20. INTRODUCTION

This chapter of the EIAR provides a summary of EIAR, based on the design and mitigation measures identified within the technical assessments of this report. The schedule below details the measures upon which the findings of this EIAR have been based and are an integral part of the proposed project.

During the construction phase of the proposed project, all personnel working on the project will be required to be responsible for the environmental control of their own work and to perform their duties in accordance with the requirements and procedures of the CEMP (See Appendix 2-3).

20.1 SCHEDULE OF EIAR MITIGATION MEASURES

The following table provides a summary of the mitigation and monitoring measures proposed within this EIAR.

Table 20-1: Table of EIAR Mitigation Measures

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
Pre-construction Phase				
Description of Proposed Project				
MM1	Environmental Management – CEMP	EIAR Chapter 2	A CEMP has been prepared for the proposed project and is included in Appendix 2-3 of the EIAR. The CEMP includes all relevant mitigation measures and will be updated prior to commencement of development to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the planning authority for written approval and regularly reviewed and updated as required during the course of the works. The construction contractor will be responsible for implementing the mitigation measures specified in the EIAR and CEMP and for communicating the requirements with all staff on-site. Their implementation of the mitigation measures will be overseen by the supervising environmental manager, ecologists, archaeologists and/or geotechnical engineers, as appropriate.	The CEMP with be regularly reviewed and updated as required during the course of the works., as required through the Contractor's CEMP. The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
MM2	Health and Safety	EIAR Chapter 2	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 prior to the construction stage. A Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) will be appointed in accordance with the provisions of the Safety, Health and Welfare at Work (Construction) Regulations.	As required through the Contractor's CEMP and the Health and Safety Plan.
MM3	Surface Water Drainage System	EIAR Chapter 2 and Chapter 9	The surface water drainage system will undergo weekly and daily inspections depending on the construction phase works to ensure that it is working optimally. Settlement ponds will require regular inspection and cleaning where sediment collects. The drainage and treatment system for the proposed wind farm will be monitored more frequently during/after heavy rainfall events during the construction phase. A programme of inspection and maintenance will be designed and dedicated construction personnel assigned to manage the inspection programme. This is discussed further in the CEMP (Appendix 2-3 of the EIAR).	Monitoring in accordance with the Surface water management plan – Appendix 9-4
MM4	Traffic Management	EIAR Chapter 2 and Chapter 14	The Traffic Management Plan (TMP) includes/incorporates all relevant mitigation measures to avoid, prevent or reduce any significant adverse effects on the environment identified in this EIAR. The TMP is included as Appendix 2-2 of the EIAR. This is a living document and will be updated	As required through the Contractor's CEMP and TMP.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			ahead of construction to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by An Coimisiún Pleanála, in the event planning permission/approval is granted.	
MM5	Traffic	Chapter 14	A confirmatory survey of road condition, including the condition of all road water crossings on the route, will be carried out along the proposed grid connection route (GCR) in advance of any works.	
Biodiversity				
MM6	Management of Invasive Non-native Species	EIAR Chapter 6	A site specific Invasive Alien Species (IAS) Management Plan will be prepared prior to the construction works commencing. The document will be prepared in line with best practice guidance on the management of invasive species (TII, 2020; NRA, 2010; SNH 2021, RAPID, 2021).	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
MM7	Biodiversity: Himalayan Balsam	EIAR Chapter 6	A pre-construction IAS survey will be conducted along the GCR. This will be undertaken from April when the young plants are first apparent but before the flowering season in June. • The control of the species will be implemented by suitably qualified contractors). • The Himalayan Balsam will be pulled from the ground between mid (15) May and the end of (30) June before the seed pods develop. Pulling should be performed prior to the formation of the seed pods which explode at the slightest disturbance when ripe. Himalayan Balsam has very shallow roots, making uprooting by hand easy. • The pulling technique will be undertaken so that the entire plant is uprooted. This is normally best accomplished when pulled from low down on the plant, near the root structure at the base. If snapping occurs at a node, the pulling will be completed to include the roots. • Uprooted plants will be left to air dry and decompose on a non-permeable membrane within a site compound to prevent any part of the plant, including its developing seeds entering any watercourse and to prevent dispersion by wind. The plant material is to be removed to a licensed landfill site or buried at least 1m below ground level within the site compound. • Once the initial stand of Himalayan Balsam has been pulled, the area of works will be covered with jute material prior to works commencing (or by ECoW approved equivalent) to degrade	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			naturally. If it is necessary to track over this area, the jute material will be secured and steel road plates (or by ECoW approved equivalent) will be placed on top to avoid any ground contact of tracking machinery. If the soil itself needs to be excavated to facilitate the works this will be carried out under supervision of the ECoW, the material will be placed in big-bags or tonne bags. This material will either be removed from site by a licensed contractor, or it will be buried on site at least 1m below ground level. The removal of invasive material off site may require a licence from the NPWS in advance of any removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477) as amended. Any material that is taken off site must be taken by a licensed waste carrier and must go to a suitably authorised landfill site. • All areas containing Himalayan Balsam will be cordoned off and clearly marked as exclusion zones with IAS signage. • A multi-annual approach is required until the plant is eradicated from site.	
MM8	Biodiversity: Parrot's Feather	EIAR Chapter 6	A pre-construction IAS survey will be conducted to establish the full extent of the infestation. • Prior to any treatment works commencing onsite, the ECoW will agree the location for and supervise the demarcation of all working areas/bio-secure areas related to invasive species. This will include the establishment of bio-secure zone, haul route for materials and storage area. • Careful preparation of the site and planning of the works is crucial to successful treatment of invasive species. Nobody will be allowed into the contaminated area once work has begun unless they have been inducted into biosecurity measures on site. The surrounding area will be isolated by closing the works area to all pedestrian and vehicular traffic during excavation and construction, until the site has been reinstated. Biosecurity measures shall be put in place to avoid the accidental transport of material. Biosecurity measures will consist of closing off the area to traffic and providing a clean-down and de-contamination area for all vehicles and equipment operating on site. • Silt curtains will be installed within the drainage ditches at locations identified by the ECoW to contain any silt or plant	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			fragments to prevent movement downstream should they become dislodged. • Water levels will need to be low during the removal to ensure fragments of the invasive species do not travel downstream and spread further. This may be done by damming off the section of river during treatment. The works area surrounding the invasive plant will be bunded using sandbags, if possible, to create a dry working area prior to any removal works commencing. • The plants will be mechanically removed. This will be confirmed by the ECoW who is monitoring the works. This treatment should be done by cutting the roots in the sediment with as little disturbance as possible to prevent fragmentation. All parts of the plant will be removed. After cutting the plant, jute matting should then be placed down on the treated area to block light on potential new shoots. Re-treatment must be applied as necessary. • Removal of the IAS will be carried out within the recommended timeline under the supervision of the qualified ECoW. Monitoring and follow-up treatment protocols (if required) will be implemented to ensure any potential regrowth is effectively treated.	
MM9	Biodiversity: Otter, Badger, and other protected mammals	EIAR Chapter 6	Pre-construction surveys for Otter, Badger, and other protected mammals will be completed within the proposed wind farm site by an appropriately experienced ecologist (ECoW). These surveys will identify any changes in protected mammal activity, such as the establishment of new burrows or other signs of use, within the ZoI of the proposed project. The surveys will be conducted in accordance with NRA (2005) guidelines, no more than 10–12 months in advance of construction. Surveys will be completed by a suitably qualified ecologist. The survey will record all evidence of badger activity, including setts, latrines and snuffle holes. Camera traps may be used to confirm activity levels where required. All results will be mapped and retained within the project's ecological records. In the event that a new sett (Badger) (established within the interim period) is identified within the footprint of the works or within 150 m of construction activity during the pre-construction confirmatory survey,	As required through the Contractor's CEMP and Biodiversity Environmental Management Plan (BEMP) – Appendix 6-1.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			the mitigation measures as outlined below in relation to Badger, will be implemented..	
MM10	Biodiversity: Bats		Pre-construction bat surveys, prior to commencement of tree felling, survey will be carried out following Collins (2023) by a bat-licensed Ecologist. If required, a derogation license will be secured in advance of any tree-felling works, if any, and appropriate mitigation measures will be put in place to avoid or reduce impacts on bats.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
MM11	Biodiversity: Common Frog	EIAR Chapter 6	A pre-construction frog spawn survey will be undertaken within wet grassland and drainage ditch habitats, including tyre rut pools, which may be disturbed during the Common Frog spawning season (1st March – 31st June, inclusive). In the event that frog spawn is identified within the footprint of the proposed works, a license under Sections 22 and 23 of the Wildlife Acts will be sought from NPWS. The license, if required, will detail specific measures to translocate the frogs and spawn to suitable nearby habitat (to be identified prior to carrying out the survey) which will not be impacted by the proposed project.	As required through the Contractor's CEMP and BEMP
MM12	Marsh Fritillary	EIAR Chapter 6	• Pre-construction survey will be conducted within suitable habitat for Marsh Fritillary within the proposed wind farm site, which is limited to the mapped area surrounding the proposed compound at the southern entrance of the site and the proposed hardstand at T8. • Pre-construction surveys for larval webs will follow best practice guidance (NBDC, 2021). • The recommended survey season is late August to early September when the webs are most conspicuous (NBDC, 2021). However, the larval webs are also identifiable during early spring (March-April) following the hibernation period (Phelan *et al.*, 2021). As such, it is at the discretion of the ECoW to identify the optimum time to conduct pre-construction larval web searches, as the spring window will likely best suit the timeline for the translocation of larval webs during the month of April (Section 6.7.1.5.6.4 of Chapter 6). • It is essential that surveys are carried out in optimum weather conditions to improve success rate when searching for larval webs, as caterpillars are only visible in sunny weather (Phelan *et al.*, 2021) .	Monitoring as part of BEMP

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• The larval web searches will be conducted by suitably qualified ecologists under direct supervision of the ECoW. This will ensure the ECoW is familiar with the exact locations of all larval webs identified as well as the site conditions. The locations of the larval webs will be recorded. This information will be used to inform the exclusion zones. • The ECoW will provide pre-construction briefings to contractors working within the proposed wind farm site, as appropriate, highlighting the presence of species and the associated strict exclusion zones (Section 6.7.1.5.6.3 of Chapter 6).	
MM13	Devil's-bit scabious	EIAR Chapter 6	A second pre-construction survey will be carried out within the donor site to ensure no butterfly have laid eggs on the leaves of Devil's-bit scabious. In order to make these pre-construction surveys effective they will be carried out in August – September, during the optimum survey season for larval webs and following the implementation of mitigation measures for Marsh Fritillary.	
MM14	Biodiversity: Habitats and Flora	EIAR Chapter 6	Proposed construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed wind farm site. Vegetation clearance will be kept to a minimum, where possible. Any necessary removal of trees or scrub will be implemented outside of the bird breeding season in line with the Wildlife Act, as amended. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within three days of the nest survey, otherwise repeat surveys will be required. Construction vehicles will be restricted to designated access tracks to avoid impacting adjacent habitats and to ensure that soil compaction is restricted to these tracks. Large access mats will be used to mitigate rutting and reducing soil erosion and impact to the surrounding habitats. Replacement of access mats will be undertaken when they become heavily used and worn. All disturbed ground will be fully and appropriately reinstated following the completion of the works.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
Ornithology				
MM15	Management of Disturbance/Displacement	EIAR Chapter 7	Pre-construction surveys will be carried out to identify the location of any breeding birds onsite, in particular breeding Snipe, which was identified as being potentially significantly negatively affected by	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			disturbance and displacement during the breeding period, as well as other wader and raptor species. To minimise disturbance or displacement of this breeding bird species or other breeding species which may become established surveys will only be conducted between the months of April to July. These surveys will inform site clearance activities given the legal protection of all breeding birds.	perspective on behalf of the Project Developer.
Material Assets				
MM16	Underground Services	EIAR Chapter 15	Location of water network services will be re-consulted prior to commencement of construction. Consequently, prior to construction, the applicant will submit a diversion enquiry to Uisce Éireann and receive a Confirmation of Feasibility (COF) letter. Appendix 2-5 (of this EIAR) details the proposed GCR construction methodology. Should any water network infrastructure be identified, any excavation required in the vicinity will require consultation with Uisce Éireann and be subject to appropriate wayleaves. Prior to the commencement of the construction phase, there will be engagement with all utility asset owners/service providers. • A confirmatory survey of all existing services (electrical/ESB, water/Uisce Éireann, gas/Gas Networks Ireland (GNI), telecommunications cables etc.) will be carried out prior to construction to verify the assumptions in this report and identify the precise locations of any services. Where assets/services are identified, the Applicant will liaise with the service provider; Utility assets / services (underground and overhead) will be identified and clearly marked prior to any pre-construction (site clearance) / construction / demolition activity occurring; • No excavations will take place without prior consultation with relevant utility asset owners / service providers; • Digging around existing services, if present, will be carried out by suitably qualified contractors and as per best practice/guidance[1] by hand to minimise the potential for accidental damage;	As required through the Contractor's CEMP.

