Appendix 17.1: Summary of Mitigation Measures

17 INTRODUCTION

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

All mitigation which will be implemented during the various phases of the Project are presented in **Table 17.1** below. This provides an easy to audit list that can be reviewed and reported on during the project phases. The monitoring schedule for the Development is presented in **Table 17.2** below. The proposal for site inspections and environmental audits are set out in the Construction and Environmental Management Plan (CEMP) which is included as **Appendix 2.1** of this EIAR. Subject to planning permission being granted, **Table 17.1** serves as a reporting template for site compliance audits. It can be further developed, in consultation with the relevant statutory agencies and Clare County Council, prior to the project start and during the course of the project phases.

Table 17.1: Summary of Mitigation Measures

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Pre-Construction Phase					
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	At the commencement of works at the T2 location, the required work footprint on the bog will be identified and the area will be marked by a rope fence (using range poles or similar) and with appropriate signage. No activities will be allowed outside of this agreed work area.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.3	At the commencement of works at the T3 location, the required work footprint within the Molinia meadow will be identified and the area will be marked by a rope fence and with appropriate signage. No activities will be allowed outside of this agreed work area. The ECoW will inspect the area regularly whilst works are on-going at T3. The fence will remain in place until the works are fully complete.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.3	A pre-construction otter survey will be carried out along the stretch of river which skirts the project redline boundary, and upstream and downstream of the boundary, should more than 24 months have elapsed since the baseline 2024 survey (NRA 2008). Should an active holt be located in the immediate area of the proposed works, measures may need to be taken to evacuate the animals from the holt to ensure that there is no disturbance to breeding animals		
Flora & Fauna	Chapter 6 Biodiversity	6.5.4	Areas where construction works are due to commence during the period February to August will be checked by the ECoW for the presence of frog spawn, tadpoles and adult frogs. If present, these will be removed under licence from NPWS and transferred to suitable ponds, drains or wetlands in the vicinity. The licence will be obtained before construction in anticipation that frogs will be encountered. During the walk-over survey for presence of the common frog, any common lizards observed will be removed from the work area and placed on bog elsewhere within the site.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.1	The proposed Project incorporates embedded mitigation aimed at minimising the potential significant effects during the design phase. This includes the design principle of maintaining set-backs of 50m for turbines and associated infrastructure from EPA		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			mapped streams and rivers (IWEA, 2012) and utilising existing forestry access tracks where feasible. Peatland and agricultural drains at the Site are not considered a major hydrological constraint and therefore a reduced 10m buffer is applied to these.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.1	The siting of all turbine locations and other key infrastructure (including the spoil area) at a minimum set-back of 50m from EPA mapped streams and rivers, (namely the main channel of the Moyasta River following best practice guideline of the Irish Wind Energy Authority (IWEA, 2012). The only exception to this rule will be where upgrades to pre-existing access tracks that are already located within the 50m buffer zone are required, where unavoidable stream crossings are required. Avoidance of the area to the West and South of T2 is recommended as per the Peat Stability Risk Assessment (Appendix 8.1). Peatland and agricultural drains at the Site are not considered a major hydrological constraint and therefore a reduced 10m buffer is applied to these.		
NIS		3.4.1.1	The fundamental mitigation measure to be implemented during each stage of the Project will be avoidance of sensitive hydrological receptors wherever possible, this key principle is referred to as "mitigation by avoidance". This principle has been adopted during the design of the site layout and associated infrastructure across multiple design iterations. The final Development layout plan has been identified as the optimal layout design available for protecting the existing hydrological regime of the Site, while at the same time incorporating and overlaying engineering and other environmental constraints.		
NIS		3.4.1.1	The greatest risk of adverse impacts on the aquatic environment will occur during the construction phase of the Project. Key to minimising this risk has been the siting of all turbine locations and other key infrastructure at a minimum set-back of 50 m from main watercourses (namely the main channel of the Moyasta River), and a set-back of 10 m from main drains. Where possible all of the key Development areas (turbines, hardstands, construction compound, substation etc.) have been located significantly away from the delineated 50 m natural watercourse buffer zones. The spoil storage area is also located outside of the delineated 50 m		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			hydrological buffer applied to EPA mapped watercourses. Where works are proposed within the buffer zone, i.e. at watercourse crossings, additional mitigation measures will be implemented.		
NIS		3.4.1.2	The following drainage control measures will be used during the construction phase in conjunction with the existing drainage network to ensure the protection of all rivers and downstream watercourses. Source controls: • Interceptor drains, diversion drains, erosion and velocity control measures such as the use of sandbags, oyster bags filled with gravel, filter fabrics and other similar/equivalent or appropriate systems. • Small working areas, covering temporary stockpiles, weathering off temporary stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. In-Line controls: • Interceptor drains/swales, erosion and velocity control measures such as check dams, sandbags, oyster bags, straw bales, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, temporary pumping systems, settlement ponds, or other similar/equivalent or appropriate systems. Treatment systems: • Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as "Siltbuster", and/or other similar/equivalent or appropriate systems.		
Construction Phase					
Health & Safety	Chapter 5 Population & Human Health	5.5.7.1	The PSDP shall see that the General Principles of Prevention, outlined under the safety design advice provided by the Health and Safety Authority (HSA) are taken into account for all designs relating to the project.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.1	There will be loss of: (i) an area of approximately 0.8 ha of cutover bog, rated as a Significant Negative effect, as a result of the construction of T02 turbine, and (ii) a small area (200 m^2) of Molinia meadow as a result of the construction of T03 turbine, rated as a Slight Negative effect. These losses will be		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			offset through a Biodiversity Enhancement and Management Plan (see **section 6.7** below and **Appendix 6.11).**		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.1	Hedgerows will be reinstated where possible (at the site entrance) and where reinstatement is not possible (due to permanent works or around bat buffer zones), replacement on a like-for-like basis within the redlined boundary will occur.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.1	Additional hedgerow habitat will be created to offset the loss following best practice, a minimum of 530 m, *i.e.* twice the total loss, will be replanted within the redline boundary of the wind farm site.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.1	The new plantings will comprise native hawthorn and willow (*Salix aurita* and/or *Salix cinerea* subsp. *oleifolia).* All plantings will be of certified Irish genetic stock. Planting will be along the boundaries of fields where there is either no existing hedging (usually just a drainage ditch) or where there is an existing hedge that is poorly grown with gaps and may require bolstering. Details of the planting programme are within the Biodiversity Enhancement and Management Plan (see **Appendix 6.11).**		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	At the commencement of works at the T02 location, the required work footprint on the bog will be identified and the area will be marked by a rope fence (using range poles or similar) and with appropriate signage. No activities will be allowed outside of this agreed work area. The ECoW will inspect the area regularly whilst works are on-going at T02. Excavated peat and other material will be removed to the approved storage area with no storage of spoil or materials on unplanted bog or in areas immediately adjoining the bog. The fence will remain in place until the works are fully complete.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	This will be achieved by removing suitable areas of the vegetated cutover bog surface (cut out as sods or 'turves') within the work footprint at T02 and including the section of access track over the cutover bog. This material will be stored appropriately on-site, and reused to re-instate areas around the turbine, hardstand margins and along the edges of the access tracks. It is noted that wet areas of the bog surface (such as along old drains) and/or undulating areas at old peat banks are		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			unlikely to be suitable for the removal of peat turves. The surface turves of vegetated bog will be dug out to a minimum depth of approximately 30 cm using a dumper/digger with a bucket. Care will be taken to keep the turve as intact as possible and the vegetated side upwards (though this is not always possible). The turves will be loaded to a trailer and transported to a pre-identified storage area. The storage area will be located in an area of Site (not vegetated bog) where disturbance during the storage period will not occur. The turves will be off-loaded from the trailer and placed side by side and vegetation side upwards. They will be placed in single layers, *i.e*. not piled on top of each other. Should storage be for prolonged periods (months), the turves may need to be watered during dry spells. When ready for placement at the finished turbine/hardstand/track, they will be lifted with a dumper and bucket and taken to the destination. Here they will be off-loaded, placed side by side on the disturbed bog surface with vegetation side up. The turves will be bedded in with the bucket of a dumper so that they form a continuous layer without gaps between them. This approach will provide almost immediate cover of the bare surfaces and is highly effective in reducing the potential for surface erosion. All of the above will be monitored by the ECoW.