of drainage system inspections will be reduced following completion of the construction phase of the Prospective Development. 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.	Ongoing	Weekly	Project Hydrologist
MX7	Reactive Site Drainage Management	EIAR Chapter 4, 9	All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.	As required	As Necessary	EnvCoW / Project Hydrologist
MX8	Reactive Site Drainage Management	EIAR Chapter 4, 9	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.	Daily	As Necessary	EnvCoW / Project Hydrologist
MX9	Reactive Site Drainage Management	EIAR Chapter 4, 9	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	Ongoing	Weekly	EnvCoW / Project Hydrologist

			emerges from the drain at the top of the pipe will be repaired promptly.			
MX10	Reactive Site Drainage Management	EIAR Chapter 4, 9	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.	Ongoing	Weekly	EnvCoW / Project Hydrologist
MX11	Waste Management	EIAR Chapter 4 Appendix 4-3	The Waste Management Act requires that any waste related activity must have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the Site to ensure that all contractors hired to remove waste from the Site have valid Waste Collection Permits to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.	As Required	Weekly	Waste Manager
MX12	Borrow Pit	EIAR Chapter 4, 8	› The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock, in line with best practice guidelines. › It will be necessary to construct rock buttresses founded on in-situ rock within BP3 to create individual cells (up to 3 no. as required). The cells will be opened in sequence and filled as needed. The rock buttress will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for the buttress will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer. › Supervision by the Project Geotechnical Engineer is required for the development of the borrow pit.	As Required	Monthly	EnvCoW, Project Geotechnical Engineer.

			› All the above-mentioned requirements will be implemented by the Contractor during construction			
MX13	Peat Stability	EIAR Chapter 4 Appendix 6-4	Monitoring of ground movement and constructed works; In order to monitor the performance of the constructed works within the peat areas, and any further construction works to be carried out, a series of monitoring points shall be established throughout the Wind Farm Site. › Monitoring is proposed to provide advance warning of potential instability or possible longer-term movement, that may represent potential for degradation of the works over time that could lead to instability. › The exact location of the monitoring will be determined following inspection. Other locations may be included as required by the designer or contractor. › Monitoring will consist of a series of wooden posts (say 4 no.) inserted into the ground to create a straight line, ideally obliquely across the slope. A string line will be tied to the first and last post. The line of posts will be placed such that they can be sighted along from the position of the road. Any deviation of the posts would indicate potential movement of the peat. › The monitoring is intended to be easy to install, readily read without any equipment, and where required can be readily maintained and replaced. › The monitoring locations will be read weekly or following heavy rainfall. Readings will be carried out until completion of the works. › A record of the readings shall be maintained. The record will include time, date, movement of any posts (or no movement), any follow-up inspections. Accidental movement of the posts will be noted and the posts moved back into alignment, where possible.	Ongoing	As Required	Project Geotechnical Engineer

			- Trigger levels will be taken as indicatively 100mm or continued rate of creep movement, as determined by the designer. Where trigger levels have been reached, the designer will be notified and the reason for the movement established to determine whether the movement warrants further investigation. - Where there are remaining works to be completed then monitoring will be installed adjacent to the works at critical locations. Operatives will be made aware of the monitoring and will be required to observe the monitoring at a regular interval and to report any unusual observations to the construction management team. - Where monitoring shows ground movement has occurred in an area where construction works is underway then works will cease in that area and operatives and plant moved to a safe location, the designer notified and the reason for the movement established prior to re-commencing works. Inspection of constructed works indicated a number of locations where monitoring is required.			
MX14	Rainfall Forecasting and Monitoring	EIAR Chapter 9, 10, 11 Appendix 4-3	The following forecasting systems are available and at least one of the following will be used on a daily basis at the Site to direct proposed construction activities: - 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 informative than general forecasts as only available on a provincial scale;	As Required	Daily	EnvCoW

			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.			
MX15	Rainfall Forecasting and Monitoring	EIAR Chapter 9, 10, 11 Appendix 4-3	- Daily general visual inspections of site operations and inspections of all drainage infrastructure within the Site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW; - Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter will be noted and corrective action will be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; - Event based inspections by the ECoW as follows: >10 mm/hr (i.e. high intensity localised rainfall event); >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,	As Required	Daily	EnvCoW