[1] https://www.gasnetworks.ie/home/safety/dial-before-you-dig/
Transmission Policies and Standards (eirgridgroup.com)/ Publications (esbnetworks.ie)

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• Prior to any mechanical excavation taking place ESBN will be consulted with and the exact locations of all underground electricity cables established and verified; • All works undertaken in the vicinity of underground assets will be carried out in accordance with current HSA guidance, namely the HSA 'Code of Practice for Avoiding Danger from Underground Services'; • All works will be undertaken with in accordance with the exclusion and safe operating distances around electricity infrastructure as set out in the ESB Code of Practice, as well as HSA guidance including the 'Code of Practice for Avoiding Danger from Overhead Electricity Lines'; • Any proposed works will require a minimum clearance distance of 1 m either side of electrical cables[2]; • Liaison with asset owners / service providers will continue as required throughout the construction phase.	
MM17	Aviation	EIAR Chapter 15	• An aeronautical warning light scheme will be agreed with the IAA and Irish Air Corps and implemented; • The final as-constructed coordinates and dimensions of each turbine will be mapped and provided to Tipperary and Offaly County Council and other stakeholders, including the IAA and Irish Air Corps prior to erection of turbines to ensure that maps and databases are up-to-date for flight navigation; • 30 days' notice will be given to the IAA prior to any crane operations commencing during the construction phase.	
MM18	Telecommunications	EIAR Chapter 15	Significant interference to communication links during the construction phase are unlikely. Any interference will be very limited and only possible in the final stages of construction when cranes are being used to erect the turbines, and when the turbines have been erected (prior to commissioning). In relation to the Eir_L2 link, mitigation measures as described will be implemented as required during this phase. In order to ensure there are no issues at construction, all telecommunications operators will be contacted in advance of construction to check that they have no new links in operation at that	As required through the Contractor's CEMP.

[2] ESB Networks – Code of Practice for Avoiding Danger from Underground Services (2022)

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			time. In the unlikely event that new links are identified or interfered with during construction, the operator will be contacted to be made aware, and where disrupted, agree repair/restoration which will be carried out as soon as possible at the Applicants cost. The Applicant will sign an agreement with 2RN (who run Ireland's principal digital terrestrial television and radio broadcast networks) prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed project.	
MM19	Wastewater	EIAR Chapter 15	Wastewater from the staff welfare facilities will be managed by means of a sealed storage tank, with all wastewater being tankered off-site occasionally (as required) by a permitted waste collector to a wastewater treatment plant. The permitted waste collector will also be responsible for ensuring clean water storage tanks are topped up. The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. It is proposed to use low volume flush toilets (such as those in commonly used port-a-loos) and low volume sink faucets to significantly reduce the volume of waste water produced.	As required through the Contractor's CEMP.
MM20	Waste	EIAR Chapter 15	Segregation of waste will be carried out to maximise the potential for waste recycling and minimise potential effect on waste services. Suitably permitted commercial waste collectors will be employed to remove any waste arisings generated from construction to the nearest appropriately licensed waste management facilities.	As required through the Contractor's CEMP.
Archaeology				
MM21	Test Trenching	EIAR Chapter 13	Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at the greenfield locations of the proposed wind farm. This work will be carried out under licence to the National Monuments Service of the DoHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH.	As required through the Contractor's CEMP.
Traffic and Transport				

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM22	Traffic: Pre- and Post-Construction Condition Survey	EIAR Chapter 14	The client will undertake pre-construction and post-construction visual pavement surveys on the Haul Roads. Where the surveys conclude that damage on the roadway is attributable to the Construction Phase of the proposed project, the applicant will fund the appropriate reinstatement works to bring the road back to pre-construction condition as a minimum, details for which will be agreed with the Roads Authorities.	As required through the Contractor's CEMP and TMP.
Construction Phase				
Description of Proposed Project				
MM23	Forestry Felling	EIAR Chapter 2	With the exception of commercial forestry felling, vegetation clearance will commence outside the breeding birds season, which runs from the 1st of March to the 31st of August. If any minor clearance or trimming is required within those dates, or if the initial vegetation clearance extends past the 1st of March due to unsuitable weather conditions, the works will be preceded by an ecological survey (from a qualified and suitably experienced ecologist) to ensure there are no sensitivities associated with the action. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within three days of the nest survey, otherwise repeat surveys will be required.	As required through the Contractor's CEMP.
MM24	Construction Hours	EIAR Chapter 2	The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations will generally be restricted to between 7:00hrs and 19:00hrs Monday to Friday (excluding public holidays) and between 07:00hrs and 14:00hrs on Saturdays. However, during the following critical periods longer hours will be required: • Concrete pours for turbine foundations; • During turbine installation when the weather is suitable (i.e. light winds); • Delivery of oversized loads; • In the unlikely event of an emergency (this is unlikely - see Chapter 18 of the EIAR (Major Accidents and Natural Disasters). Any such out of hours working will be agreed in advance with Offaly and Tipperary County Council's apart from in the case of an emergency.	As required through the Contractor's CEMP.
MM25	Surface Water Drainage / Silt Control	EIAR Chapter 2	A Surface Water Management Plan (SWMP) has been prepared (Appendix 9-4 of the EIAR) and all mitigation measures included will be implemented.	As required through the Contractor's CEMP and SWMP.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM26	Waste Management	CEMP	The CEMP (Appendix 2-3 of the EIAR) provides an overview of the best practice in waste management during all phases of the proposed project, with a view to reducing, reusing, recycling and recovering waste produced, in that order of preference. Waste disposal will be avoided where possible. The main site contractor will appoint an Environmental Clerk of Works who will ensure that all waste contractors have the correct permits for any waste streams they are removing from site, and that they are taking it to the appropriately licensed/permitted waste facilities.	As required through the Contractor's CEMP.
MM27	Vehicle Management	CEMP	Vehicles will be kept on site access roads for the vast majority of the construction phase, however in the initial construction phases, there will be some requirement for off-road vehicle movements (for forestry felling, ground works, etc.). For forestry felling, standard practices and equipment/vehicles will be used (as described in the Forestry Report – see Appendix 2-8 of the EIAR). For ground works and other off-road activity, the use of specialist vehicles that are tracked or use large low ground pressure tyres or bog mats which distribute their weight evenly across a large surface area will be used. These will minimise ground disturbance, particularly where there is a presence of peat (albeit very shallow on this site) and therefore minimise the risk of sediment entering downstream watercourses. All vehicles will be restricted to the areas where works are required, and unnecessary off-road movements around the wider site will be avoided. Where there are any sensitive habitats present around a proposed work area, these areas will be marked out so that vehicles will not enter and damage them.	As required through the Contractor's CEMP.
MM28	Vehicle Washing	CEMP	Wheels or vehicle underbodies will be regularly washed before leaving sites to prevent the build-up of mud on public (and site) roads. Site roads will be already formed using on-site materials before other road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). The site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. However, in accordance with best practice and to avoid the potential for the transfer of alien invasive plant species into the site, it is proposed to install a self-contained wheel-wash system near the project site entrance. The drawings include details and proposed location of a proposed self-contained wheel-wash system which will be installed as part of the construction phase of works (11333-2010 and 11333-2040). Water will be supplied for this using a water bowser. A road sweeper will	As required through the Contractor's CEMP.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed project. The CEMP (Appendix 2-3) provides further details of best practice and environmental considerations in relation to this.	
MM29	Spoil Management	CEMP	The use of the borrow pits will be phased. This will allow materials to be permanently placed in the first borrow pit while borrow pit 2 or 3 is in use, thereby minimising the volume of soils requiring temporary storage. In order to further reduce temporary storage requirements, soils and turves will be reinstated around infrastructure as part of restoration and landscaping works. This will be carried out during the construction phase, as soon as is practical after the completion of the works in any one area of the site. Where the proposed wind farm footprint is located on any mineral-based soil, this material will be side-cast and profiled as close to the excavation areas as practical. In the case where other adjacent infrastructure or constraint features might prevent side-casting, it will be used to reinstate the borrow pits. The sides of the borrow pit areas will be battered/sloped sufficiently to ensure that slippage does not occur (2:1 for mineral soil). The excavated side cast material will be smoothed with the back of an excavator bucket and surrounded by silt fences to minimise the potential for sediment-laden run-off occurrence. Side-casting will not occur within 50 m of a watercourse. The side-cast material will be used around the turbine foundations, or for landscaping locally or reinstatement elsewhere on site (such as the borrow pits). Further information on the spoil management is provided in Appendix 8-3. Where side-casting is not possible, topsoil and sub-soil will be stockpiled separately. Turves will be stored turf side up and will not be allowed to dry out. Stockpiles will be isolated from any surface drains and a minimum of 50 m away from watercourses, and will be located at points with easy access to internal roads within the proposed borrow pit areas which have not yet been extracted. Measures that will be employed will include interceptor ditches around these areas deployment of double silt curtains and seeding of the piles will be incorporated to prevent runoff of suspended solids and soil erosion. No permanent spoil or stockpiles will be left on site. Where available, vegetative sods/turves or other topsoil in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface. Where sods/turves are not available, some seeding with	As required through the Contractor's CEMP.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			native species will be carried out. This method for restoration of excavated or disturbed areas is to encourage stabilisation and early establishment of vegetation cover.	
Population and Human Health				
MM30	Health and Safety	EIAR Chapter 5	The proposed TDR to allow for the transport of the turbines to the proposed wind farm site will involve some works as discussed in Chapter 2 of the EIAR (Description of the Proposed Project). These works will be carried out to the relevant construction and road safety guidelines. When the turbine components are being transported, they will have a Garda escort and will be carried out at night when there is less traffic on the road. The proposed turbine delivery works allow for the entire range of proposed turbine dimensions.	As required through the Contractor's CEMP.
MM31		EIAR Chapter 2	The project will employ all of the latest and relevant guidelines and legislation (See CEMP in Appendix 2-3 of the EIAR in terms of health and safety both for works within the proposed wind farm site as well as for works outside the main wind farm such as those on the proposed TDR). The required levels of safety (e.g. during road works) will be maintained for all road users as well as pedestrians. The proposed wind farm site itself will not be open to the public. Public access will be restricted to works areas outside the proposed wind farm site such as the proposed TDR works areas and the proposed GCR while work is underway. Appropriate health and safety measures as described in the CEMP (Appendix 2-3 of the EIAR) will be taken for all works areas during the construction phase in the interest of worker and public safety also.	
Biodiversity / Ecology				
MM32			A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor. The ECoW will be experienced in the management all relevant flora and fauna and aquatic, peatland and heathland habitats. The ECoW will oversee all construction works and monitor all relevant receptors as described in this report including possible sources of impact for the duration of the construction programme. The ECoW will guarantee that the construction phase of the proposed project will be undertaken in strict agreement with the methods prescribed within the CEMP and will have the power to stop the works in case any activities or works are not compliant or when impacts rise above environmental thresholds as specified in the CEMP	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM33	Habitats and Flora	EIAR Chapter 6	• Construction work areas will be demarcated prior to the construction works commencing. • No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed wind farm site. • Vegetation clearance will be kept to a minimum, where possible. Any necessary removal of trees or scrub will be implemented outside of the bird breeding season in line with the Wildlife Act as amended. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within three days of the nest survey, otherwise repeat surveys will be required. • Construction vehicles will be restricted to designated access tracks to avoid impacting adjacent habitats and to ensure that soil compaction is restricted to these tracks. • Large access mats will be used to mitigate rutting and reducing soil erosion and impact to the surrounding habitats. • Replacement of access mats will be undertaken when they become heavily used and worn. • All disturbed ground will be fully and appropriately reinstated following the completion of the works.	As required through the Contractor's CEMP. and BEMP – Appendix 6-1
MM34	Establishing WL1 Hedgerows and WL2 Treelines	EIAR Chapter 6	• New linear habitat (should have a minimum extension of 1.3km in total) will be established within the proposed wind farm site, largely along the proposed access tracks. • The tree and shrub species selected for planting will be native and can include, i.e. Hawthorn, Blackthorn, Alder, Grey Willow, Elder, Holly, Hazel, Spindle, Sessile oak, and Rowan. • Managed for biodiversity and maintained until the end of the Operation Phase, or until the planted shrubs and trees will be considered sustainable by the ECoW. • Any failed saplings will be replaced as appropriate. • Treelines will be side trimmed as necessary but not topped in order to allow trees to reach their full height.	Post-construction compliance monitoring reports shall include hedgerow surveys of these newly established linear habitats as well as recommendations for maintenance and enhancement measures as appropriate.
MM35	Establishing WN7 Bog woodland	EIAR Chapter 6	2.82ha of new WN7 Bog woodland will be established through the planting of suitable native species including Downy birch, Scots Pine, and Willow species on more fertile areas locally (DAFM, 2024).	As per BEMP – Appendix 6-1