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.3	As described for cutover bog, at the commencement of works at the T03 location, the required work footprint within the Molinia meadow will be identified and the area will be marked by a rope fence and with appropriate signage. No activities will be allowed outside of this agreed work area. The ECoW will inspect the area regularly whilst works are on-going at T03. The fence will remain in place until the works are fully complete. In addition, some of the grass surface will be dug out and stored during the construction phase and later replaced over the disturbed surface around the turbine foundation (T03). This will follow the same procedure as described for the cutover bog, though a smaller amount of sods will be required as only the actual turbine protrudes into the Molinia meadow.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.1	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.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.1	Two 17m high lightning monopole protection masts are proposed at the control building and a warning light will be fixed to two of the turbines. Otherwise, motion sensitive lighting only will be used.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	Inevitably the construction works will cause disturbance to cutover bog habitat around the turbine and hardstand for the T02 turbine and along the access road, as an area will be needed by the Contractor to facilitate the works. To minimise disturbance to the bog and to ensure good recovery, as well as to minimise areas of bare peat which would be prone to erosion, a programme of ongoing monitoring and rehabilitation will be followed during construction phase.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	Mitigation is required to minimise the area of exposed peat surface and to encourage revegetation. This will be achieved by removing suitable areas of the vegetated cutover bog surface (cut out as sods or 'turves') within the work footprint at T2 and including the section of access track over the cutover bog. This material will be stored appropriately on-site, and reused to re-instate areas around the turbine, hardstand margins and along the edges of the access tracks. It is noted that wet areas of the bog surface (such as along old drains) and/or undulating areas at old peat banks are unlikely to be suitable for the removal of peat turves (however, such surfaces will be removed and stored separately from sub-soils for later surface re-instatement works – see **Chapter 2: section 2.5.16**).		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	The surface turves of vegetated bog will be dug out to a minimum depth of approximately 30 cm using a dumper/digger with a bucket. Care will be taken to keep the turve as intact as possible and the vegetated side upwards (though this is not always possible). The turves will be loaded to a trailer and transported to a pre-identified storage area. The storage area will be located in an area of Site (not vegetated bog) where		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			disturbance during the storage period will not occur. The turves will be off-loaded from the trailer and placed side by side and vegetation side upwards. They will be placed in single layers, *i.e.* not piled on top of each other. Should storage be for prolonged periods (months), the turves may need to be watered during dry spells. When ready for placement at the finished turbine/hardstand/track, they will be lifted with a dumper and bucket and taken to the destination. Here they will be off-loaded, placed side by side on the disturbed bog surface with vegetation side up. The turves will be bedded in with the bucket of a dumper so that they form a continuous layer without gaps between them. This approach will provide almost immediate cover of the bare surfaces and is highly effective in reducing the potential for surface erosion. All of the above will be monitored by the ECoW.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.3	While the encroachment into the Molinia meadow by the construction of turbine T3 is fairly minor (estimated 200m^2), care is required to minimise disturbance to the meadow area adjoining the work area.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.3	As described for cutover bog, at the commencement of works at the T3 location, the required work footprint within the Molinia meadow will be identified and the area will be marked by a rope fence and with appropriate signage. No activities will be allowed outside of this agreed work area. The ECoW will inspect the area regularly whilst works are on-going at T3. The fence will remain in place until the works are fully complete.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.3	In addition, some of the grass surface will be dug out and stored during the construction phase and later replaced over the disturbed surface around the turbine foundation. This will follow the same procedure as described for the cutover bog, though a smaller amount of sods will be required as only the actual turbine protrudes into the Molinia meadow.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.2	Should the pre-construction surveys indicate a requirement for protection from construction-related disturbance of any relevant species, appropriate measures will be taken in line with all relevant legislation and best practice guidance available at the time to ensure that breeding attempts are not disturbed		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			by construction related works. Best available evidence has been reviewed (Currie & Elliot 1997, NatureScot 2022, Pearce-Higgins et al. 2012, Scottish Natural Heritage 2016) and it is suggested that the following relevant species could be disturbed by construction works at the following distances: Merlin 500 m Kestrel 200 m Snipe 400 m Barn owl 100 m Should any of these species be recorded breeding within the given distances of the works area through confirmatory surveys before and/or during construction, a buffer zone (using above distances) shall be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by an ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing and all site staff will be alerted through toolbox talks. The above mitigation, if needed, will apply from March to August (inclusive) and will ensure that the works will not have an adverse effect on the identified species of conservation importance.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.1.3	A range of passerine bird species breed within the Site, including the Red-listed meadow pipit and Amber-listed species such as skylark and willow warbler. In compliance with Section 22 of the Wildlife Acts 1976 to 2022, all vegetation required to be cleared to facilitate the works will be done outside of the restricted period from 1st March to 30th August.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Should it be necessary to remove vegetation during the breeding season, for instance where bramble and ephemeral plant species have become established on ground cleared earlier, this will be surveyed by an ornithologist up to 10 days before any clearance. Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by the ornithologist. The restriction will be maintained until it is established that any young birds present have fledged.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.7	During construction, the following best practice measures will be implemented: • Good construction site hygiene will be employed to prevent introduction of invasive plant species by thoroughly washing vehicles prior to entering site • Any soil or topsoil required on the site will be sourced only from a stock that has been screened for the presence of invasive species • Should the presence of an invasive species be detected, the treatment and control of same will follow guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	The developer will appoint an Ecological Clerk of Works (ECoW) to ensure compliance during the construction stage with all mitigation measures, planning conditions and legislative requirements related to ecology. They will consult and assist with the Client in evaluating compliance with applicable legislation by means of a monthly Environmental Audit.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	• Open constructed drains for development run-off collection and treatment. • Collection drains for upslope "clean" water collection and dispersion. • Filtration check dams to reduce velocities along sections of road which run perpendicular to contours. • Settlement ponds, settlement lagoons and buffered outfalls to control and store development runoff to encourage settlement		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			prior to discharge at greenfield runoff rates. • Ongoing monitoring of on-site surface water management infrastructure to ensure systems are operated and managed in accordance with best practice • Post significant rainfall events the surface water management drainage infrastructure will be assessed to ensure no risk of silt laden run off, including discharges from the flood compensation /spoil storage area		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	There will be no direct site run-off to watercourses during the construction phase with all outflows from drainage via check dams and stilling ponds and buffered outfalls from which treated surface water is released by diffuse overland flow at appropriate locations. To reduce the amount of silt laden water to be treated, clean water drains will be created upstream of the works area to divert water away from construction areas, thereby lessening the volume of water to be treated onsite. This will prevent the risk of suspended solids or dissolved substances entering the watercourses.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	Dewatering flow rate or pumping rate will be controlled by an inline gate valve or similar infrastructure. This will facilitate reduction of loading on the receiving drainage and attenuation network, thus enhancing the attenuation and settlement of suspended solids. All pumped water will be discharged to constructed drainage and in line treatment train or to a vegetated surface through a silt bag outside of surface water buffer zones. Dewatering is a dynamic process and will require continuous monitoring and modification depending on conditions encountered.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	Contaminated water arising from construction works, namely, excavations, drilling and temporary stockpiling, will be contained and treated prior to release or discharge.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	There are 8 proposed water crossings of artificial drains on sites where a 10m buffer will be imposed during the proposed works. Where works are proposed within the buffer zone, i.e. at watercourse crossings additional mitigation measures will be proposed.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	The proposed spoil storage area is located outside of the delineated 50m hydrological buffer zone which was applied to EPA mapped watercourses. During the initial placement of subsoil, silt fences, straw bales and biodegradable matting will be used to control surface water runoff from the storage area.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	Where applicable the vegetative topsoil layer of the spoil storage area will be rolled back to facilitate placement of excavated spoil, following which the vegetative topsoil later will be reinstated. Where reinstatement is not possible, the spoil storage area will be sealed with a digger bucket and seeded as soon as possible to reduce sediment entrainment in runoff.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	Drainage from the spoil storage area will ultimately be routed to an oversized swale and a number of stilling ponds with appropriate storage and settlement designed for a 1 in 10 year return period before being discharged to the onsite watercourses.