			○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). ➤ Monthly site inspections by the Project Hydrologist/ ECoW during construction phase; ➤ Quarterly site inspections by the Project Hydrologist/ ECoW after construction for a period of one year following the construction phase; and, ➤ A written record will be maintained or available on-site which will be maintained on-site during the construction phase. ➤			
MX16	Water Quality	EIAR Chapter 9, 10, 11 Appendix 4-3	Surface Water Quality Monitoring: Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The ‘before’ sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The “during” sampling will be undertaken once a week or after rainfall events. The ‘after’ sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e. where an impact has been shown). Criteria for the selection of water sampling points include the following: ➤ 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;	As required	Monthly	EnvCoW

			- 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. Also, daily surface water monitoring forms (for visual inspections and field chemistry measurements) will be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.			
MX17	Drainage Monitoring	EIAR Chapter 4, 9	All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.	As required	As required	Project Ecologist
MX18	Ornithology	EIAR Chapter 7 Appendix 7-7	A Bird Monitoring Programme with the objective of monitoring the ornithological community at the Wind Farm Site during construction works has been prepared. It includes for pre-commencement and construction monitoring to identify sensitive nests or roosts in proximity to the works. This will include surveys in suitable hen harrier habitat.	Ongoing	Annually	Project Ornithologist
Operational Phase						
MX19	Maintenance	EIAR Chapter 4	Each turbine will be subject to a routine maintenance programme involving several checks and changing of consumables, including oil	Monthly	Monthly	ECoW

		Appendix 4-3	changes. In addition, there is often a requirement for unscheduled maintenance, which could vary between resetting alarms to major component changes requiring a crane. Typically, maintenance traffic will consist of four-wheel drive vehicles or vans. The site roads will also require periodic maintenance. Maintenance of the site roads will involve filling potholes and maintaining road edge markers. Drainage maintenance will typically involve cleaning of drainage ditches when required to prevent water backing up. The onsite 110kV substation and site tracks will also require periodic maintenance. The onsite 110kV substation is operational 24 hours per day, 7 days a week throughout the year. Substations can be operated remotely and manually. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. The following maintenance procedures will also be adhered. 1. Periodic service and maintenance works which include some vehicle movement. 2. For operational and inspection purposes, substation access is required. 3. Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following: > Six-month service – three-week visit > Annual service – six-week visit > Weekly visits as required. Occasional technical problems may require maintenance visits by technical staff. During the six-month and annual service visits, some waste (lubricating and cooling oils, packaging from spare parts or equipment, unused paint, etc.) will arise. This will be recorded and removed from the Site and reused, recycled or disposed of in accordance with the relevant legislation in an authorised facility.			
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			It is estimated that 1-2 daily visits will be made to the Wind Farm Site for authorised persons and vehicles to undertake minor routine maintenance and inspection, if and when required. Although the level of activity required for the maintenance of the both the Wind Farm Site and existing Grid Connection infrastructure is minimal.			
MX20	Bats	EIAR Chapter 6 Appendix 6-1	➤ Monthly water sampling and laboratory analysis will be undertaken for the first six months during the operational phase. ➤ 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. ➤ Post-construction linear habitat restoration monitoring following the main growing season (i.e. in September) in a given year for the first five years of growth. ➤ Post turbine commissioning noise monitoring will be commenced within 6 months of commissioning the wind farm.	Ongoing	Monthly	Project Ecologist
MX21	Operational Phase Drainage	Appendix 4-3	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.	Ongoing	Weekly	Project Hydrologist. ECOW
MX22	Operational Monitoring Bats	EIAR Chapter 7 Appendix 6-1 Appendix 7-6	In accordance with NatureScot (2021), a minimum of three years of post-construction bat monitoring is proposed for the Prospective Development. The objectives of post-construction monitoring are to verify pre-construction risk predictions, assess any changes in bat activity patterns following construction, and determine whether further mitigation measures are required to avoid significant effects on bats. Post-construction monitoring will comprise a combination of: ➤ static acoustic monitoring; ➤ manual activity surveys (walked transects); and	Ongoing	Annually	Project Ornithologist