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			No planting will be undertaken on peatland habitats but instead a green agricultural field on peat, peaty podzols or peaty gley will be selected for conversion. Methods for the establishment of native woodlands will follow those set out in the Native Woodland Scheme. A Native Woodland Scheme registered ecologist, and forester will be contracted to oversee works and maintenance. Where feasible, new woodland should be created as a single, contiguous block rather than as several smaller, separate areas.	
MM36	Establishing WD1 (Mixed) broadleaved woodland	EIAR Chapter 6	Planting of 1.02ha native broadleaved woodland will be implemented within the proposed wind farm site during the construction phase. As above, methods for the establishment of native woodlands will follow those set out in the Native Woodland Scheme. Appropriate species for the establishment of the (Mixed) broadleaved woodland will be dependent upon the soil type. Where possible, species will be selected to compliment the Long-established sessile oak woodland identified within the proposed wind farm site including, Sessile oak, Downy birch, Rowan, and Holly (DAFM, 2024). Where feasible, new woodland will be created as a single, contiguous block. No planting will be undertaken on peatland habitats	As per BEMP – Appendix 6-1
MM37	Establishing WS1 Scrub	EIAR Chapter 6	1.06ha agricultural greenfield site will be converted to WS1 Scrub through natural regeneration. Grazing on the area will be prohibited year-round and management of the grassland will take place, with the exception of invasive species control where appropriate. Through the process of ecological succession, the area will be allowed to undergo conversion to WS1 Scrub and overtime, its eventual transition to native woodland.	As per BEMP – Appendix 6-1
MM38	Biosecurity Measures	EIAR Chapter 6	The following biosecurity measures will be undertaken by the appointed contractor throughout the duration of the construction phase: • Prior to arrival all machinery and equipment used during the construction works will be thoroughly cleaned and dried using a high-pressured steam cleaner, with water >65 °C, in addition to the removal of all vegetative material. • Items difficult to soak/spray will be wiped down with a suitable disinfectant (e.g. solution of 1% Virkon® Aquatic). • The contractor will establish and clearly delineate a bunded cleaning/washing areas at the Construction Compounds, where	As required through the Contractor's CEMP. and BEMP – Appendix 6-1