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	Method statements for watercourse crossings will be prepared at the construction stage and submitted to the ECoW for prior approval, and incorporation in the works program. All banksides in the vicinity of the new crossings will be fully reinstated with vegetation cover as quickly as possible using only native species appropriate to the existing environment.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2- Peat Stability	The following will be required to minimise any risk of landslides and/or peat movement occurring; • The use of floating tracks in areas where there is deeper peat (>1m). • Works will be limited to the development footprint as far as practical (vehicle movements, personnel movements, temporary storage, etc) and otherwise avoiding areas of elevated risk or close to sensitive receptors. This includes avoiding the area to the west and south of T2. • No temporary stockpiles will be positioned or placed on areas of peat which have not been assessed or are indicated as being geo-hazards, particularly in areas of unacceptable factor of safety / stability including to the west and south of T2. • No temporary stockpiles will exceed 1 m.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• No permanent stockpiles will remain on site following reinstatement work. Any material not reused on site will be removed to the designated permanent storage location. • Stockpiles at the permanent storage location will not exceed 2m for peat and 3.5m for soil. • Earthworks will not occur during sustained or intense rainfall events. • All works are to be supervised and monitored by a competent person (e.g. Geotechnical Engineer) throughout the construction phase. • Monitoring of the spoil storage area, particularly during construction, but also in the first 5 years post construction. • Currently most of the western side of the permanent spoil storage area is waterlogged. Drainage will be constructed in the permanent spoil area. • Retention berms will be used at the edge of the permanent storage location to prevent any movement of material from the storage location and mitigate against high organic material entering the surrounding surface water network. Settlement ponds and drainage will surround the berms. • The stone retention berm will be brought down to firm ground, with peat and soft waterlogged soil removed. • The site is to be monitored at a reasonable frequency during the operational phase of the proposed development. The frequency of monitoring during the operational phase will be conducted at a high frequency (e.g. weekly) during the initial months and will reduce gradually (e.g. monthly) over the following year minimum, or until site conditions are observed to be stable. • The spoil material at the permanent storage will need to dry out over a number of years to increase the shear strength. Therefore, the permanent spoil deposition area will require additional monitoring, including restricted access following the construction phase until the storage area is deemed to be stable.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.2	For abnormal load deliveries on the TDR, steel plates are to be placed along the road in ecologically sensitive areas (where the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			route traverses unprotected watercourses on local roads), resting against the existing carriage way and supported on the verge by sandbags. This includes three TDR river crossings (i.e., the GOWERHASS TULLAGOWER, and BRISLA EAST stream) . An Ecological Clerk of Works ("ECoW") will be employed from the commencement to completion of construction works and will be onsite to oversee the crossings of the watercourses during the turbine deliveries.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.3- Sediment-laden Runoff and Contamination by Pollutants	During the construction phase the appointed contractor(s) will ensure that the following mitigation is adhered to in line with IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters:• All site drainage, as described in the SWMP (Appendix B of the CEMP) and Chapter 9 Hydrology, Section 9.7.2 and shown on associated planning drawings, will be directed through either sediment traps, settlement ponds and/or buffered drainage outfalls to ensure that total suspended solid levels in all waters discharging to any watercourse will not exceed 25mg/l (IFI, 2016). All construction site run-off will be channelled through a stilling process to allow suspended solids to settle out and through a spill-containment facility prior to discharge. • Daily monitoring of all sediment traps and settlement ponds will be undertaken by the Environmental Manager or Ecological Clerk of Works to ensure satisfactory operation and/or maintenance requirements. A full specification for the water quality monitoring is presented in the CEMP (see Appendix .2.1) • The storage of hydrocarbons etc., will be undertaken in accordance with current best practice and detailed within Section 9.7.2.4, Chapter 9 • All machinery operating at the Site will be fully maintained and routinely checked to ensure no leakage of oils or lubricants occurs. • Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature and where possible, all refuelling on site will be within the temporary compound within the dedicated re-fuelling area. Only essential refuelling will be completed outside of the dedicated refuelling area via use of a mobile bowser, drip kits, and qualified personnel. Any		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			extensions to existing drainage culverts on the Site Access Roads will be undertaken in dry conditions and in low flow. During the culvert installation and associated construction work, double silt fences shall be installed immediately downgradient and downstream of the construction area for the duration of the construction phase. • No batching of wet-cement products will occur onsite. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place (see Chapter 9, Section 9.7.2.5 for further details).• Raw or uncured waste concrete will be disposed of by removal from the Site and returned to the source location or disposed of appropriately at a suitably licensed facility.• Where concrete is delivered onsite, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. A dedicated bunded area will be created to cater for concrete wash-out and this will be located in the Temporary Construction Compound.• An emergency plan for the construction phase to deal with accidental spillages is included within the Appendix A of the CEMP. Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.• Re-seeding / re-vegetation of all areas of bare ground or the placement of geo-jute (or similar) matting will take place prior to the operational phase to prevent silt-laden run-off. Seed mixes will contain only suitable native species of plant that occur in the local area. • Silt traps erected during the construction phase within roadside and artificial drainage will be replaced with stone check dams for the lifetime of the project. These stone check dams will only be placed within artificial drainage systems such as roadside drains and not in natural streams or drainage lines.• A full review of construction stage temporary drainage will be undertaken by the Developer (in conjunction with the Project Hydrologist/ Site Engineer and the Project Ecologist) following the completion of construction, and drainage removed or appropriately blocked where this will not interfere with infrastructure.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.3- Horizontal Directional Drilling	• The HDD works are described in detail in the Chapter 2: section 2.5.10.2 & Appendix 2.1, as well as in Chapter 9, section 9.7.2.5. • During the HDD processes there is a risk of leakages of drilling fluids which can have toxic effects on aquatic biota (depending on the type of lubricant used). • For this Project, 'Clearbore' or a similar environmentally friendly drilling fluid product will be used during the HDD process. Clearbore is produced using free flowing polymers and is designed to instantly break down and become chemically destroyed in the presence of small quantities of calcium hypochlorite. At normal usage, the product is not toxic to aquatic organisms and is biodegradable. • The following general mitigations will be implemented during the directional drilling works: o No in-stream works will be permitted. o Works shall not take place at periods of high rainfall and shall be scaled back or suspended if heavy rain is forecast. o A floating hydrocarbon boom and spill kit will be available. o Plant will travel slowly across bare ground at a maximum of 5 km/hr. If truck rutting is observed, then bog mats or rolling road will be employed. o Silt fencing will be erected at a setback distance of 5 m from the works during excavation. o Any excess construction material shall be removed from the works areas and disposed of in a fully licensed landfill. o No re-fuelling of machinery will take place on site or within 50 metres of any watercourse. o All construction workers will be given a toolbox talk addressing the environmental topics concerning the drilling prior to commencement of construction. o Also, the Inland Fisheries Ireland published guidelines relating to construction works along water bodies entitled 'Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites" will be adhered to during works at watercourses.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.3- Trenching	Any excess spoil from trenches in public roadways will be removed as it is excavated and transported to a licenced facility. A silt fencing filtration system will be installed on all existing drainage channels for the duration of the cable construction to prevent contamination of any watercourse		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.3- Clear Felling	• All of the proposed felling as part of the Project at the Blade Transfer Area is located outside of the 50m self-imposed hydrological buffer zone, therefore no felling which will occur in close proximity to any EPA mapped watercourse. The large distance between the felling area and sensitive aquatic zones means that any poor-quality runoff arising from the felling area can be adequately managed and attenuated prior to reaching the primary drainage routes. • Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. • All machinery will be operated by suitably qualified personnel. • Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works. • Machines will traverse the site along specified off-road routes (referred to as racks). • The location of racks will be chosen to avoid wet and potentially sensitive areas. • Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall. • Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground. • In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction. • Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses. • Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. • Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites. • Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff. • Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required. • Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors. • Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Felling will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.2.3- Drain Inspection and Maintenance	• Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines. • Inspection of all areas reported as having unusual ground conditions. • Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. Ideally the pre-felling inspection will be carried out during rainfall. • Following tree felling all main drains will be inspected to ensure that they are functioning. • Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground. • Culverts on drains exiting the site, if impeded by silt or debris, will be unblocked. • All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.		