			carcass searches to record any bat fatalities associated with turbine operation. The results of post-construction monitoring will be used to review the effectiveness of the mitigation strategy. Where monitoring identifies evidence of significant bat mortality, an adaptive mitigation response will be implemented, which may include the introduction or refinement of turbine curtailment measures during periods of elevated collision risk, informed by key activity periods and weather parameters. Any such measures will be developed in line with relevant guidance and reviewed annually. At the end of each monitoring year, the efficacy of the monitoring and mitigation programme will be reviewed, and any identified refinements incorporated into subsequent monitoring years. This adaptive approach allows for an evidence-based assessment of post-construction bat risk and ensures that mitigation measures remain proportionate, effective and responsive to site-specific conditions. The effectiveness of any curtailment measures will be assessed to determine both: (a) whether bat mortality remains incidental; and (b) whether turbine downtime can be minimised while maintaining effective protection for bats. <u>Monitoring Year 1</u> <u>Bat activity surveys</u> Post-construction bat activity surveys will be undertaken using a comparable survey effort and methodology to the baseline surveys. Static acoustic monitoring will be undertaken during the main bat activity season (April to October), in accordance with NatureScot (2021). Full-spectrum bat detectors will be deployed at turbine locations for a duration and density consistent with the baseline bat surveys.			
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			Bat activity data will be processed and analysed using the same site-specific analytical framework applied to the baseline surveys, including calculation of bat passes per hour (bpph) and assessment of median and maximum nightly activity levels. This ensures direct comparability between pre-operational and post-operational datasets. Walked transect surveys will also be undertaken to provide supplementary information on bat behaviour across the landscape. Key environmental parameters known to influence bat activity and collision risk will be recorded and reviewed alongside activity data, including: › wind speed (m/s), measured at nacelle height; › ambient temperature (°C); and › precipitation (mm/hr). <i>Carcass searches</i> Carcass searches will be undertaken at each turbine in accordance with NatureScot (2021) guidance to record bat fatalities associated with turbine operation. Surveys will incorporate: › systematic search protocols; › searcher efficiency trials; and › scavenger removal trials, to allow appropriate correction factors to be applied when estimating true mortality rates. Surveys will be undertaken across relevant activity seasons, with a trained dog detection team utilised to maximise detection efficiency. <u>Monitoring Years 2 & 3</u> Monitoring will continue during Years 2 and 3, with survey methods and effort refined based on the findings of the preceding year(s).			
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			Where curtailment measures have been implemented, monitoring will assess the effectiveness of these measures relative to baseline conditions and earlier post-operational results. The performance of any curtailment strategy will be evaluated in relation to bat activity levels, wind speed and temperature thresholds, to confirm that mitigation is neither under- nor over-curtailing turbines during periods of bat activity. Annual reviews will determine whether modifications to the mitigation or monitoring programme are required. Where no bat fatalities are recorded during Year 1, the scope of curtailment (where applicable) may be reduced, revised or removed in subsequent years, subject to agreement with the relevant consenting authority and continued monitoring to confirm outcomes.			
MX23	Management of Woodland and Scrub	Appendix 6-4	› To prevent colonisation by tree and scrub species, Parcel 1 and Parcel 2 will be monitored annually for the first 5 years. The area covered by scrub, woodland and the windrowed material will be between 10% and 30% of the total area. Woodland and scrub retained on the site will be located in a mosaic throughout the site and not in one big block. › To prevent the colonisation of the blanket bog habitat enhancement area by tree species, the area will be monitored for all seedling regeneration and the regeneration will be removed annually for the first 5 years. › The frequency of maintenance and monitoring will be reviewed after 5 years and can be reduced if there is little ongoing colonisation. The colonisation will not be allowed to compromise status of the hen harrier habitat or the blanket bog habitat and the monitoring frequency will ensure that this does not happen. The period between monitoring visits and associated maintenance will not	Ongoing	Annually	Project Ecologist