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			gravity will not drive untreated washed material towards local drains. • No removed material or run-off is permitted to enter any water bodies (including drainage ditches). • Evidence that all machinery and equipment was cleaned will be required to be on file for review by the statutory authorities and the appointed ECoW. The level of evidence required of the contractor will be, registration plates of vehicles onsite and a register of when, how and where each of these were cleaned before they arrived on site. • Spot checks on the adequacy of cleaning will be carried out by the ECoW. • The contractor will establish and clearly delineate a bunded cleaning/washing areas at the Construction Compounds, where gravity will not drive untreated washed material towards local drains.	
MM39	Invasive Species Management	EIAR Chapter 6	A strict biosecurity demarcation area will be installed by the ECoW within the zone where Third Schedule listed INNS are present - 10m from each stand (unless it is not feasible for Health & Safety reasons – e.g. roadside); Only works outside the biosecurity area will be allowed to proceed. If any of the proposed works will be required to break the biosecurity area mentioned above, a specific and detailed Invasive Species Management Plan (ISMP) will be developed by the contractor; The ISMP will detail a strategy of uprooting the IAS plants, currently present at the proposed wind farm site and along the GCR, the most effective management measure for the control of each species.	As required through the Contractor's CEMP. and BEMP – Appendix 6-1
MM40	Badger	EIAR Chapter 6	In accordance with NRA (2005), exclusion of badgers from disused or currently inactive setts, may be undertaken during any season. Works to temporarily exclude badgers from any currently active sett will only be carried out during the period of July to November (inclusive) in order to avoid the badger breeding season. Temporary Closer	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Confirming that a sett is inactive during the breeding season (that is, ensuring no cubs are present below ground) will require a period of monitoring, typically five or more consecutive days of checks using camera traps, sand pads, or sticks placed at entrances to detect footprints or signs of use. For disused or verified inactive setts, and to prevent reoccupation, entrances may be lightly blocked using vegetation and a small amount of loose soil (soft blocking). The purpose of soft blocking is to confirm that a sett is not occupied. If, following soft blocking, no evidence of Badger activity is observed during the monitoring period, construction works may proceed under the supervision of the ECoW. However, if any evidence of current or recent Badger activity is detected during this process, sett evacuation procedures will be implemented. Sett Evacuation Where exclusion is required, inactive entrances will first be soft blocked, while any active entrances will be fitted with one way Badger gates (with secure proofing along the sides) to allow Badgers to exit but not return. The gates shall remain tied open for three days before being set to operate in one way mode. Monitoring tools such as sticks placed within tunnels or camera traps at entrances shall be used to confirm Badger presence or absence. The one-way gates shall remain in place for a minimum of 21 days (including the initial period when tied open), with regular inspections throughout. Any evidence of Badger activity during this period will require repetition of the procedure or the application of additional exclusion measures. Because one-way gates can be disturbed by other animals or members of the public, frequent monitoring is essential. Badgers may also attempt to dig around or reopen closed entrances, particularly if gates remain in place for extended periods. In cases where the sett is extensive, temporary electric fencing may be used as an alternative or supplementary exclusion method. The fence shall encompass all entrances, with one-way gates installed at key crossing points along established Badger paths. The exclusion period shall again be a minimum of 21 days and will only conclude once no Badger activity has been observed within the fenced area for the full monitoring duration.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			The appointed ECoW will determine the most effective exclusion method for each sett, based on local conditions such as topography, ground conditions, and accessibility. Post Exclusion Reinstatement Following completion of the exclusion period and confirmation that the sett is inactive, all exclusion measures (e.g. gates, fencing, or proofing) will be removed under the supervision of the Ecological Clerk of Works (ECoW). The area will then be sensitively reinstated using soil and natural vegetation to return the ground surface to its previous condition. This reinstatement will ensure the area remains available for potential future use by Badgers once construction activities are complete. The ECoW will document all reinstatement works and confirm that the area has been appropriately restored following the completion of construction.	
MM41	Badger - Timing of Works, Lighting and Noise	EIAR Chapter 6	To minimise potential disturbance or displacement, all construction works within 150 m of any suitable Badger habitat or known sett, will be confined strictly to daytime hours between 08:00 and 18:00. Works will not commence or conclude during civil twilight periods. To reduce behavioural disturbance to Badgers, all site lighting will be directional, downward facing, and shielded. Lighting will be used only where required for safety and will not be directed towards woodlands or known Badger setts. High noise activities such as piling or rock breaking within 150 m of known Badger setts will be restricted to daytime hours and kept to the shortest practicable duration. Where operational requirements necessitate deviation from these hours, the works will be subject to review and approval by the ECoW.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
MM42	Otter - Timing of Works, Lighting and Noise		To minimise potential disturbance or displacement, all construction works within 150 m of any watercourse, including water crossing locations and HDD points along the GCR, will be confined strictly to 7:00 hrs and 19:00 hrs Monday to Friday (excluding public holidays) and between 07:00 hrs and 14:00 hrs on Saturdays. Works will not commence or conclude during civil twilight periods. To reduce behavioural disturbance to otters, all site lighting will be directional, downward facing, and shielded. Lighting will be used only where required for safety and will not be directed towards riparian	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			habitats. High noise activities such as piling or rock breaking within 150 metres of a watercourse will be restricted to daytime hours and kept to the shortest practicable duration. Where operational requirements necessitate deviation from these hours, the works will be subject to review and approval by the ECoW.	
MM43	Otter - Pollution Prevention and Water Quality Protection	EIAR Chapter 6	To prevent indirect habitat loss impacts on otter through deterioration of water quality or prey availability, the following pollution control measures will be implemented through the CEMP: • Vegetated buffer strips will be retained adjacent to all watercourses where practicable. • Silt traps, settlement ponds, and sediment fencing will be installed to prevent sediment laden runoff from entering watercourses. • Refuelling and fuel storage will take place only within bunded areas located at least ten metres from any watercourse. • Spill kits will be available at all refuelling locations and a site-specific spill response procedure will be implemented. • Staff will receive toolbox talks on pollution prevention and emergency procedures. • Turbidity and suspended solids will be monitored upstream and downstream of active works in accordance with best practice.	Turbidity and suspended solids will be monitored upstream and downstream of active works in accordance with best practice- See Appendix 9-4.
MM44	Otter - Response to Discovery of Otter Holts	EIAR Chapter 6	In the event that a new holt (established within the interim period) is identified within the footprint of the works during the pre-construction confirmatory survey and the following mitigation measures will be applied in accordance with the NRA *Guidelines for the Treatment of Otters during the Construction of National Road Schemes* (NRA, 2006) as follows: • No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts (NRA, 2006). Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence. • No works will be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site (NRA, 2006).	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Breeding may take place in any season, so activity at a holt will be determined on a case-by-case basis by the ECoW. • A prohibited working area associated with otter holts will be fenced and appropriate signage erected under guidance of the ECoW; • If holts are found to be inactive prior to construction, exclusion of holts and their subsequent destruction may be carried out during any season under licence with the NPWS. To prevent the reoccupation of holts the entrances will be soft blocked (using vegetation and a light application of soil) for a period of five days (NRA, 2006).	
MM45	Bats	EIAR Chapter 6	The removal of trees in order to implement the bat mitigation buffers will result in the loss of 12 trees containing PRF-I features. The absence of roosting bats will be confirmed immediately prior to the removal of PRF-I (potential roost features for individual bats) trees with an internal inspection of the potential roost features. These trees will not be removed during the hibernation period (November – March inclusive) to avoid the potential for disturbance effects on any bats which may be in torpor. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within three days of the nest survey, otherwise repeat surveys will be required. Eight bat boxes will be erected at suitable locations outside of the buffer zones identified above, in consultation with a bat-licensed Ecologist. 'Woodcrete' bat boxes will be used as they are durable and long-lasting and do not require maintenance. A mixture of bat box types should be used to cater for seasonal and species requirements. The following products (or similar) are suitable: • Schwegler 1FS Colony Bat Box 95. • Schwegler 2F Universal Bat Box. • Schwegler 2FN Bat Box 55. Bat boxes should be installed on suitably large trees or specially installed poles in consultation with a bat-licensed Ecologist. Boxes should be installed at a minimum height of 4 meters above ground level, at suitable	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			aspects (not northern) and in locations which are inaccessible to unaided climbing (to minimise the risk of vandalism) and not vulnerable to artificial light or noise pollution. Further detail in bat boxes is available in Chapter 6 of the EIAR.	
MM46	Bats - Timing of Works, Lighting and Noise		Construction operations will take place during the hours of daylight in as far as possible to minimise disturbances to bats and other wildlife. It is recognised that key works such as turbine delivery and erection may require night-time working. Where working at night is required the reduction of light levels or application of motion sensor lights will be used where bat foraging habitat is present. All construction phase lighting systems will be designed to minimise nuisance through light spillage and follow ILP (2023) guidance. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during the hours of darkness. Directional lighting will be used to prevent overspill on to forestry/woodland edges, riparian zones or other habitat features of importance to bats. This will be achieved with the use of covers and shields (baffles, hoods or louvres) to reduce light spill and direct lighting to the intended area only. Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats. Only luminaires with an upward light ratio of 0% and with good optical control will be used. Luminaires will be mounted on the horizontal, i.e. no upward tilt.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.
MM47	Bats – Proposed GCR	EIAR Chapter 6	Horizontal Directional Drilling (HDD) is proposed for bridge B08. • A minimum separation distance between the drill trajectory and the foundation of the bridge of 4 metres will be provided in order to further minimise the potential for impacts on roosting bats as a result of vibration being carried through the bridge structure. • A minimum separation of 45m between the launch and receptor pits will be provided and this is considered sufficient to minimise potential for noise and vibrational impacts on any bats roosting within the bridge during directional drilling. • Hoarding or acoustic blankets to a height of the parapet wall will be provided prior to the commencement of work between both pits and the barrel facing the proposed works to reduce noise and visual cues.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• An Ecologist will supervise the directional drill at this location.	
MM48	Larval Web	EIAR Chapter 6	Any larval webs identified within the footprint of the proposed project, inclusive of the works corridor, will be demarcated with temporary fencing. This temporary fencing will act to mark the location of the webs identified for translocation. An area of ca. 2m^2 will be fenced off around each larval web, in order to protect the larval webs from disturbance. Appropriate signage will be used to alert contractors to the purpose of the fence. Prior to the erection of the fence, the ECoW and the contractor will decide a suitable route to take while traversing the Marsh Fritillary habitat, in order to minimise disturbance to larval webs and supporting habitat. The installation of the fence will be undertaken using appropriate lightweight machinery, as needed and under the direct supervision of the ECoW. The use of heavy machinery will not be permitted within Marsh Fritillary habitat during the installation of fencing. Where avoidance of Marsh Fritillary habitat and larval webs is not possible, this will necessitate the translocation of all larval webs identified within the footprint of the project. The translocation of larval webs will be conducted during the month of April, following pre-construction surveys. This avoids disturbance to the species during the hibernation period (winter), which is prohibited under the Bern Convention. In late April the Marsh Fritillary caterpillars disperse from the larval web and pupate, existing as a chrysalis for 2-4 weeks (DAeRA, n.d.). Ideally, the translocations will take place before the caterpillars pupate into a chrysalis. Translocations will be conducted under direct supervision of the ECoW. Prior to the translocations the ECoW and the contractor will agree a suitable route for the contractor to take while operating within the Marsh Fritillary habitat and while transporting turves/sods containing the webs to the receiving GS4-Wet grassland habitat. The receiving GS4-Wet grassland habitat must be within the mapped area of suitable Marsh Fritillary habitat within the proposed wind farm site. Abundance of devils bit scabious is vital for the larvae as they are monophagous, meaning they only feed on the one plant species (Phelan *et al.* 2021). As such, the receiving habitat is limited to 0.03 ha to the south of the temporary contractors compound near the site entrance and 0.07 ha to the north-east and west of T8 (see Figure 6-6 o Chapter 6). The locations where	A report will be prepared by the ECoW detailing the methods followed and the results of the translocation. The report will be made available to the contractor and the competent authority. Continued monitoring will take place and associated reports will be issued in year 1, 2, 3, 5, and 10 and every five years thereafter. Monitoring will include larval web searches and habitat condition assessments within suitable Marsh Fritillary habitat. Reports should recommend any habitat management measures to be implemented, such as scrub control and extensive cattle grazing. Due to the importance of hydrology in the maintenance of GS4 – Wet grassland, which has been identified as the supporting Marsh Fritillary habitat within the proposed wind farm site, reporting will also include information on the vegetation community, including habitat changes over time.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			each turve is to be deposited will also be pre-determined and clearly mapped. A skilled contractor will be employed to operate a tractor and bucket. Following the pre-agreed route the contractor will arrive at the mapped locations within the receiving Marsh Fritillary habitat. The contractor will remove turves from these locations up to a depth of 0.5 m and deposit them within the surrounding GS4- Wet grassland. This may encourage the proliferation of Devil's-bit scabious beyond the suitable Marsh Fritillary habitat. Selected turves for removal from the receiving GS4- Wet grassland should not contain abundant Devil's-bit scabious, as reducing the cover of the plant will further diminish the suitability of the habitat for the Marsh Fritillary larvae. Turves will be deposited vegetation side up. Every effort will be made to keep the turve intact during removal, transportation and deposition. The contractor will then follow the pre-arranged route and arrive at the temporary fencing demarcating a Marsh Fritillary web within the footprint of the development. The contractor will allow the ECoW to confirm the presence of the pupae within the turve if necessary and to remove the temporary fencing. The contractor will remove the supporting turve and transport it to the pre-agreed area within the suitable Marsh Fritillary habitat which lies beyond the footprint of the development. This process will be repeated until all identified webs are located beyond the footprint of the proposed wind farm site, inclusive of the works corridor.	
MM49	Marsh Fritillary Habitat Exclusion Zones		Following the translocation of larval webs, Exclusion zones will be created to protect the wider Marsh Fritillary habitat, which is to be retained namely, the 0.03 ha to the south of the compound and 0.07 ha to the north-east of T8 (see Figure 6-6 of Chapter 6). The exact delineation of the habitat exclusion zones will be decided with guidance from the ECoW, allowing for the maximum extent of mapped Marsh Fritillary habitat to be retained. The extent of bounds for the exclusion zones shall be clearly demarcated with post-and-wire fencing as well as appropriate signage (NRA, 2008). Light weight mechanical machinery such as an All-Terrain Vehicle (quad bike) will be used as necessary to erect the post and wire fencing. During the construction phase, access to the exclusion zones will be prohibited for vehicles and contractors. There will be no materials, equipment, or side-casting of material within the exclusion zones. The	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			exclusion zone will remain in place until the construction phase is complete. This approach will limit unnecessary mortality of larval webs and confine habitat loss and disturbance to the extent essential for delivering the proposed project. Fencing of areas of retained Marsh Fritillary habitat is essential in order to protect the species during construction (NRA, 2008). The ECoW will supervise all works within suitable Marsh Fritillary habitat during construction activities.	
MM50	Pre-construction Vegetation Management for Marsh Fritillary		Adult Marsh Fritillary are active from the second week in May to the peak emergence period in the first week of June (Phelan *et al.* 2021). During this time, the ECoW will monitor Marsh Fritillary activity. Following field observations on adult flight time, a decision will be made by the ECoW to begin vegetation management sometime between mid-May to mid-June. The decision to begin vegetation management will be based on when the local population of Marsh Fritillary emerges into adult form, which is weather and site dependant (Phelan *et al.* 2021). The vegetation management will be limited to the footprint of the compound at the southern entrance to the wind farm site and the hardstand at T8, inclusive of the identified works corridor. Vegetation management will entail cutting the GS4-Wet grassland vegetation to below a height of ca. < 12cm, mimicking an overgrazed habitat which is less suitable for the species (NBDC, 2021). The aim of this measure is to encourage adult females to lay their eggs outside of the footprint of the project. Light weight mechanical machinery such as an All-Terrain Vehicle with a mechanical flail can be used under direct supervision of the ECoW. No vegetation management will take place within the demarcated Marsh Fritillary exclusion zones (see 6.7.1.5.6.3). The disturbance to the GS4-Wet grassland vegetation will make the site less suitable for the breeding population of Marsh Fritillary. The aim of this measure is to encourage dispersion of the local population to alternative habitat within the wider landscape. Adults are largely sedentary and rarely fly more than 100 m but females will occasionally disperse towards the end of the flight season, so individuals may be seen on occasions some distance from suitable breeding sites (Phelan *et al.* 2021).	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			The removal of any scrub vegetation within the grassland will not be undertaken at this time to avoid disturbance to breeding birds (1st March-31st August), in accordance with the Wildlife Act (as amended). Any necessary scrub removal shall be done during the winter months preceding construction activities. Scrub clearance within the Marsh Fritillary habitat will be done under direct supervision of the ECoW. The use of heavy machinery for scrub clearance during winter months will not be permitted in suitable Marsh Fritillary habitat.	
MM51	Management of GS4 Wet Grassland for Marsh Fritillary		There will be the loss of approximately 0.225 ha of suitable Marsh Fritillary habitat as a result of the proposed project. This habitat has been identified as GS4- Wet grassland with abundant Devil's-bit scabious. To compensate for this habitat loss, 4.8 ha of GS4-Wet grassland located within the immediate area of the suitable Marsh Fritillary habitat of proposed wind farm site will be managed for suitability of the target species Marsh Fritillary. For clarity, the existing suitable habitat for marsh fritillary will be referred to here as the 'donor site' and the GS4-Wet grassland identified for mitigation measures will be referred to as the 'receiving site'. Mowing The management of the receiving site for Marsh Fritillary can begin as soon possible, and before any construction activities have taken place. Vegetation management of the receiving site is necessary to improve the suitability of the site for Marsh Fritillary. The GS4-Wet Grassland habitat survey beyond the Marsh Fritillary habitat was noted to be species-poor. The receiving site will be topped using an ATV and flail mower once in March and once again in June, to reduce the dominance of purple-moor grass (*Molinia caerulea*) and soft rush (*Juncus effusus*) within the receiving site (INCC, 2018). Mowing is a once-off option for restoring sites that have become overgrown (Phelan *et al.* 2021). The cuttings will be removed from the receiving site and disposed of following guidance set out in the CEMP (Appendix 2-3). Conservation Grazing Small-scale non-intensive farming with cattle in spring and summer months is the optimum approach to managing wet grassland for Marsh Fritillary (Phelan et al. 2021). Cattle grazing best facilitates the creation of an uneven sward structure, which is favoured by the Marsh Fritillary	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			(Phelan *et al.* 2021). Grazing rates will likely vairy from year to year, but recommended grazing rates prescribe 1 live unit/ha of cattle (INCC, 2018). Stocking rates may not be increased without written recommendation within post-construction compliance reporting from a suitably qualified ecologist. Monitoring of the receiving site will include observation on sward height, with the aim of the grazing regime to maintain the sward height between 12-25cm (Phelan *et al.* 2021). The cattle must be moved elsewhere if the sward height reaches below 12cm, as this threshold indicative of overgrazing (INCC, 2018). Similarly, if poaching is noted throughout the site, then adjustments to stocking rates and/or the length of the grazing season must be made. Supplementary feed will not be placed within the area as it can lead to localised nutrient enrichment. Controlled burning events will not be implemented (INCC, 2018). Sheep grazing within GS4-Wet grassland habitats within the proposed wind farm site is to be avoided as it is unsuitable for Marsh Fritillary habitat (Phelan *et al.* 2021). Scrub Management Small patches of scrub can be beneficial as they provide shelter for adult butterflies during harsh weather (Phelan *et al.* 2021). However, it can reduce overall suitability of the site for Marsh Fritillary (Phelan *et al.* 2021). WS1-Scrub which has been identified as encroaching into the donor site will be target for removal between September 1st- February 28th, outside of the bird breeding season (Phelan *et al.* 2021). All cuttings should be removed from the site to keep fertility levels low (Phelan *et al.* 2021). The removal of WS1-Scrub will only be carried out following direction from the ECoW and/or following recommendations by ecologists included in post-construction compliance reporting. Before WS1-Scrub removal commences the habitat must be surveyed for mammal resting sites.	
MM52	Translocation of Devil's-bit scabious	EIAR Chapter 6	In order to promote the establishment of Devil's-bit scabious within the GS4-Wet grassland receiving site, it is recommended to translocate turves of vegetation from the donor site. The removal of Devil's-bit scabious from the donor site will only be done following the full implementation of mitigation measures outlined for the Marsh Fritillary species. These works will be conducted under supervision of the ECoW.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Following confirmation that Devil's-bit scabious plants within the donor site are not hosts to larval webs, the ECoW will pre-select turves with abundant Devil's-bit scabious and mark them for translocation. Similarly, the ECoW will select suitable locations within the receiving site and make them for extraction. The location of these sites will be recorded (ITM) and photographed. This information will be record within a subsequent report so that follow-up monitoring on the success of the translocations can be reported on. The ECoW and the contractor operating the heavy machinery will identify a suitable for the contractor to take during the translocations. The ECoW will highlight the strict exclusion zones and alert the contractor to the presence of the Annex II Marsh Fritillary species. The ECoW will direct the contractor to the receiving GS4-Wet grassland habitat. The contractor will remove turves from the marked locations. At the donor site, under supervision of the ECoW, the contractor will extract the marked turves and transport them to the identified locations within the receiving site. The turves will be orientated within the extraction sites. The bucket of the digger can be used to tap the turves in place to ensure good contact with the soil. All works will take place during suitable weather conditions with avoidance of works after heavy rainfall, as outlined in the CEMP. Ideally, this work will be carried out with light to moderate rainfall forecast in the coming week. This work should not be carried out during a drought period.	
MM53	Siltation Prevention	EIAR Chapter 6 / NIS	The construction of temporary settlement ponds will be implemented to capture and treat surface water runoff during the construction phase. These settlement ponds will help to settle out suspended solids and other contaminants, further reducing the risk of siltation in receiving water bodies. Further detail on the design of settlement ponds is contained in Chapter 9 - Hydrology and Hydrogeology. Further mitigation measures to prevent siltation of water courses are outlined below: • No instream works within natural watercourse will be permitted during the construction works. Where stream crossing occurs on site, a clear-span design bridge will be used.	The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• A surface water management plan will be implemented (Appendix 9-4). • Appropriate measures, like correctly installed silt fences and earth bunds including natural vegetation buffers, will be taken to prevent runoff from reaching these waterbodies; • Silt fences will be erected along all areas where the construction works are within 20m of a drainage ditch or river or and 10m around stockpiled material under supervision of an ECoW; • All drainage ditches within the proposed wind farm site, will be blocked at least 20m upstream of the confluence with the EPA waterbody under supervision of an ECoW prior to the construction works commencing. The drainage ditches will be blocked off using locally sourced subsoil materials and double silt fences will be installed downstream; • Borrow pits and stockpiled material will be designated and located at least 50m from any water body or drainage ditch under supervision of an ECoW; • Excavation works will not be carried out during or following heavy rainfall (i.e. if there is a yellow weather warning in place or 5-mm in a 1-hour period); • An accidental spillage emergency plan for the construction phase of the proposed project will be created and implemented through training of on-site personnel.	
MM54	Contamination Prevention	EIAR Chapter 6	Storage of contaminants at the Construction Compound has potential to lead to contamination of surface water. As such, several mitigation measures designed to mitigate the risk of contamination will be implemented and are summarised below: • Fuels storage will be minimised onsite; • However, because it might not be practical to refuel all vehicles and machinery offsite, areas will be designated for contaminant storage at each Construction Compound; • The designated areas for contaminant storage will be enclosed, appropriately signed, and demarked from the remainder areas of the Construction Compounds;	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• Any diesel, fuel, hydraulic oils, paints or any other type of contaminant that will require to be kept onsite, will be stored in bunded storage tanks, only at the designated areas within each of the Construction Compounds; • Each bund area will have a volume of at least 110% of the volume of the respective stored contaminant(s); • Each container within the bund area will be appropriately labelled and sealed; • Only authorised and appropriately trained personnel may access the contaminant storage designated area; The designated area for contaminant storage will be provided with a log book. • The log book will be a register of: • the number of containers for each contaminant; • volume of each container; • approximate volume of each contaminant stored; • date/time contaminants are taken off/stored in the designated area, and respective destination; • Signature of the authorised person responsible for the log entry; • Stock of spillage containment material (e.g. spill kits). • The ECoW will make a daily verification of the logbooks, confirming the accuracy of the information logged; • The designated contaminant storage areas will also keep a stock of absorbent materials (e.g. oil binder granules), pads/mats, and drip trays to be made available if needed. At each Construction Compound, an area will be designated as "Refuelling Area"; • The Refuelling Area will be delineated at an easily accessible location by vehicles and mobile machinery, and in the immediate vicinity of the designated area for contaminant storage; • The Refuelling Area will be appropriately demarked and signed, for easy identification; • When refuelling, drip trays and fuel absorbent mats will be used to capture any potential spills;	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• To mitigate spills associated with machinery movement on site, the following measures will be implemented : • All vehicles and machinery will be provided with emergency drip trays and spill kits; • The ECoW will undertake weekly checks for spillages on all machinery and vehicles used onsite; • The ECoW will maintain a logbook to register all checks undertaken, and required maintenance to eliminate leaks.	
MM55	Horizontal Directional Drilling	EIAR Chapter 6	• A competent and experienced contractor will be appointed to undertake the trenchless construction works. • The contractor will prepare a trenchless construction Method Statement which will outline the standard approach for the construction. The Method Statement will include a contingency plan for break-out and for excessive ground settlement. • The contractor will undertake the trenchless construction in accordance with industry best practice including British Standard EN 16191:2014 Tunnelling machinery, safety requirements and CIRIA C648 "*Control of water pollution from linear construction projects Technical Guidance.*" • To prevent loss of bentonite or 'frac-out' from occurring, a series of actions will be implemented; the drill fluids operator will monitor drill fluid density, viscosity and solids content on an ongoing basis, to ensure that the fluid does not increase in viscosity, requiring additional pressure to maintain mobility. • In critical cases, viscometers will be used to measure drill fluid gel strength and shear strength. Filtrate can also be measured to calculate the amount of filter cake building up on the internal wall of the bore. Any increases in pump pressure experienced by the drill operator will be investigated immediately to prevent the risk of pressure build up within the annulus. In some circumstances, dependant on the drilling equipment used, the pilot drill borehole assembly will be fitted with a down hole pressure monitor to measure pressure in the annulus between the drill and the bore wall. This will give an early indication of pressure build up in the hole and allow the drill operator to	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			prevent a 'break-out'. If there is a risk of a 'frac-out' a number of measures will be implemented including: • pumping a pill of drilling fluid with a higher density to the risk zone, • Circulate and pump loss circulation material (typically cork or manufactured inert polymers) to the risk zone to seal the risk zone, grouting of the risk zone, and, or launch a packer before the risk zone. • The contractor will implement procedures to maximise the recirculation or reuse of drilling mud to minimise waste disposal. • Disposal of drilling fluids will be the responsibility of the contractor to an approved and licenced waste facility. • Monitoring of the drilling operations will be undertaken at all times by the contractor. The monitoring will include visual inspection of the pits and monitoring of the volume of returns flowing back to the entry pit. The monitoring personnel will be in constant communication with the drilling rig operator and thus will be able to immediately cease drilling if necessary. • Buffer strips of natural uncleared vegetation shall be preserved between construction activity. Reception pits will be situated outside of the riparian zone. A buffer zone width for smaller channels (<10m) of 20m or greater will be maintained. • The ECoW will prescribe silt fencing if deemed necessary. • In addition, the ECOW will undertake sediment monitoring both upstream and downstream before, during and after the trenchless construction works.	
Ornithology				
MM56	ECoW		A suitably qualified Ecological Clerk of Works (ECoW) with extensive experience in ornithology, will be appointed by the Contractor and will be present full time on site during the construction phase. The ECoW will ensure that all mitigation measures outlined below are implemented correctly during the construction phase.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM57	Construction Phase Toolbox Talks	EIAR Chapter 7	Regular toolbox talks with construction staff on disturbance to relevant bird species during construction will take place. These toolbox talks will be mandatory, and will run at the beginning of each season: in February, in preparation to the breeding season; and in August, in preparation to the non-breeding season . These toolbox talks include the description of the main ecological features staff should note, particularly the identification of KORs and signs of proximity to sensitive locations (e.g. raising awareness to alarm calls during the breeding season; description of ground-nesting species), and the processes of reporting any findings to the ECoW. If an important ornithological area becomes apparent, the works will immediately cease, and the suitably qualified ECoW will clearly mark these areas, in line with appropriate buffer distances which have been outlined in Goodship and Furness (2022). The areas will be avoided until the chicks have fledged or where nesting has failed (in the case of breeding activity) or where birds are no longer found, roosting, feeding or foraging (in the case of wintering activity).	
MM58	Management of Habitats Loss	EIAR Chapter 7	Where areas of potentially sensitive breeding bird habitat are proposed to be removed during construction, these works will be timed to avoid the breeding birds nesting season from 1 March to 31 August. This measure will avoid any potentially significant effects to breeding bird species particularly in areas where hedgerow, scrub and woodland will be removed. In the event that the bird nesting season cannot be avoided, a suitably qualified ornithologist/ecologist will undertake a pre-construction survey of the vegetation proposed to be removed to establish the presence of breeding birds and nests. This survey will be conducted up to five days ahead of the works to identify breeding behaviour and nests. Where an active nest is found, the nest will be clearly marked and avoided until the chicks have fledged or where nesting has failed.	
MM59	Pollution control measures	EIAR Chapter 7 / NIS	• All construction works will be undertaken regarding alignment with the guidance contained within the CIRIA Document C811 'Environment Good Practice on Site' (CIRIA, 2023) and the IFI guidance 'Guidelines on the Protection Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) to ensure the protection of watercourses located within the Proposed project site.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• Culverting will only be used for existing artificial peatland, agricultural or forestry drainage ditches and will be carried out in dry weather periods. • Fuels and chemicals will be stored within bunded areas within the construction compound to guard against potential accidental spills or leakages. The bund area will have a volume of at least 110 % of the volume of such materials stored. • All on-site refuelling will be carried out at construction compounds by a trained competent operative. • All vehicles and machinery operating and the proposed project site will be provided with mobile measures, such as drip trays and fuel absorbent mats, which readily available for use during all refuelling operations. • No refuelling will take place within 50m of any watercourse; • All equipment and machinery will have regular checking for leakages and quality of performance and will carry spill kits. • Any servicing of vehicles will be confined to designated and suitably protected areas within the construction compounds. • Additional drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site. • Soil/peat exposure will be minimized by controlling, in so far as is practical, where and when peat is stripped. • Concrete is required for the construction of the turbine bases and foundations. No batching of wet-cement products will occur on site. Ready-mixed supply of small amounts of wet concrete products and emplacement of pre-cast elements will take place. Pre-cast elements for bridge, culverts and concrete works will be used. • After concrete is poured at, the chutes of ready-mixed concrete trucks must be washed out to remove the remaining concrete before it hardens at the construction compound. Wash out of the main concrete bottle will not be permitted on site; wash out will be restricted only to chute wash out. Wash down and wash out of the concrete transporting vehicles will take place at an appropriate facility, offsite. • The best practice management objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leak proof containers, or impermeable lined wash out pits, so that the washed material does not reach the	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			soil surface and then migrate to surface waters, or into the groundwater. The collected concrete washout water and solids will be emptied on a regular basis and disposed of offsite. • During the construction phase, four temporary site compounds will be required. Temporary on-site toilet facilities will be used. These will be sealed with no discharge to the surface water or groundwater environment adjacent to the site. They will be emptied on a regular basis by a suitable contractor and disposed of offsite.	
MM60	Sediment and Erosion Control Measures		• The stripping of soils will be kept to a minimum and confined to construction areas only. • Silt fencing will be erected immediately downslope of construction works at watercourse crossings and along sections of the grid connection route that are adjacent to or within 50 m of a watercourse. Fencing will be positioned between the works area and the watercourse to intercept surface runoff and prevent silt entering aquatic habitats. • Silt curtains and floating booms will be available for use were deemed to be appropriate, as per the surface water management plan (SWMP). An assessment for its use will be undertaken by the ECoW separately at each individual location. • Excavated material will not be stockpiled or side-cast within 50m of any watercourse. • During the side casting of peat, silt fences, straw bales and/or biodegradable geogrids will be used to retain surface water runoff from the storage areas and prevent silt-laden runoff to flow into rivers and water features. • All surface water run-off from the development will pass through settlement ponds. It is proposed to locate settlement lagoons immediately downstream of the proposed infrastructure including each hardstand and along all site access tracks. • Settlement ponds will be located appropriately as per the SWMP and will be installed concurrently with the formation of the access track. They will be located as close to the source of sediment as possible. • The settlement ponds will be regularly cleaned/maintained to provide effective and successful operation throughout the works, the sediment of which will either be disposed of offsite or deposited into borrow pits. Outfalls and ditches will be	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			cleaned, when required, starting upstream, with the outfalls blocked temporarily prior to cleaning. • Traffic on site will be kept to a minimum. Only the proposed onsite access track will be used for project-related traffic. Where onsite access tracks pass close to watercourses, silt fencing will be used to protect the streams.	
MM61	Management of Disturbance/Displacement	EIAR Chapter 7	As noted, any removal of scrub vegetation will be undertaken outside the bird breeding season, where feasible, which begins on the 1 March and ends on 31 August. Where this is not possible, these works/activities will not take place before a confirmatory survey of the affected area (i.e. ground-based nests) is undertaken by the ECoW. This survey will be conducted up to five days ahead of the works to identify breeding behaviour and nests. In the event of any key ornithological receptor nests being found, the works will immediately cease, and the suitably qualified ECoW will clearly mark these areas in line with appropriate buffer distances which have been outlined in Goodship and Furness (2022). These areas will be avoided until the chicks have fledged or where nesting has failed. Areas identified as supporting important wintering records of bird species, such as locations in proximity to T1, and sections of infrastructure along the Little Brosna River to the north-east of the proposed project, will be subject to seasonal restrictions on habitat removal and other potentially disturbing activities. Works related to this area will be scheduled outside the typical wintering period (October to March inclusive). To minimise disturbance or displacement of these wintering Key Ornithological Receptors (KORs) or other winter species which may have become established following the completion of surveys in 2024, such works will be scheduled outside the wintering period, typically from October to March inclusive. Should unforeseen circumstances require activity within this period, surveys will be undertaken up to five days before the works, by a suitably qualified ECoW to confirm the absence of KORs within the affected area. If wintering birds are present in large enough concentrations and assessed to be foraging, resting and/or roosting, works will be postponed or relocated to an alternative area until the birds have vacated. Physical exclusion zones and clear signage will be implemented where necessary to prevent accidental encroachment during the wintering season.	The effectiveness of these measures will be overseen by a suitably qualified Ecological Clerk of Works, with ongoing monitoring undertaken throughout the construction phase.
Land, Soils and Earthworks				