Soil Erosion and Degradation	Chapter 8 Soils and Geology	8.5.2.5	Erosion and degradation of exposed soils will occur primarily during the construction phase. Mitigation against the potential effects, includes: • Limiting the amount of exposed soil at any one time. • Limiting vehicular movement to the development footprint as far as practicable. • Ceasing construction activities during periods of sustained significant rainfall events, or directly after such events. • Covering exposed temporary stockpiles with plastic sheeting during periods where works have temporarily ceased (e.g., weekends / overnight) and ahead of heavy rainfall / storm alerts. • Where possible when excavating peat, the upper vegetative		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			layer will be stored separately from subsoil and with the vegetation part of the sod facing upwards to encourage growth of plants and vegetation at the surface of the landscaped peat. These measures will prevent the erosion of peat in the short and long term. • Reusing soils and subsoils as quickly as possible. • Any areas not required for operation will be reinstated, including drainage, to minimise future erosion of the soils. • Following the construction phase, temporary areas and drainage will be reinstated and revegetated so as to minimise future erosion of the soils. • No stockpiles will remain on site following the construction phase of the Project. • Peat on site will be managed as per the Peat Spoil Management Plan (Appendix 2.1 CEMP – Appendix C).		
Subsoil and bedrock removal	Chapter 8 Soils and Geology	8.5.2.6	The designated Spoil Storage Area has a capacity of 44,928m3 for the estimated excavation quantities (Table 2.7, Appendix 2.1 CEMP – Appendix C). Refer to The Peat Spoil Management Plan (Appendix 2.1 CEMP – Appendix C) for additional detail on the management of peat. • All soil and subsoil types or horizons identified construction, will be treated as separate materials and arisings separated accordingly. This includes, for example acrotelm peat, catotelm peat, topsoil, clays, subsoils, weathered rock. Therefore, during reinstatement works, the soil profile can be returned to as close to baseline as possible with material in identified soil horizons. • Peat material excavated will be reused as backfill in areas previously excavated as much as possible, and/or for reinstatement works elsewhere on the Site. These areas include exposed areas around infrastructure such as slopes or graded ground around Site access tracks, turbine hardstands and foundations. Excavated peat will also be reinstated in degraded cutaway bog. To facilitate this, the acrotelm (living layer) and the catotelm (lower layer), will be treated as two separate materials. Catotelm peat will be used to backfill, for example in the working space around turbine foundations. Acrotelm peat will be used as a dressing on top of deposited		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			catotelm peat in order to promote and re-establish flora and ensure the acrotelm layer becomes relatively cohesive in terms of localised peat stability (vegetated). • While excavated bedrock is not expected on site, if it is encountered it will be re-used on site wherever possible for construction of site access tracks and/or turbine hardstands or as ballast on top of turbine foundations. Using the local bedrock as fill will ensure that effects to hydrochemistry are minimised.		
Soil Contamination	Chapter 8 Soils and Geology	8.5.2.7	• As discussed, construction activities will be restricted to the footprint of the development, therefore the potential for contaminants reaching soils is likely limited to the footprint of the development or construction area. • Dedicated, bunded storage areas will be used for all fuels or hazardous substances. • Any and all contaminants including any contaminated soil will be removed from the site in an appropriate manner if and when they should be produced or observed, and suitable remediation work undertaken. • A suitably qualified Resident Engineer will be present on site to supervise construction activities. • In the event of a significant contamination or pollution incident e.g., discharge or accidental release of hydrocarbons / fuel, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. If necessary, the relevant authorities will be notified, and stakeholders will also be promptly informed.		
Release of Hydrocarbons	Chapter 8 Soils and Geology	8.5.2.7.1	• Any vehicles coming onto the site will be required to be inspected and cleaned before leaving the temporary construction compound and advancing to the construction area. Machines will be inspected twice a day during the day to check for leaks. • Onsite re-fuelling of plant and machinery will be carried out using a mobile double skinned fuel bowser: • The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located;		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. • The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. • All machinery will carry a spill kit. In the event of an accidental spill of hydrocarbons, contamination occurrences will be addressed immediately (as outlined in the CEMP). This includes the cessation of works in the area of the spillage until the issue is resolved. No materials contaminated including soils will be left on the site. With appropriate environmental engineering controls and measures, this potential risk can be significantly reduced.		
Imported aggregate	Chapter 8 Soils and Geology	8.5.2.7.2	To mitigate against the potential effects of importing contaminated aggregate to the land and soils, only verified clean, inert material with an Article 27 declaration will be used. A list of local quarries is provided in Table 2.5, Chapter 2 as indicative of where the material may come from. Imported rock will be locally sourced and conform to relevant standards, it will not change the baseline conditions.		
General Stability	Chapter 8 Soils and Geology	8.5.2.8.1	An experienced civil engineer / geotechnical engineer / engineering geologist will be employed during the construction phase to monitor excavation activities, to verify that safety standards are being met and monitor for any potential stability issues, particularly in areas of deep peat or where there are deeper excavations. Emergency responses to potential stability incidents have been assessed and established to form part of the CEMP, Emergency Response Plan. Construction activities will not occur during periods of sustained significant rainfall events, or directly after such events. Vehicular movements will be restricted to the footprint of the development.		