			exceed 5 years. Where scrub and trees need removing, this will likely be undertaken using a machine with a mulching head.			
MX24	Monitoring of Habitat Suitability for Hen Harrier	Appendix 6-4, 7-7	To ensure that Parcel 1 and Parcel 2 provide suitable foraging habitat for hen harrier, the structure will be monitored annually for the first 5 years post initial enhancement works. The frequency of monitoring will be reviewed at this stage and can be reduced if the habitat is in a suitable structure and condition.	Ongoing	Month	Project Ornithologist
MX25	Monitoring for Hen Harrier Activity	Appendix 6-4, 7-7	To provide information on hen harrier activity in the BMEP Site, Parcel 1 and Parcel 2 will be monitored annually for the first 5 years to understand short-term use, as well as on Year 10 and 15, to understand long-term use. In brief, monitoring will include monthly field surveys in Parcel 1 and Parcel 2. The results will be presented during reporting for the Bird Monitoring Programme.	Ongoing	Annually	Project Ornithologist
MX26	Monitoring Blanket Bog	Appendix 6-4	High level monitoring assessments will be carried out within the target area for the first 5 years post initial enhancement works. These will serve to identify if the enhancement works are progressing as planned, in the potential absence of positive habitat condition assessments, which may take some years to establish. Ten 4x4m parcels will be established within the target area, within which the following metrics will be recorded: > Water levels. > Cover of non-native species. > Presence of sphagnum or other indicator species (yes or no). > Bare peat cover.	Ongoing	Annually	Project Ecologist

MX27	Breeding Walkover Surveys	Appendix 7-7	Breeding Walkover Surveys are proposed to monitor species that were recorded breeding within proximity to or within the Wind Farm Site during surveys from September 2023 to September 2025 and their response to the operating wind farm. In particular, these include grey wagtail, kestrel, meadow pipit, snipe, buzzard, long-eared owl and sparrowhawk. Surveys are proposed during operational Years 1, 2, 3, 5, 10 and 15 of the operational lifetime. Survey methodology should be adapted from Brown and Shepherd methodology (Brown and Shepherd, 1993; Calladine <i>et al.</i>, 2009). One visit should be conducted each month from April to July inclusive to all areas within a 500m radius of the development footprint. The surveyor should record and map all target species (species listed on Annex I of the EU Birds Directive or red-listed for breeding populations on the Birds of Conservation Concern in Ireland list). A list of non-target species encountered should also be recorded to inform supporting habitat.	Ongoing	Annually	Project Ornithologist
MX28	Collision Monitoring Surveys	Appendix 7-7	Carcass searches for bird casualties as a result of collision with turbines will follow survey methods broadly based on guidelines issued by the SNH (2009) and search methods adopted by Duffy and Steward (2008) and any revisions to the same. The study area will be visited once per month during operational Years 1, 2, 3, 5, 10 and 15 of the operational lifetime. During each visit, the base of each of the 19 turbines will be searched for bird carcasses. The area to be searched will be based on the turbine size and surrounding landscape. A trained dog and handler should be used to locate carcasses. If a bird carcass is found, the following details will be recorded: GPS location of each bird carcass, photographic record, carcass condition (intact - carcass that is completely intact or not badly composed;	Ongoing	Annually	Project Ornithologist

			scavenged - evidence that the carcass was fed upon by a scavenger/predator; or feather spot - ten or more feathers indicating predation or scavenging or two or more primary feathers must be present to consider the carcass a casualty), distance from the turbine, date and time. Carcass removal trials and searcher efficiency trials will be undertaken to account for the ability of the dog to find bird carcass and the likelihood of scavenging of carcass by animals. This is done to ensure a more accurate estimation of the total number of collision victims. The result of these trials is a correction factor that can be applied to the results of the carcass searches.			
MX29	BMEP Site Auditing	Appendix 6-4	The BMEP will be audited each year. The audit will assess: ➤ Objectives of the plan. ➤ Implementation of the plan. ➤ Adherence to the requirements of the plan. The BMEP will be reviewed annually and as previously outlined, any requirement for amendments will be submitted to the planning authority.	Ongoing	Annually	Project Ornithologist
MX30	Vantage Point Surveys	EIAR Chapter 7	Vantage Point Surveys are proposed to monitor bird flight activity at the Wind Farm Site. This will provide information on bird responses to the operating wind farm as well as providing context to any carcasses found during Collision Monitoring Surveys. Surveys should be conducted at the same vantage point locations used during pre-planning surveys (VP1-VP6) to provide comparable data. Methodology should follow NatureScot (2025) or any revisions to the same. The surveyor should conduct a 6 hour survey (including	Ongoing	Annually	Project Ornithologist