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM62	Contaminated Sites/Potential for contamination	EIAR Chapter 8	The contractor's yard/maintenance yard will incorporate a bund for the storage of small items of plant and oil filled equipment, such as hand portable generators, pumps, etc. Storage of small volume oils or chemicals, in barrels, IBCs, etc, will be confined to a covered bunded area. Where barrels or other containers are required at work locations these will be stored in enclosed bunded cabinets, and drip trays will be used where distribution of the material is required. The main storage areas for oil filled equipment, vehicles, plant, etc, will be on an impermeable surface and the discharge of surface water from these areas will be via oil interceptors. An oil spill response plan will be developed for the construction works and appropriate containment equipment will be available at work locations in the event of a spillage. Oil spill response will form part the induction and training of site personnel. All wastes generated on site will be segregated and appropriate materials are re-used on site. Residual materials will be collected by licensed waste hauliers for appropriate reuse (Article 27/article 28) sorting, recycling and disposal.	
MM63	Soil compaction and erosion		Landscaping areas will be sealed and levelled using the back of an excavator bucket to minimise the potential for erosion. The upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface. to prevent erosion. The construction traffic will utilise the permanent access track network for access and egress, and this access will be constructed in advance of other ground works in a sequential manner. A Spoil and Peat Management Plan (SPMP) was developed as part of the planning application – See Appendix 8-3. This plan documents how spoil will be managed on site for re-use of materials, the design for on-site re-use and disposal options, and a scheme for the tracking and recording of soil movements. These measures will prevent the erosion of soil in the short and long term. Soils, overburden, and rock will be reused on site to reinstate any excavations where appropriate. Access tracks will be constructed first to allow for access within the proposed wind farm. Vehicular movements will be restricted to the footprint of the proposed wind farm, particularly with respect to the	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			newly constructed access tracks. This means that machinery must be kept to the tracks and aside from advancing excavations do not move onto areas that are not permitted for the development, such as areas which have not been designated for access or infrastructure. Construction of internal electricity transmission cables will present similar, but lower-level risks, to the construction risks outlined above, and the same mitigation measures will be adopted as above. Surplus material from the onsite roads will be reused on site in the borrow pits or on road upgrades. Based on the pre-mitigation level of effect (not significant effect), additional mitigation is not required. The following measures however will be implemented. The majority of the proposed GCR cabling will be laid in the public road. Construction method statements and templates will be implemented to ensure that the proposed GCR infrastructure is installed in accordance with the correct requirements, materials, and specifications of ESBN and EirGrid. The ducts will be installed and the trenches will be reinstated in accordance with ESBN/EirGrid, private third-party landowners and County Council specifications. Once all are satisfied, then the cables are pulled through the installed ducts in approximately 500 to 850 m sections. For concrete and asphalt/bitmac road sections, it is proposed to carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or private landowners, unless otherwise agreed with the local authority. Surplus excavated bitmac material shall be notified as Article 27 material or sent to appropriately licensed facility in accordance with the circular economy approach will be brought to a recycling facility for processing in accordance with the circular economy approach. For offroad i.e access tracks/grass sections at HDD locations, the cable section will be laid within an existing access track. Silt fences will be utilised along the offroad sections. Short sections (<50m) will be excavated and reinstated on a phased basis with suitable excavated material to ground level and finish in a gravel track as per the EirGrid/ESBN specification. By limiting the excavated sections, the potential for compact or erosion is limited.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM64	Mitigation - Geohazard/Peat and Soil Stability	EIAR Chapter 8	Peat or peaty soils on the proposed wind farm are shallow. Given the scale of the project, a major consideration for its development is the management of the materials excavated as part of the construction works. To this end and in order to further mitigate against any risk of peat instability, it is proposed to use any excavated peat in the extant borrow pit areas, within 10m of access tracks and PDA. A Spoil and Peat Management Plan is provided in Appendix 8-3. Due to the nature of the peat and subsoils at the site, construction of the proposed wind farm will require deep excavations at the turbine locations. Instability of soils will be localised to the extent of excavations for the various infrastructure locations. Identified temporary works will be put in place to successfully mitigate this risk. This is likely to be in the form of a battering back of excavations to a safe angle (as determined by a detailed slope stability assessment by a competent temporary works designer) or temporary granular berm or sheet pile wall. Following a peat stability assessment, the risk of long-term instability is considered low. It should be noted that the excavations will be backfilled to the existing ground level. The management of peat stability will be ongoing throughout the construction and operational stages of the project and will be managed through the use of a geotechnical risk register. A physical barrier will be implemented between the excavations and the potentially unstable material at unstable conditions, in the form of a granular berm or sheet piles. The long-term stability of the area around the wind turbine foundations will be achieved by filling the area back up to existing ground level following installation of the foundation. A suitably qualified and experienced geotechnical engineer or engineering geologist will monitor excavation works. The earthworks will not be carried out during severe weather conditions.	
Hydrology and Hydrogeology (Water Quality Management)				
MM65	Surface Water Drainage	EIAR Chapter 9	The SWMP (Appendix 9-4) will be implemented by the appointed contractor and will be regularly audited throughout the construction phase. The Environmental Manager will be required to stop works on site if he/she is of the opinion that a mitigation measure or corrective action is not being appropriately or effectively implemented.	As required through the Contractor's CEMP and the SWMP.
MM66	Alteration of Surface Water Flow	EIAR Chapter 9	Near-stream construction work will only be carried out during the period permitted by the IFI (2016) guidance document "Requirements for the	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Protection of Fisheries Habitat during Construction and Development Works at River Sites", that is, May to September inclusive. This time period coincides with the period of lowest expected rainfall and, therefore, minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. The proposed HDD at Croghan Bridge, Birr will be completed in the summer months to avoid periods of potential flooding.	
MM67	Alteration of Surface Water Quality	EIAR Chapter 9	The Standards for Felling and Reforestation describe the universal standards that apply to all felling (thinning, clear felling) and reforestation projects on all sites, will be implemented under a felling licence issued by the Department of Agriculture, Food & the Marine. Sediment traps will require monitoring and maintenance throughout the construction stage. Sediment traps will be constructed and maintained in line with the requirements of the Forest Road Manual and Forest Drainage Engineering – A Design Manual (Forestry Schemes Manual, 2011).	It is recommended that local surface water features at the proposed wind farm site are monitored pre-construction and during construction to take account of any variations in the quality of the local surface water environment as a result of activities related to the proposed wind farm site. A SWMP is included in Appendix 9-4. The main water parameters in terms of their potential to cause damage to aquatic life, ecosystems, human health, and water quality in the receiving waters are outlined in the proposed surface water monitoring schedule in Appendix 9-4. Inspections of silt traps are critical after prolonged or intense rainfall while maintenance will ensure maximum effectiveness of the proposed measures. Stockpiles will be evaluated and monitored and kept stable for safety and to minimise erosion. Turbidity monitors/alarms will be strategically placed 0.5km upgradient on the Holy Well Clohaskin River and 0.5km downgradient of works to assess the main construction works including bridge crossing and turbine base