Stockpile Stability	Chapter 8 Soils and Geology	8.5.2.8.2	• Short term stockpilings will be limited to the footprint of the development, outside of any sensitive buffers, slopes or areas		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			which are indicated as high risk. Stockpiling will only in areas which have been risk assessed. • No stockpiles will be placed in the area to the west and south of T2. • Short term temporary stockpiles will be limited to 1m height and removed for reuse/remediation purposes or transported to the designated Spoil Storage Area where the height will be 2m for peat and 3.5m for soil. • Stockpiles will have side slopes battered back to a safe angle of repose. • Exposed temporary stockpiles will be covered in plastic sheeting during periods where works have temporarily ceased (e.g., weekends / overnight) and ahead of heavy rainfall / storm alerts.		
Designated Spoil Storage Area	Chapter 8 Soils and Geology	8.5.2.8.3	Surplus excavated peat will be stored in the designated Spoil Storage Area to the east of the windfarm site. Prior to construction, this area will be drained with new drainage constructed.• Retention berms will be used at the edge of the permanent storage location to prevent any movement of material from the storage location and mitigate against high organic material entering the surrounding surface water network. Silt fencing will surround the berms. This a specific and appropriate measure for peat storage.• The stone retention berm will be brought down to firm ground, with peat and soft waterlogged soil removed.• This permanent storage area will be topped with the excavated top surface layer of acrotelm peat and topsoil excavated from that area to encourage rapid revegetation.• The Spoil Storage Area will be monitored daily during the construction phase. • The Spoil Storage Arae will drain to an appropriately sized settlement pond before discharging to an existing drain as detailed in the Surface Water Management Plan – Appendix 2.1 -CEMP – Appendix B and shown on Drawing No. 6778-JOD-MM-XX-DR-C-1401.		
Peat Stability	Chapter 8 Soils and Geology	8.5.2.9	• In those parts of the Site where excavation may intercept areas of peat that are >1.0m depth, a geotechnical engineer/engineering geologist will be onsite to supervise and manage the excavation works and confirm the necessity for		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			supporting newly excavated peat exposures or redirect initial construction phase drainage to maintain ground stability, particularly around T2. • Peat will only be stockpiled temporarily in areas of thin or absent peat and only in areas which have been assessed for stability by a suitably experienced geotechnical engineer. Peat will be stockpiled no higher than 2m and will follow the recommendations set out in the (NRA, 2014). • No temporary stockpiles will be positioned or placed on areas of peat which have not been assessed or are indicated as high risk, including to the south and west of T2. • In areas of saturated peatlands, prior to excavation, drains will be established to effectively drain grounds prior to earthworks. Such drains will be positioned at an oblique angle to slope contours to ensure ground stability. Drains on areas of the Site with minimal risk of bog failure as identified by Site Investigations will be positioned at a more acute angle to the slope contour in order to reduce the velocity of surface water drainage. • Draining water from the construction area will be done through advanced dewatering techniques. In particular, ponding of water will not be allowed to occur in recent excavations, particularly in any areas encountered where peat is >1m deep. All deliberate or incidental sumps will be drained to carry water away from the sump following rainfall to the nearest stilling pond via the constructed drainage network. • Groundwater level (pore water pressure) will be kept low at all times (excavation dewatering) to avoid ground stability risks (subsidence) associated with peat and careful attention will be given to the existing drainage and how structures might affect it. • Vehicular access to any areas of deep peat (>1m) during construction will be restricted to low ground pressure vehicles, with all construction vehicles travelling on existing access tracks whenever possible. • In the unlikely event of a peat stability issue, all ongoing construction activities at the particular area of the Site and all		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			ongoing activities in the vicinity will cease immediately. The assigned geotechnical supervisor will inspect and characterise the issue at hand, before advising on the corrective measures to be implemented. • Provision for a peat stability monitoring programme to identify early signs of potential bog slides (pre-failure indicators, for example cracks forming). This will be done in line with Scottish Governments' Guidance (2017).		
Earthworks	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Presented below are temporary and long-term drainage control measures that will be utilised during the construction phase. As stated above there is an existing drainage network at the Site which comprises of peat and agricultural drains. The measures outlined below will be used in conjunction with the existing drainage network to ensure the protection of all rivers and downstream watercourses. Source controls: • Interceptor drains, diversion drains, erosion and velocity control measures such as the use of sand bags, oyster bags filled with gravel, filter fabrics and other similar/equivalent or appropriate systems. • Small working areas, covering temporary stockpiles, weathering off temporary stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. In-Line controls: • Interceptor drains/swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, temporary pumping systems, settlement ponds, or other similar/equivalent or appropriate systems. Treatment systems: • Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			proprietary settlement systems such as "Siltbuster", and/or other similar/equivalent or appropriate systems.		
Earthworks	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	• Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed wind farm drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion. • Temporary silt traps will be placed in the existing drains downstream of construction works, and these will be diverted into proposed interceptor drains, or culverted under/across the works area. • During the operational phase of the Wind Farm, runoff from individual turbine hardstanding areas will be not discharged directly into the existing drainage network but discharged locally at each turbine location through field drains, main drains, and existing settlement ponds. • Buffered outfalls which will be numerous over the Site will promote percolation of drainage waters across the bog surface and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site. • Velocity and silt control measures such as check dams, sandbags, oyster bags, straw bales, silt fences will be used during the upgrade construction works. • Existing culverts will be lengthened where necessary to facilitate access road widening.		
Pre-Commencement Temporary Drainage Works	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Prior to the commencement of road upgrades (or new road/hardstand or turbine base installs) the following key temporary drainage measures will be installed: • All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps. • Clean water diversion drains will be installed upgradient of the works areas.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains. • A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.		
Pre-Commencement Temporary Drainage Works	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Silt Fences: Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to the existing drainage network of sand and gravel-sized sediment, released from the excavation of mineral sub-soils of glacial and glacio-fluvial origin and entrained in surface water runoff. Inspection and maintenance of these structures during the construction phase will be completed and is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Silt Bags: Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the sediment is retained by the geotextile fabric allowing filtered water to pass through. Settlement Ponds: The Project footprint will be divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 10-year return period rainfall event will be calculated for each catchment. These flows will then be used to design settlement ponds for each drainage catchment. The settlement ponds will either be designed for 4.1hr or 24hr retention times used to settle out medium silt (0.01mm) and fine silt (0.004mm) respectively (EPA, 2006). Settlement ponds along Site Access Tracks and at Turbine Hardstands will have 4.1hr retention as there is additional in-line drainage controls proposed along Site Access Tracks and at hardstands. Level Spreaders and Vegetation Filters: The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			surface water runoff. They are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Wind Farm Site to provide a polishing filter for the wind farm drainage prior to reaching the downstream watercourses. Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls >check dams > silt traps > settlement ponds > level spreaders > silt fences> vegetation filters).		
Water Treatment Train	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train (sequence of water treatment processes)) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply to all of the construction phase.		
Pre-emptive Site Drainage Management:	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Earthworks will be suspended if forecasting suggests any of the following is likely to occur: • >10 mm/hr (i.e. high intensity local rainfall events). • >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, • >half monthly average rainfall in any 7 days. Prior to earthworks being suspended the following further control measures will be completed: • All open peat/spoil excavations will be secured and sealed.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Temporary or emergency drainage will be created to prevent back-up of surface runoff. • Working during heavy rainfall and for up to 24 hours after heavy events will not be allowed to ensure drainage systems are not overloaded.		