			a 30 minute break after 3 hours) at each vantage point once per month. The surveyor should record and map all target species (species listed on Annex I of the EU Birds Directive or red-listed for breeding populations on the Birds of Conservation Concern in Ireland list). A list of non-target species encountered should also be recorded to inform supporting habitat.			
MX31	Breeding Red-throated Diver Surveys	EIAR Chapter 7	Field surveys showed that red-throated diver may be breeding in Lough Golagh and Lough Slug, and birds also travel to Loughnaweelagh. Although the Wind Farm Site was considered to be of No Ecological Importance to this species, given that red-throated diver are a rare breeding bird with a breeding range restricted to County Donegal, this presents an exclusive opportunity to monitor the local red-throated diver population in County Donegal in an area where there are wind energy developments. Therefore, it is proposed to conduct breeding season surveys at Lough Golagh and Lough Slug during operational Years 1, 2, 3, 5, 10 and 15 of the operational lifetime. Survey methodology should follow Gilbert <i>et al.</i> (1998) or any revisions to the same. Surveys should be conducted once at the end of May/June and once in July (leaving 14 days between visits). The surveyor should select a vantage point over looking the lough. Surveys should be conducted for 6 hours (with a 30 minute break after 3 hours) and should be during daylight. Red-throated diver, foraging flights and signs of nesting should be recorded and mapped.	Ongoing	Annually	Project Ornithologist
MX32	Earthworks	EIAR Chapter 4, 9	An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the	Ongoing	Annually	Project Ecologist

			systems where it is not intended. Inspections will also be undertaken after tree felling. 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. Checks will be carried out on a daily basis. During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) will be undertaken for each primary watercourse, and specifically following heavy rainfall events (as per the CEMP included in Appendix 4-3 of the EIAR).			
MX33	Noise and Vibration	EIAR Chapter 12 Appendix 12-6	Prior to the commissioning of the proposed turbines, the Applicant will submit a Noise Compliance Monitoring Protocol (NCMP) to the planning authority for written agreement and approval. The NCMP will include detailed methodologies for noise measurements, procedures for recording results, and a protocol for managing complaints in accordance with the most up to date guidance, standards, and industry best practice. It is a standard procedure for this to be agreed under the planning condition compliance framework. The proposed noise limits shall be cumulative, accounting for all operational wind turbines. When setting appropriate turbine noise limits in accordance with the criteria following the applicable WEDG06 guidelines and best practice guidance, it is important to bear in mind that where an existing wind turbine development is the dominant source of turbine noise at a given NSL, this must be considered in the context of the planning condition for noise under which other development operate.	Once within six months	As Required	Noise Consultant