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
				construction. Where elevated turbidity is noted both upstream and downstream, visual checks will be undertaken. All monitoring equipment will be calibrated regularly to ensure that results are accurately measured. Corrective Actions would include: • Investigate whether channels used to convey water are protected with vegetation, erosion control blankets, or a similar erosion control measure. If not, implement appropriate erosion control measures. • Check all outlets and location of turbidity monitors • Stop dewatering if the downgradient area shows elevated turbidity or erosion. Control and the receiving water. • Check outlet protection or a velocity dissipation device. • Ensure a stable, erosion-resistant surface (e.g., well-vegetated grassy areas, clean filter stone, geotextile underlayment) in place at outlets. • Check for leaking pumps, hoses, and pipe connections and fix if identified. A programme of inspection and maintenance will be designed, and

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
				dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, and records kept. During the construction phase, field testing and laboratory analysis of a range of parameters will be undertaken at adjacent watercourses, specifically following heavy rainfall events (i.e., weekly, monthly and event based as appropriate).
MM68	Alteration of Groundwater Flow	EIAR Chapter 9	Groundwater encountered will be managed and treated in accordance with CIRIA C750, 'Groundwater control: design and practice' (CIRIA, 2016). Groundwater from the borrow pits will be treated in the settlement ponds, see Drawing 11333-2061 to 11333-2074. At the Ballyloughane wells and along the GCR, an alternative supply to wells will be provided during the HDD works at W1 (HDD Crossing) – See Appendix 2-5 TLI Construction methodology and Chapter 9).	The dewatering operations will be inspected each day when dewatering water is ongoing to ensure that dewatering treatment controls are working correctly; to evaluate whether there are observable indicators of sediment discharges; Where any issues are encountered, action will be undertaken to correct any problems at the proposed project or with the dewatering controls that may have contributed to the discharges. Regular monitoring of groundwater (levels and quality) will take place using existing monitoring boreholes during the construction phase. The Ballyloughane borehole abstractions will be monitored on site during construction and for a period following cessation of construction activities (to be agreed with the relevant authorities).

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM69	Alteration of Groundwater Quality		Where groundwater is encountered, water pumped from excavations will be treated to remove sediment by the use of silt bags. Water will discharge from the silt bags into settlement ponds and the SuDS network. During the construction phase, all works associated with the construction of the GCR will be undertaken in accordance with the guidance contained within CIRIA Document C811 'Environmental Good Practice on Site' (CIRIA, 2023). Groundwater pumped from excavations will be treated to remove silt by the use of silt bags. When undertaking HDD works near the two Ballyloughane wells, turbidity monitoring of wells will be undertaken. An alternative water supply will be provided during the HDD works.	
Material Assets				
MM70	Aviation	EIAR Chapter 15	No significant effects on aviation are anticipated during the proposed operational phase Therefore no specific mitigation measures are proposed in terms of aviation. However, the following standard practices will be undertaken: • The turbines will be required to be included in the IAA Electronic Air Navigation Obstacle Dataset; • As-constructed coordinates of the turbines will be provided to the IAA; • 30 days' notice will be given to the IAA prior to any crane operations commencing during the operational phase.	
MM71	Telecommunications		To offset the potential impact of T11 on the Eir radio link (Eir_L2) from Knockshe to Coolderry, one of the following mitigation options will be implemented as agreed with Eir. Preliminary radio link analysis (path profile and link budgets) indicates that the proposed radio link (required for this mitigation measure solution) would meet the Radio Link Availability Criteria required by ComReg for radio licensing; however, additional investigations and technical analysis would be required to confirm this	
Noise & Vibration				
MM72	Construction Noise	EIAR Chapter 11	The contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. 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, and the contract documents will require the Contractor to implement these measures. These are outlined in the Construction and Environmental Management Plan (CEMP) that has been prepared for the proposed project (see Appendix 2-3).	
Archaeology and Cultural Heritage				
MM73	Archaeology	EIAR Chapter 13	All townland boundary interventions required for the proposed wind farm, route of the new access road, the excavation of the GCR trench, where it passes to the west of AH109 and excavation of the GCR launch/reception pits for the directional drilling at BH 18 and BH68 will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DoHLGH and will include a full record of the sections of boundaries removed. If any archaeological remains are identified further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH. The section of demesne wall associated with Sharavogue House (DL12) will be cleared of vegetation prior to the commencement of construction and a full written and photographic record of the wall will be made. The removal of the wall will be subject to archaeological monitoring as described above. The wall will be reinstated following the completion of works.	As required through the Contractor's CEMP
Air Quality / Dust				
MM74	Communications		An Environmental Manager (EM) will be in assigned by the appointed contractor. The EM will be responsible for co-ordinating the day-to-day management of environmental impacts during the Construction Phase. The EM will be responsible for performing inspections as deemed necessary and manage responses to environmental incidents. The name and contact details of the EM who will be responsible for construction	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			dust management and air quality issues will be displayed at the construction compound/site boundary hoarding, as well as head/regional office contact details. A complaints register will be kept by the appointed contractor detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.	
MM75	Construction Works Area Management	EIAR Chapter 10	Construction compounds will be laid out so that machinery and dust causing activities such as stockpiles are located away from receptors, as far as is practicable. The appointed contractor will provide a site hoarding of 2.4m height at a minimum at construction compounds, which will assist in minimising the potential for dust impacts off-site. Construction works area fencing, barriers and scaffolding will be kept clean using wet methods. Receptors which have the potential to receive dusting and soiling temporary works at TDR nodes located adjacent to dwellings; and dwellings directly adjacent to the GCR construction that experience dust soiling, where appropriate, and with the agreement of the landowner, will have the facades of their dwelling cleaned if required should soiling occur. Stockpiles will be covered to prevent wind whipping. Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. Any chutes and conveyors will be enclosed and skips will be covered. Drop heights from any conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised. Fine water sprays will be used on such equipment where visible dust plumes are generated. Cutting, grinding or sawing equipment will be fitted with or used in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Equipment will be readily available in the construction works areas site to clean any dry spillages. Spillages will be cleaned up as soon as reasonably practicable after the event using wet cleaning methods.	As required through the Contractor's CEMP