Management of Runoff from Spoil Storage Area	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	The waterlogged Spoil Storage Area will be drained to increase load bearing capacity of the underlying soil prior to constructing the edge berms which will be brought down to competent ground. A rock berm and silt fencing will be installed around the spoil storage area (Drawing No. 6778-JOD-MM-XX-DR-C-1401). The runoff from the spoil area, will be directed to an oversized swale and a number of stilling ponds with appropriate storage and settlement designed for a 1 in 10 year return period before discharge to an existing drain that flows for 640m before entering the Order 1 Durha stream. Where applicable the vegetative topsoil layer of the spoil storage area will be rolled back to facilitate placement of excavated spoil, following which the vegetative topsoil later will be reinstated. Where reinstatement is not possible, the spoil storage area will be sealed with a digger bucket and seeded as soon as possible to reduce sediment entrainment in runoff.		
Timing of Site Construction Works	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.		
Additional Measures for Works within Buffer Zone:	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	In addition to the above mitigation measures, where works are proposed within the delineated hydrological buffer zones the following additional mitigation measures will be implemented: • Double row silt fences will be emplaced immediately down-gradient of the construction areas.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Additional Measures along the GCR	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	The GCR will require excavation of cable trenches in existing roadways. These works are transient in nature with very limited excavation at any one time. Any excess spoil from trenches in public roadways will be removed as it is excavated and transported to a licenced facility. A silt fencing filtration system will be installed on all existing drainage channels for the duration of the cable construction to prevent contamination of any watercourse.		
Additional Measures along the TDR	Chapter 9 Hydrology and Hydrogeology	9.7.2.1	Verge and road strengthening (rock aggregate) along the L2036 will involve removing the verge material, placing geotextile and geogrid at the base of the verge and backfilling the verge with granular material compacted in layers. Silt fencing will be placed around works areas and at watercourse crossings steel plates will be placed on the verge for 10m each side of watercourse crossings to avoid excavation and disturbance of the existing ground		
Clearfelling	Chapter 9 Hydrology and Hydrogeology	9.7.2.2	• Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. • All machinery will be operated by suitably qualified personnel. • Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works. • Machines will traverse the site along specified off-road routes (referred to as racks). • The location of racks will be chosen to avoid wet and potentially sensitive areas. • Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			of high rainfall. • Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground. • In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction. • Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses. • Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. • Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites. • Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff. • Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required. • Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		
Silt Traps	Chapter 9 Hydrology and Hydrogeology	9.7.2.2	Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.		
Timing of Proposed Project Felling Works	Chapter 9 Hydrology and Hydrogeology	9.7.2.2	Felling will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses.		
Drain Inspection and Maintenance	Chapter 9 Hydrology and Hydrogeology	9.7.2.2	The following items will be carried out during pre-felling inspections and after: • Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines. • Inspection of all areas reported as having unusual ground conditions.• Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches will be identified. Ideally the pre-felling inspection will be carried out during rainfall. • Following tree felling all main drains will be inspected to ensure that they are functioning.• Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground. • Culverts on drains exiting the site, if impeded by silt or debris, will be unblocked.• All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.		
Dewatering	Chapter 9 Hydrology and Hydrogeology	9.7.2.3	Management of surface water and groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: • Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place. • If required, pumping of excavation inflows will prevent build-up of water in the excavation. • The interceptor drainage will be discharged to the Site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit. • There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur. • Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken. • A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available onsite for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.		
Hydrocarbons	Chapter 9 Hydrology and Hydrogeology	9.7.2.4	• During construction, where possible, all refuelling on site will be within the temporary compound within the dedicated re-fuelling area. • All plant will be inspected and certified to ensure they are leak free and in good working order prior to use onsite. • Site vehicles will be refuelled offsite where possible. • Only essential refuelling will be completed outside of the dedicated re-fuelling area but not within 50m of any watercourses. Onsite re-fuelling of plant and machinery will be carried out using a mobile double skinned fuel bowser: o The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located; o The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. o The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			o Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. o A non-permeable High-Density Polyethylene (HDPE) membrane will be provided beneath connection points to catch any residual oil during filling and disconnection. These membrane will be inspected and if there is any sign of oil contamination will be removed from the site by a specialist waste contractor. • Onsite refuelling will be carried out by trained personnel only; • A permit to fuel system will be put in place; • Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; • All fuel storage areas will be bunded appropriately for the duration of the construction phase. Fuels will be stored in the Temporary Construction Compound and bunded to at least 110% of the storage capacity of fuels to be stored. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; • Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; • The electrical control building (at the substation) will be bunded appropriately to 110% of the volume of oils that will be stored, and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; • The plant used during construction will be regularly inspected for leaks and fitness for purpose; and, • An emergency plan for the construction phase to deal with accidental spillages is included within the Construction and Environmental Management. Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.		
Release of Cement Based Products	Chapter 9 Hydrology and Hydrogeology	9.7.2.5	• No batching of wet-cement products will occur onsite. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Where possible pre-cast elements for culverts and concrete works will be used. • Vehicles will undergo a visual inspection prior to being permitted to drive into the wind farm Site to ensure that there is no excess cementitious material which could be deposited on site. • Where concrete is delivered onsite, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. A dedicated bunded area will be created to cater for concrete wash-out and this will be located in the Temporary Construction Compound. • The contractor will use weather forecasting to plan dry days for pouring concrete. • The contractor will ensure pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event. • No surplus concrete will be stored or deposited anywhere on Site. • Raw or uncured waste concrete will be disposed of by removal from the Site and returned to the source location or disposed of appropriately at a suitably licensed facility. • Where shuttering is required to be installed in order contain the concrete during pouring, it will be installed to a high standard with minimal potential for leaks. Additional measures will be taken to ensure minimal potential of leaking, these measures are the use of plastic sheeting and the use sealing products at joints.		
Wastewater Disposal	Chapter 9 Hydrology and Hydrogeology	9.7.2.6	• During the construction phase, the Project will include an enclosed wastewater management system at the temporary compound capable of handling the demand during the construction phase with 50 construction workers on site at peak. • A self-contained port-a-loo with an enclosed wastewater holding tank will be used at the on-site temporary construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			compound area, maintained by the providing contractor, and removed from the site on completion of the construction works. • Water supply for the site office and other sanitation will be brought to site and removed after use by a licensed contractor to be discharged at a suitable offsite treatment location. • Wastewater/sewerage from the staff welfare facilities located in the temporary construction compound will be collected and held in a sealed storage holding tank, fitted with a high-level alarm. The high-level alarm is a device installed in the storage tank that is capable of sounding an alarm during a filling operation when the liquid level nears the top of the tank. • All wastewater will be emptied periodically, tankered off-site by a licensed waste collector to the local Kilrush wastewater sanitation plant for treatment and disposal, or to other suitable facilities for treatment and disposal. There will be no onsite treatment of wastewater. • No water or wastewater will be sourced on the Site, nor discharged to the site.		