			The proposed turbine noise criteria should apply to the nearest NSLs where it can be reasonably determined that the noise contribution from the operation of the proposed turbines is the dominant wind turbine source or has a significant contribution to the cumulative turbine noise level at a given NSL. The proposed operational noise limits for the proposed turbines at are: Noise levels generated by the windfarm following commissioning by itself or in combination with other existing or permitted wind energy development in the vicinity when measured externally at noise sensitive locations, shall not exceed: › 40 dB L_{A90,10min} for daytime in quiet environments with typical background noise of less than 30 dB L_{A90,10min}. › 45 dB L_{A90,10min} for daytime in environments with typical background noise greater than or equal to 30 dB L_{A90,10min} or a maximum increase of 5 dB(A) above background noise (whichever is the higher); and › 43 dB L_{A90,10min} for night-time periods or a maximum increase of 5 dB(A) above background noise (whichever is the higher). Prior to the commissioning of the wind farm, the developer shall submit a Noise Compliance Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP shall include a detailed methodology for all noise measurements, (which is usually monitored within the first 6 months of turbine operation) and procedures for recording results. Noise Complaint Management Protocol			
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			In the event that a complaint which indicates potential excessive amplitude modulation (AM) associated with the Subject Development, the operator will fully investigate the complaint in collaboration with the turbine manufacturer, through review of the meteorological periods and conditions during which the reported AM occurs. If an ongoing issue with excessive AM is identified, a mitigation strategy to reduce the level of AM will be implemented through engineering methods and/or curtailment of specific turbines. The operator may appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the IOA AMWG or subsequent revisions.			
MX34	Peat and Spoil Management / Instability	Appendix 4-3 Appendix 8-1	To monitor possible peat movements following the construction of the Prospective Development, it is recommended that the Wind Farm Site is inspected by a suitably qualified engineer annually for the first three years following commissioning of the Prospective Development. Particular attention should be given to the floating roads, as well to any areas where the site drainage is not functioning as intended. Excessive Movement Where there is excessive movement or continuing peat movement recorded at a monitoring location or identified at any location within the Wind Farm Site but no apparent signs of distress to the peat (e.g. cracking, surface rippling) then the following will be carried out. All activities (if any) will cease within the affected area. Increased monitoring at the location will be carried out. The area will be monitored until such time as movements have ceased. Re-commencement of activities will only start following a cessation of movement and agreement with all parties (Contractor/Engineer/Designer). Onset of Peat Slide	As required	Every 6 Months	Geotechnical Engineer

			In the unlikely event where there is the onset or actual detachment of peat (e.g. cracking, surface rippling) then the following will be carried out. On alert of a peat slide incident, all activities (if any) in the area will cease and all available resources will be diverted to assist in the required mitigation procedures. Action will be taken to prevent a peat slide reaching any watercourse. This will take the form of the construction of check barrages on land. Due to the terrain, the possible short run-out length to watercourses, speed of movement and the inability to predict locations it may not be possible to implement any on land prevention measures, in this case a watercourse check barrage will be implemented. All relevant authorities (such as Donegal County Council) will be notified if a peat slide event occurs on the Wind Farm Site. For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest the area will be stabilised initially by rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and stabilisation procedures implemented. The area will be monitored, as appropriate, until such time as movements have ceased. Check Barrages Whilst it is not anticipated based on the analysis undertaken that a peat slide will occur on Wind Farm Site. The check barrage procedure deals with preventing a peat slide from moving downstream within a watercourse. The most effective method of preventing excessive peat slide debris from travelling downstream in a watercourse is the use of a check barrage. A check barrage comprises the placement of rock fill across a watercourse. The check barrage is a highly permeable construction that will allow the passage of water but will prevent peat debris from passing through. Rock fill will comprise well-graded coarse rock pieces from about 200mm up to typically 5000mm.			
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Decommissioning Phase						
MX35	Bird Monitoring	Appendix 7-7	It is proposed that decommissioning works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement surveys will be undertaken within one month prior to the initiation of works at the Wind Farm Site. The surveys will aim to identify sensitive sites (e.g., nests or roosts) in proximity to works. During construction, surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). As above, these surveys will aim to identify sensitive sites for birds in proximity to works. Any requirement for construction works to run into subsequent breeding or winter seasons following the commencement of works will be subject to a repeat of the pre-construction bird surveys. Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. Suitable hen harrier habitat will be visited, particularly in areas where hen harrier were previously recorded nesting during pre-planning or operational phase surveys. If winter roosts or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location in line with best practice guidance (Forestry Commission Scotland, 2006; NatureScot, 2022). No works shall be permitted	Ongoing	Annually	Project Ornithologist

			within the buffer until it can be demonstrated that the roost or nest is no longer occupied. All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off to alert all personnel on site to the suspension of works within that area.			
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