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			A water bowser will be used to spray work areas (wind turbine area and grid connection route) and haul roads, especially during periods of excavations works coinciding with dry periods of weather. An adequate water supply for effective dust or particulate matter suppression and mitigation will be ensured, and non-potable water will be used where possible and appropriate. Construction works area runoff of water or mud will be managed as per the Surface Water Management Plan (Appendix 9-4).	
MM76	Operating Vehicles / Machinery	EIAR Chapter 10	Engines of all vehicles will be switched off engines when stationary - idling vehicles are not permitted. The use of diesel- or petrol-powered generators will be avoided and mains electricity or battery powered equipment will be used where practicable. A Traffic Management Plan (TMP – Appendix 2-2) has been developed as part of the CEMP (Appendix 2-3) to minimise use of the Local Road Network. The TMP will be adhered to be the appointed contractor.	
MM77	Earthworks Activities	EIAR Chapter 10	Materials with the potential to produce dust, such as excavated material, will be removed from the construction works area as soon as possible, unless being re-used within the construction works area. Management of extracted material is detailed in the Construction and Demolition Resource and Waste Management Plan (CEMP, Appendix 2-3). Areas exposed by earthworks will be re-vegetated to stabilise surfaces as soon as practicable. Hessian, mulches or tackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Cover will only be removed in small areas during work and not all at once. During dry and windy periods and when there is a likelihood of dust nuisance (defined under "Monitoring" measures below), water-based dust suppression (e.g. bowser) will operate to ensure soil moisture content is high enough to increase the stability of the soil and thus suppress dust.	
MM78	Construction Activities	EIAR Chapter 10	Sand and other aggregates will be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process. Smaller supplies of fine power materials bags will be sealed after use and stored appropriately to prevent dust escaping	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM79	Measures specific to trackout	EIAR Chapter 10	A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. Vehicles transporting loose materials (e.g. spoil or sand) entering and leaving the proposed project works areas and construction compounds will be covered with tarpaulin to prevent escape of materials during transport. Before entrance onto public roads, trucks will be checked to ensure the tarpaulins are properly in place. Where construction work area or construction compound conditions result in large amounts of mud building up on truck wheels, wheel washing will be carried out for trucks before they use the public road network. Water-assisted dust sweeper(s) will be used at the access points to a construction compound and the immediate adjoining local road, to remove, as necessary, any material tracked out of the compound. Any on-site haul routes will be inspected for integrity and necessary repairs to the surface will be carried out as soon as reasonably practicable.	
MM80	Monitoring	EIAR Chapter 10	To determine if any short-term dust impacts will occur, a minimum of daily visual inspections for dust soiling of receptors (including roads, and surfaces such as street furniture, cars and windowsills) adjoining the construction works areas will be undertaken. Inspection results will be recorded in the site inspection log. Cleaning will be provided if necessary, such as in the event of a dust complaint resulting from the proposed project construction works. The potential for dust generation increases when rainfall is less than 0.2 mm/day and at wind speeds of greater than 10 m/s. To determine if these conditions are likely to affect the site, the weather forecast will be consulted daily, specifically the hourly forecasts for wind speeds as well as 12 hour rainfall radar showing anticipated amounts of precipitation in mm. The frequency of site inspections by the Environmental Manager responsible for dust management will be increased to a minimum of twice daily during the above conditions. The effectiveness of dust control methods will be monitored via visual inspections and work that would generate dust (e.g. moving materials from stockpiles or transferring loose	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			dry materials from trucks) will be limited in so far as is practicable during these weather conditions.	
Climate				
MM81			During construction the Contractor will mitigate against the effects of extreme rainfall/flooding, the effects of extreme wind/storms, temperature extremes, the effects of fog, lighting and hail through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures and the Contractor will ensure that these are complied with.	
Traffic Management				
MM82	Construction Traffic	EIAR Chapter 14	The Traffic Management Plan (TMP) is a comprehensive set of mitigation measures that will be implemented by the Contractor before and during the construction phase of the proposed project to minimise its effects. The TMP proposed for the proposed project is included in Appendix 2-2 of the EIAR. The following mitigation has been incorporated into the TMP:	As required through the TMP.
			Traffic movements will be limited to 07:00 - 19:00 Monday to Friday and 07:00 – 14:00 Saturday, unless otherwise agreed in writing with Offaly County Council and Tipperary County Council.	
			HGV movements will be restricted during peak road network hours (including school hours) from 08:30 – 09:30 and 16:30 – 17:30 Monday to Friday, unless otherwise agreed in writing with Offaly County Council and Tipperary County Council.	
			HGV movements for the proposed project shall be directed away from sensitive areas (i.e., schools, urban centres).	
			No parking shall be permitted along the access route for unloading or activities that result in blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding the works and traffic on the road network.	
			Measures to remove queuing of construction traffic on the adjoining road network, including turning space and queuing of convoy HGVs will be provided within the proposed project site.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Wheel wash equipment will be used on site to prevent mud and stones from being transferred from the proposed wind farm site to the public road network.	
			Activities generating dust will be minimised where practical during windy conditions. Loads will be covered on arrival and departure from the proposed wind farm site, where required.	
			Clear construction warning signs will be placed on the public road network to provide advance warning to road users of the presence of the construction site and slower-moving vehicles making turning manoeuvres.	
			Access to the construction site of the proposed wind farm will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security/site personnel, and site visitors will all receive a suitable Health and Safety site induction.	

			• A detailed programme of deliveries, particularly for turbine components, will be submitted to Offaly and Tipperary County Councils prior to commencement.
			• Local residents will be informed in advance of any traffic-related impacts, such as temporary lane or road closures or night-time deliveries, via local notices and public postings.
			  ○ Notices will include the developer's representative contact details for the public and both the Offaly and Tipperary County Council's details for any queries during working hours.
			  ○ An out-of-hours emergency contact number will also be provided.
			• Pre- and Post-Construction Road Surveys:
			  ○ A pre-construction condition survey will be carried out on approach roads to document their condition before works commence.
			  ○ A post-construction survey will be completed upon completion of works.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			○ The timing and scope of these surveys will be agreed in advance with both the Offaly and Tipperary County. • Continuous liaison will occur with Offaly and Tipperary County Councils, their Roads and Transportation Sections, and An Garda Síochána during the delivery phase of Abnormal Indivisible Loads (AILs) to coordinate escorts, timing, and local traffic controls. • The following temporary modifications will be undertaken along the haul route to accommodate turbine component deliveries: • Temporary removal of road marker poles at the Foynes Port exit gate. • Temporary demounting of signage and vegetation trimming at key bends and junctions along the N69, including: • N69 junction; • N69 left bend at Shrylane; • Left bend west of Borrigone; • N69 west of Toreen (tree canopy trimming); • N69 bend northwest of Knockbrack West; and • N69 roundabout west of Clarina. Temporary demounting of signage, removal of lighting columns, vegetation clearance, and installation of temporary load-bearing surfaces at the following locations. • N69/N18 Slip Road Roundabout 1; • M7 Junction 21/R435; • R435 Mountain View Roundabout; • R435/R445 Roundabout; • R445/Dublin Road Roundabout; • Dublin Road/N62 Junction;	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			• Dublin Road (Roscrea); and • N62 right bend north of Gloster House.	
			• A new temporary offline access track will be constructed in advance of the junction to provide adequate turning radii for abnormal loads accessing the R492. • A review of overhead line clearances will be undertaken with statutory providers along the entire haul route. A minimum clearance height of 5 metres (plus flashover protection) will be maintained. • Delivery Times of Large Turbine Components – TMP will include the option to deliver the large wind turbine plant components at night to minimise disruption to general traffic during the construction stage.	
MM83	Concrete Pours		The largest traffic volume is associated with the concrete pours for the turbine foundations. The works at other areas within the main site will continue during these concrete pours, but only essential deliveries will be scheduled to occur on the same days as the concrete pours. To mitigate this impact, liaison with local authorities and the community in advance of the foundation pours will occur.	
MM84	Junction Visibility	EIAR Chapter 14	Maintenance of the hedgerows within the visibility splays shall be undertaken to maintain the required visibility splays and mitigate the potential for overgrown vegetation which may result in inadequate visibility at the access and crossing points during the construction activities, see Drawings No. 11474-2050 to 11474-2051.	
MM85	Junction Swept Past Analysis	EIAR Chapter 14	Internal roads will have a running width of approximately 5–7 metres with wider sections at corners and near turbine locations.	

MM86	Haul Routes	EIAR Chapter 14	Mitigation measures on the haul roads and cable route includes:
			• Selection of a viable route with the lowest impact on the road network.
			• Avoidance where possible of sensitive receptors and urban settings
			  ○ The site access route encourages the use of the existing infrastructure in the area while avoiding the local road and potential sensitive receptors.
			  ○ Turbine delivery route along national roads with largest capacity to accommodate the vehicles.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			○ The typical construction materials are obtained from borrow pits onsite and from local quarries in the proximity of the site. ○ Restricting HV movements during peak sensitive times on the road networks (i.e., at school times). ○ The grid connection route will be carried out at off-peak times. • To mitigate the impact of the AIL delivery on the road network, the advanced works will be undertaken (i.e., hardstanding, making signs demountable, utility diversions etc). The hardstanding works areas will be temporary in nature and removed once the final turbine is delivered to site. To mitigate the impact of the AIL deliveries these deliveries will be undertaken under Garda and traffic management escort during off-peak (i.e., night-time) hours. The arrangement of the appropriate abnormal load licences will be obtained by the appointed contractor in a timely fashion on procurement of the AIL. The appointed contractor will liaise with the relevant road's authorities and, an Garda Síochána on the delivery schedule for the AILs.	
MM87	Trench Reinstatement	EIAR Chapter 14	The proposed project includes works along the public road for a 12.23 km grid connection to the existing Dallow 110 kV substation. To mitigate the impact on the road network, at the time of the construction work and in advance of the required Road Closure, the appointed Contractor shall consult and comply with the Roads Authority, An Garda Síochána and other Emergency services to agree a suitable diversion route prior to implementing a Road Closure. To mitigate the impact of the cable laid within the public road, the reinstatement works will be backfilled and reinstated as soon as practicable. The reinstatement works will be undertaken in accordance with the "Purple Book" best guidance and practices. The proposed reinstatement and construction details and phasing will be agreed with associated Local Authorities in advance of the works. The Contractor will be responsible for arranging for the required road opening licences.	
Operational Phase				
Biodiversity Flora and Fauna				