Morphological Changes to Surface Watercourses	Chapter 9 Hydrology and Hydrogeology	9.7.2.7	Mitigation measures for the upgrade of the existing drain crossings and new proposed drain crossings at the Site are detailed below: • The crossing upgrades and the new proposed drain crossings will be constructed using pre-cast concrete and pre-formed plastic pipe culverts and the existing banks will remain undisturbed as much as possible. • No instream excavation works are proposed in any natural watercourses and therefore there will be no direct effect on natural watercourses. • Any guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland will be incorporated into the design of the proposed crossings. • As a further precaution near stream construction work will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", that is, May to September inclusive (IFI, 2016). This time period coincides with		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			the period of lowest expected rainfall, and therefore minimum runoff rates and the risk of entrainment of suspended sediment in runoff. • During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area. There will be no batching or storage of cement allowed on-site. **Grid Connection Route** In regard to the GCR, 1 no. watercourse crossing (WC01) is proposed which will be completed via HDD or by laying the cables in the curtilage of the carriageway within the bridge. Mitigation measures in relation to HDD are detailed in Section 9.7.2.11. There are also several crossings of drains and non-EPA mapped hydrological features. All spoil generated along the public roadways along the GCR will be disposed of at a licenced facility where not suitable for reuse. The remaining spoil generated along the GCR, not located in public roads, will be disposed of in the designated spoil storage area. Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed: • All existing roadside drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps. • Culverts, manholes and other drainage inlets will also be temporarily blocked. • A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone. The following mitigation measures are proposed for the crossing works: • No stockpiling of construction materials will take place along the grid route.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• No refuelling of machinery or overnight parking of machinery is permitted in this area (within 50m of the watercourse crossings). • No concrete truck chute cleaning is permitted in this area (within 50m of the watercourse crossing). • Works will not take place at periods of high rainfall and will be scaled back or suspended if heavy rain is forecast. • Local road drainage, culverts and manholes will be temporarily blocked during the works. • Machinery deliveries will be arranged using existing structures along the public road.		
			• All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur. Any excess construction material will be immediately removed from the area and sent to a licenced waste facility or spoil storage area depending on whether it was excavated from the public roadway. • No stockpiling of materials will be permitted in the constraint zones. • Spill kits will be available in each item of plant required to complete the stream crossing. • Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required. Turbine Delivery Route With regard to the TDR, upgrades are proposed on 3 no. watercourse crossings (over the Gowerhass, Tullagower and Brisla Wast watercourses at WC02, WC03 and WC04). At these locations, steel plates will be placed on the verge for 10m each side of watercourse crossings to avoid excavation and unnecessary disturbance of the existing ground (reducing the potential for the entrainment of suspended solids in runoff). An Ecological Clerk of Works ("ECoW") will be employed from the commencement to completion of construction works and will be onsite to oversee the crossings of the watercourses during the turbine deliveries. The steel plates will only be in use for the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			duration of the turbine delivery and will be removed afterwards leaving no significant effect on the surrounding area. This approach for crossing the Tullagower stream at this part of the Doonbeg catchment for turbine delivery will have no physical effect on the watercourses and the potential for effects on the Freshwater Pearl Mussels in the lower Doonbeg catchment is negligible.		
Siltbuster	Chapter 9 Hydrology and Hydrogeology	9.7.2.10	• The Siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing does not occur. • Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system. • Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment. • Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover. • Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs).		
Directional Drilling	Chapter 9 Hydrology and Hydrogeology	9.7.2.11	• Although no in-stream works are proposed, the drilling works will only be done over a dry period between July and September (as required by IFI for in-stream works) to avoid the salmon spawning season and to have more favourable (dryer) ground conditions. • The crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance. • There will be no storage of material / equipment or overnight parking of machinery inside the 15m buffer zone. • Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the 15m buffer zone boundary. • Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the watercourse.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered. • The area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages. • Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area. • Spills of drilling fluid will be cleaned up immediately and stored in an adequately sized skip before been taken offsite. • If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e. soil and subsoil exposures created during site preparation works). • This will be completed using a shallow swale and sump down slope of the disturbed ground; and water will be pumped to a proposed percolation area at least 50m from the watercourse. • The discharge of water onto vegetated ground at the percolation area will be via a silt bag which will filter any remaining sediment from the pumped water. The entire percolation area will be enclosed by a perimeter of double silt fencing. • Any sediment laden water from the works area will not be discharged directly to a watercourse or drain. • Works will not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted. • Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse. • If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved, and the cause of the elevated source is remedied. • On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			will be carefully reinstated and re-seeded at the soonest opportunity to prevent soil erosion. • The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated. • There will be no batching or storage of cement allowed at the watercourse crossing. • There will be no refuelling allowed within 100m of the watercourse crossing. • All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing.Fracture Blow-out (Frac-out) Prevention and Contingency Plan: • The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used). • The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage. • One or more lines of silt fencing will be placed between the works area and the adjacent river. • Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility. • Adequately sized skips will be used where temporary storage of arisings are required. • The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse. • This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur, then drilling will be immediately stopped. • Any frac-out material will be contained and removed off-site. • The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix. • If the risk of further frac-out is high, a new drilling alignment will be sought at the crossing location.		
Flooding	Chapter 9 Hydrology and Hydrogeology	9.7.2.13	The project EM (Environmental Manager) or the site ECoW will be responsible for monitoring weather forecasts during the construction phase. There will be a 24-hour advance		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			meteorological forecasting (Met Eireann download) linked to a trigger-response system. When a pre-determined rainfall trigger levels is exceeded (e.g., sustained rainfall (any foreseen rainfall event longer than 4 hour duration) and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Eireann), planned responses will be undertaken.• Cessation of all construction works until the storm event, including the storm runoff has passed. All construction works will cease during storm events such as yellow warning rainfall events. Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions e.g. dewatering of standing water in open excavations, etc.• Exposed soils/peat (exposed temporary stockpiles) will be covered with plastic sheeting during all relatively heavy rainfall events and during periods where works have temporarily ceased before completion at a particular area (e.g., overnight and weekends).With regards to the fluvial flood zones at the Site, a managed retreat from the fluvial flood zones will be implemented in the event of a high intensity rainfall event and/or weather warning related to rainfall. This will include the following:• Any areas where soil/subsoil is exposed at the surface will be compacted firmly with a digger bucket of a suitably sized excavator.• Open trenches will be backfilled and compacted.• All oils, fuels and waste material will be removed from the flood zones.• Existing sediment control measures will be removed, as these may be washed away and deposited elsewhere by the floodwaters.• Site access tracks will be scraps and any excess soft material will be removed from the flood zones.• All plant, machinery and equipment will be removed from the flood zones.		
Doonbeg River Freshwater Pearl Mussel Sensitive Area	Chapter 9 Hydrology and Hydrogeology	9.7.2.16	Upgrades are proposed on 3 no. watercourse crossings (over the Gowerhass, Tullagower and Brisla East watercourses). At these locations, steel plates will be placed on the verge for 10m each side of watercourse crossings to avoid excavation and disturbance of the existing ground. An Ecological Clerk of Works ("ECoW") will be employed from the commencement to		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			completion of construction works and will be onsite to oversee the crossings of the watercourses during the turbine deliveries. The steel plates will only be in use for the duration of the turbine delivery and will be removed afterwards leaving no significant effect on the surrounding area. This approach for crossing the Tullagower stream at this part of the Doonbeg catchment for turbine delivery will have no physical effect on the watercourses and the potential for effects on the Freshwater Pearl Mussels in the lower Doonbeg catchment is negligible.		
Noise	Chapter 10 Noise	10.13.1	No significant construction noise effects have been identified. Therefore, no specific mitigation measures are required. However, general guidance for controlling construction noise through the use of good practice given in BS 5228 will be followed. Construction and Decommissioning of the Development shall be limited to working times given and any controls incorporated in any planning permission. During the Decommissioning phase of the Development, noise levels are likely be no more than predicted in Table 10.15, however, it is envisaged that decommissioning will be of shorter duration. Any legislation, guidance or best practice relevant at the time of decommissioning will be complied with. Construction and decommissioning is a temporary day time activity.		