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM89	Bats	EIAR Chapter 6	As mentioned previously in (Section 6.6.3.2.4.1) vegetation clearance buffers 'bat-buffers' will be implemented to each turbine location to avoid encouraging bat activity within the 'blade-swept' area. Reduced rotation speed 'Feathering' will be implemented when turbines are idling, 'Feathering' of idling blades may reduce incidental fatality rates by up to 50% (NatureScot et al., 2021). No lighting is proposed within the site with the exception of aviation lighting at each turbine and security lighting at the proposed substation / BESS. These permanent lighting systems will be designed in accordance with ILP (2023) in order to minimise nuisance through light spillage. All non-essential lighting will be switched off during the hours of darkness. No artificial lighting will illuminate any trees or structures. This will not prevent disturbance or avoidance to any roosting bats potentially selecting or using any trees or tree structures for roosting or their emergence and re-entry should they roost. To reduce the ecological disturbance from artificial lighting, the following guidance will be undertaken: • Reduction of non-essential external night lighting • Lowed the angle of external night lighting • Use of LEDs, as these emit minimal ultra-violet light • White and blue wavelengths will be avoided. Wavelength will be <2,700 kelvin • Lights will peak higher than 550nm	Operational fatality monitoring and activity surveys will be carried out in years 1,2,3,5 and 10 post-construction and will consist of: • Passive bat monitoring at all turbine locations in order to monitor changes in activity levels relative to pre-construction baseline information (presented herein). • Fatality monitoring following the methodology presented in Appendix 4 of NatureScot et al. (2021) or subsequent updates. • Monitoring of proposed bat boxes by a bat-licensed Ecologist, and relocation of any boxes with no evidence of use in the first year after construction. Monitoring of linear replanting features will be carried out in the years 1, 2, 3, 5 and 10 post-construction to ensure successful establishment of replacement linear features. Any failed plants will be replaced in the first planting season following each monitoring inspection. Post-construction monitoring data will be analysed and presented in report format to the planning authority. Recommendations will be made in relation to a curtailment strategy if required.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM89	Protection of Lepidoptera Species	EIAR Chapter 6	The operational phase of the wind farm will see the use of vehicles across the site during routine maintenance works and site visits. Due to the poor flight ability of the Marsh Fritillary, the species is at risk of vehicle strike (NRA, 2008). Mitigation measures to reduce the risk of vehicle strike for the species include standard speed reduction measures of 20km/hr which are to be implemented across the operational wind farm site.	Larval Web Surveys The monitoring of Marsh Fritillary and suitable habitat for the species will continue throughout the lifetime of the project (Section 6.7.1.5.6.7). This associated reporting will contain information on the presence/absence of the species within the proposed wind farm site as well as the extent of suitable habitat.
Ornithology				
MM90	Monitoring	EIAR Chapter 7	A precautionary approach will be maintained. If unexpected ornithological issues arise during the operational phase, such as evidence of collision risk to sensitive species, an adaptive management strategy will be implemented. This will be monitored following a dedicated monitoring programme	A Bird Monitoring Programme will be undertaken at the proposed wind farm site pre and post construction of the proposed project. The monitoring programme is presented in full in Appendix 7-3.
Lands Soils and Geology				
MM91	Contamination		Fuel and oil storage and handling requirements will be as detailed for construction, with permanent fuel and oil storage located within permanent covered bunds. Transformers will be required within the substations. Surface water discharges from permanent storage areas and substation bunds will be to surface water via an oil interceptor. The oil interceptors at the proposed wind farm will be subject to a regular inspection and de-sludging to ensure that they retain full operational efficiency. Site operatives will receive appropriate training and materials will be available on site to immediately respond to any fuel or oil spill.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Welfare facilities will be provided at the substation location. These welfare facilities will produce foul effluent and these effluents will be stored in an alarmed holding tank prior to removal to an approved treatment facility.	
MM92	Geohazard /Peat and Soil stability	EIAR Chapter 8		Monitoring will consist of regular inspection of drains to prevent blockages and inspections of specific areas after a significant rainfall events. Communication of residual peat risk to appropriate site operatives; Ongoing monitoring of residual risks and maintenance if required.
Shadow Flicker				
MM93	Shadow Flicker Mitigation	EIAR Chapter 16	Shadow flicker is something that only occurs in the operational phase of a wind farm, but there is a potential for slight momentary effects to occur during turbine commissioning at the end of the construction phase while the mitigation strategy is being refined, this would be anticipated to be very limited due to the short timeframe that this takes (approximately 2 months) and the fact that turbines are often left stationary (i.e. not rotating) during this stage unless it is required for them to be rotating. All of the mitigation described below would apply during this final stage of the construction phase also.	A process will be established by the wind farm operator whereby local residents can highlight any concerns or complaints about the operation of the scheme. All concerns raised will be investigated by the wind farm operator and the turbine shutdown software adjusted accordingly, if required.
			If there is sufficient existing screening at a shadow flicker receptor, the Turbine Shutdown Scheme may not be necessary for that receptor. The Applicant will engage with any affected residents to investigate options for new or additional screening measures (such as planting vegetation to act as a screen or installation of suitable window blinds in the affected rooms of the residence) where appropriate and agreeable to the affected residents. If screening is not acceptable and/or will not be effective the Turbine Shutdown Scheme as set out in Section 16.5 of Chapter 16 of the EIAR will be implemented to ensure 'near zero shadow flicker'.	A process will be established by the wind farm operator whereby local residents can highlight any concerns or complaints about the operation of the scheme. All concerns raised will be investigated by the wind farm operator and the turbine shutdown software adjusted accordingly, if required.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Where agreed screening measures are implemented, the effectiveness of the measures will be monitored and if the measures are not functioning to the satisfaction of the property owner/occupant, they will be included in the Turbine Shutdown Scheme as set out in Section 16.5of Chapter 10 of the EIAR.	
			A shadow control system will be installed on each of the wind turbines that have the potential to cause shadow flicker for sensitive receptors. The control system will detect and calculate, in real-time: • Whether shadow flicker has the potential to affect nearby properties, based on pre-programmed co-ordinates for the properties and turbines outlined in this assessment; • Wind speed (can effect how fast the proposed turbine will turn and how quickly the flicker will occur); • Wind direction; • The intensity of the sunlight When the sunlight is strong enough to cast a shadow, and the shadow falls on a property or properties, then the proposed turbine will automatically shut down; and will restart when the potential for shadow flicker ceases at the affected properties. The Developer will install a shadow flicker impact control system at turbines which have the potential to cause shadow flicker on nearby properties. This system will be installed prior to operation of turbines.	As required through the Turbine Shutdown Scheme.
Air Quality and Dust				
MM94	Exhaust Emissions	EIAR Chapter 10	Although the intensity of activity will be only a small fraction of the construction phase, all employees and contractors that are on site will ensure that machinery used is properly maintained and is switched off when not in use to avoid unnecessary exhaust emissions from maintenance traffic.	
Noise and Vibration				

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM95	Curtailment	EIAR Chapter 11	For the Nordex N163 turbine adopted for this assessment the potential exceedance, if realised, can be mitigated through curtailment of the specific turbine for the relevant wind speed bins and period. The N163 turbines have been modelled with all turbines operating in normal mode ('Mode 0') with STE blades. The N163 turbines can be configured for up to 18 no. operating modes. Full details of the wind turbine noise prediction assessment are presented in Section 11.4.5. of Chapter 11 and Appendix 11-6. The following outline curtailment strategy applied to this assessment will ensure that the proposed wind farm can operate within the relevant best practice noise criteria. • Turbines T04 and T05 operating in Mode 1 in the northeasterly wind direction sector at wind speeds ≥7 m/s. If required for the installed turbines, the curtailment strategy will be verified by the manufacturer based on the control and physical limitation of the turbine.	
MM96	In the event of a complaint	EIAR Chapter 11	The Operator will fully investigate complaints made and conduct a review of the meteorological periods and conditions. A noise monitoring protocol will be agreed with the local authority, specifying monitoring locations and analysis methods for the sound pressure levels and any character (see Section 11.7.3 of Chapter 11). If the complaints suggest the potential occurrence of clearly audible tonality in the wind turbine noise, the audibility of the tones will be investigated from measured data with a robust, objective method such as that included in ISO 1996-2:2017 with modifications in IEC 61400-11-2. If the rated level of the wind farm is above the limit, then the operator will liaise with the turbine manufacturer to investigate and implement measures to reduce the rated level to below the limit. The appropriate mitigation measures will depend on the cause or source of the tonal noise. This may involve engineering modifications to mechanical or electrical components, or the implementation of software-based operational controls via the turbine control system, such as adjustments to the turbine operating mode, rotor speed and/or blade pitch. These capabilities are embedded within the control systems of modern wind turbines (see Appendix 11-9).	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM97	Monitoring	EIAR Chapter 11	Prior to the commissioning of the project, the developer will submit a Noise Compliance Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for all noise measurements, the frequency of monitoring, procedures for recording results and a protocol for managing complaints. . A Draft Protocol for Managing Complaints is presented in Appendix 11-9. A final version of the Protocol will be contained within the NCMP to be submitted and agreed with the Local Authority prior to the operation of the project.	
MM98	Wind Turbine Noise		Compliance noise surveys will be undertaken to ensure compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of a wind farm being commissioned. In the unlikely event that an exceedance of the noise criteria is identified as part of the compliance assessment, the guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be followed, and relevant corrective actions taken to ensure residual compliance with the turbine noise criteria. For example, implementation of noise reduced operational modes resulting in curtailment of turbine operation can be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criterion curves/planning conditions limits. Such curtailment can be applied using the wind farm control system with reduction of the wind turbine energy generation.	
Decommissioning Phase				
Biodiversity Flora and Fauna				
MM99	Protection of Bat species	EIAR Chapter 6	All decommissioning works will be governed by the same requirements to control run-off or potential pollution to watercourses (feeding resources for bats) as have been implemented during the construction phase. Any site compound will need to conform to the construction phase mitigation measures including those related to lighting design. Decommissioning phase works will include the reestablishment of woodland and linear features removed during the construction phase.	

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
MM100	Marsh Fritillary	EIAR Chapter 6	As mentioned above, monitoring of Marsh Fritillary and suitable habitat for the species will continue throughout the lifetime of the project. If evidence of the species has been recorded within the last ten years, then the ECoW will present Toolbox Talks to all relevant contractors working within the proposed wind farm site. All suitable Marsh Fritillary habitat will be demarcated using pot-and-wire fencing along with appropriate signage to prohibit access and disturbance. If suitable habitat remains within the proposed wind farm site, then prior to decommissioning works, larval webs surveys and habitat condition assessment surveys will be carried out following best practice guidance (above and Section6.7.1.5.6.1 of Chapter 6). This will include recording the location of any larval webs identified and the mapped extent of suitable habitat. If larval webs are identified within the proposed works corridor for the decommissioning phase, then every effort will be made to avoid the larval web. Where this is not possible, and as a last resort, then the translocation of the larval web will be carried out as required by law and, following the method outlined in Section 6.7.1.5.6.4.	
Ornithology				
MM101	Decommissioning Schedule	EIAR Chapter 7 Ornithology	To comply with the Wildlife Act (as amended), as well as the Article 5 of the Birds Directive (2009/147/EC), the decommissioning works will not be carried out within the period from the 1st of March to the 31st of August or in the case of locations in proximity to T1 and sections of infrastructure along the Little Brosna River to the north-east of the proposed project, will be subject to seasonal restrictions on habitat removal and other potentially disturbing activities. To minimise disturbance or displacement of wintering KORs, such works will be scheduled outside the core wintering period, typically from October to March inclusive	As required through the Contractor's CEMP
Lands Soils and Geology				
MM102	Fuel management	EIAR Chapter 8	A fuel management plan to avoid contamination by fuel leakage during decommissioning works will be implemented as per the construction phase mitigation measures. Any BESS waste from the site will require disposal/recycling in accordance the circular economy and associated legislation.	As required by the fuel management plan agreed at the time of decommissioning.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			Any best practice measures for decommissioning would conform to those given for construction.	
Hydrology and Hydrogeology – Water				
MM103	Alteration of Surface Water Flow	EIAR Chapter 9	SuDS measures will remain in place during the decommissioning period.	
MM104	Alteration of Surface Water Quality	EIAR Chapter 9	Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. Measures outlined in above in relation to fuel and drainage management will be implement during decommissioning works will be implemented as per the construction phase mitigation measures.	
MM105	Alteration of Groundwater Flow and Quality	EIAR Chapter 9	Mitigation measures outlined above in relation to groundwater flow protection will remain in place during the decommissioning phase.	
Air Quality and Dust				
MM106	Dust Emissions	EIAR Chapter 10	Construction phase, the mitigation measures applicable to construction phase dust emissions are also considered suitable for those during the decommissioning phase.	
Traffic and Transport				
MM107	Decommissioning Activities and Traffic	EIAR Chapter 14	On the decommissioning of the proposed project, a detailed decommissioning plan will be prepared and implemented to minimise the effects during this phase. The decommissioning phase will employ similar mitigation measures as the construction phase. As the decommissioning phase is envisaged to be over 35 years from now, a detailed TMP will be undertaken and will consider any road improvements and changes to the network. The plan will also consider the future baseline traffic in order to minimise the decommissioning phase effects in the vicinity. The turbine components will be separated and removed in manageable sizes. The reduced blade section lengths, tower sections, and nacelle are likely to remain abnormal loads. However, the swept path of the long blades will be reduced. This will reduce the impact on third parties and existing road infrastructure. As previously mentioned, the large volume of aggregate and concrete imported will	As required by the agreed decommissioning plan and TMP / mitigation measures agreed at the time of decommissioning.

Ref No.	Related to	Location	Mitigation Measure	Monitoring Requirements
			remain onsite. The principal expected volumes of traffic will be primarily associated with the transportation off-site of turbine components and a significantly reduced volume of materials.	