Air	Chapter 12 Air and Climate	12.2.7	The main potential effect during the construction phase of the Development will be from dust nuisance at sensitive receptors close to the Site. The contractor will be contractually required to follow best practice construction procedures to prevent dirt and dust being transported onto the local road network and to minimise vehicle exhaust emissions. All mitigation measures detailed and assessed in this EIAR and outlined in this CEMP will be implemented on site. Best practice site control measures will comprise the following: • Site access tracks will be upgraded and constructed during the initial phases. These tracks will be surfaced with graded aggregate, which compacts to reduce dust generation.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Approach roads and construction areas will be regularly monitored and maintained, including routine sweeping and cleaning, to prevent the buildup of mud. This will help prevent mud from migrating around the site, onto the public road network, and into roadside drains. Wheel wash facilities will be provided, managed, and maintained near the site entrance to prevent mud and dirt from being transferred onto the public road network. The wheel wash will be located outside the 50m watercourse buffer zone. • Public roads along the construction haul routes will be inspected and cleaned daily. In the unlikely event that dirt/mud is identified on public roads, the roads will be cleaned. The wheel wash facility will be investigated and the problem fixed to prevent this from happening again. • During periods of dry and windy weather, there is potential for dust to become friable and cause nuisance to nearby residences and users of the local road network. This requires wetting material and ensuring water is supplied at the correct levels for the duration of the work activity. The weather will be monitored so that the need for damping down activities can be predicted. Water bowsers will be available to spray work areas (Turbine Hardstand areas and Grid Connection route) and construction haul route roads to suppress dust migration from the Site. • Vehicles delivering materials to the Site will be covered appropriately when transporting materials that could result in dust, e.g., crushed rock or sand. • Exhaust emissions from vehicles operating within the Site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery. • All machinery when not in use will be turned off and stored in a secure, bunded location (e.g. construction compound). • Ready-mix concrete will be delivered to the Site; no batching of concrete will be permitted on Site. Only washing out of chutes will take place on Site and this will be undertaken at a		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			designated concrete washout facility at the contractor's Temporary Construction Compound. The concrete washout facility is a lined containment system designed to prevent run-off into soil, surface water or groundwater. • Speed restrictions of 15 km/h on Site access tracks will be implemented to reduce the likelihood of dust becoming airborne. Consideration will be given to how Site speed limits are policed by the Contractor and referred to in the toolbox talks. • Good practice will be applied and care will be taken with stockpiled materials to minimise their exposure to wind; stockpiles will be covered with geotextiles layering and damping down will be carried out when weather conditions require it. • Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. • An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the project and geotechnical services and will be retained throughout the construction phase, including monitoring and supervision of construction activities on a regular basis. The methodology statement will be signed off by a suitably qualified Geotechnical Engineer. • A complaints procedure will be implemented on Site where complaints will be reported, logged and appropriate action taken. • Careful management of the L6132 is essential, as sections of this road are within the Doonbeg catchment, which supports a viable population of Freshwater Pearl Mussels. Excessive sweeping or washdown of solids from the road could result in the deposition of sediment into small streams, potentially affecting water quality. Particular attention will be given to this route to ensure that mud and silt do not accumulate, preventing washdown into the local natural drainage system.		
Climate	Chapter 12 Air and Climate	12.5.5	• All machinery when not in use will be turned off. • Exhaust emissions from vehicles operating within the Site, including trucks, excavators, diesel generators or other plant		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery. • Use of local quarries, materials suppliers and waste facilities will be used, as outlined in Chapter 16: Traffic and Transport, minimising travel distances • A robust Traffic Management Plan (Appendix 16.2) has been developed, utilising the most direct routes where possible. This Plan will be updated to reflect project needs.		
Archaeology	Chapter 14 Archaeology and Cultural Heritage	14.5	Ground works during the Construction phase of the Development will be subject to archaeological monitoring by a suitably qualified archaeologist under licence by the National Monuments Service. In the event that any archaeological features are identified during monitoring they will be recorded and then securely cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation in situ (by avoidance) or preservation by record (by archaeological excavation). The appointed archaeologist will supervise the establishment of a fenced off exclusion zone located 20m from the outer extent of ringfort (CL057-037----). The sub-surface remains of a levelled enclosure (CL057-023----) are located immediately outside the north end of the Site boundary. A fenced off archaeological exclusion area will also be established within the area of the Site to the south of this enclosure which will extend for 20m from its recorded location. There are no guidance criteria for the extent of development exclusion areas around archaeological sites and the extent of these 20m exclusion areas are based on professional judgement which has been informed by the results of desktop studies and field surveys carried out as part of this assessment. The boundary of the spoil retention area within the areas to the north and west of the potential archaeological features will also be fenced off during the construction phase. These fenced off exclusion areas will be clearly signed as 'no entry' locations for the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			duration of the construction phase and no activities will occur within their confines including, but not limited to, ground works, construction traffic, storage or compounds.		
Traffic and Transport	Chapter 16 Traffic and Transport	16.4	Although no significant effects have been predicted, the proposed mitigation measures have been incorporated into the design to maintain the highest standard of road safety, minimise delay and disruption to all public road users, and to comply with statutory regulations • The appointed Contractor shall inform local residents, businesses and emergency services of proposed works and road closures in advance of any works taking place on Site. Access shall be maintained to properties at all times during the course of the works. The Contractor will appoint a project coordinator who will be the main point of contact for matters relating to traffic which will affect the general public, local businesses and emergency services. An out of hours contact number shall also be provided. • Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána, TII, PPP operators and all relevant Local Authorities to obtain all necessary abnormal load permits and discuss the requirement for a Garda escort. The Applicant will also outline the intended timescale for deliveries and efforts can be made to avoid peak times such as school drop off times, church services, peak traffic times where it is considered this may lead to unnecessary disruption, and abnormal loads may travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents at sensitive locations along the affected route will be notified of the timescale for abnormal load deliveries. • Prior to delivery of abnormal loads, the Applicant or their representatives, will consult with TII, PPP operators and all Local Authorities through which the abnormal loads will pass and agree the specification for any enabling works to be carried out on the Turbine Delivery Route. • Prior to the transportation of turbine components on the national road network. the Developer will submit details of the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			turbine components to TII bridge management section and determine the requirement for an abnormal load assessment to ensure that structures on the national road network are not adversely affected. • Prior to the delivery of turbine components, a survey of the Turbine Delivery Route will be undertaken to identify if any overhead lines or height restrictions at toll booths will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered. • Prior to the delivery of turbine components, a trial run shall be carried out between Shannon Foynes Port and the proposed Development entrance using an abnormal load vehicle with a retractable load gauge to determine that abnormal load vehicles can transverse the route without undue delay and disruption to public road users. • During the construction and decommissioning phases, road works signs in accordance with the requirements of Chapter 8 of the Traffic Signs Manual will be erected at all the proposed Development entrances and at all locations on the Grid Connection route and Turbine Delivery Route which are being modified to facilitate turbine delivery. Details of signage are given in the Traffic management plan in Appendix 16-2. • Wheel cleaning equipment will be used at all site entrances with the public road to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the Site. • To reduce dust emissions, vehicle containers/loads will be covered during both entrance and egress to the Site where required. • All dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas may be employed. • Access to the construction site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Site by security/Site personnel on entering and exiting the site. • All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. • A condition survey of the road network in the vicinity of the site entrances will be carried out and agreed with Clare County Council prior to any works being carried out on site. • All works on the public road network will be carried out using an approved road opening licence and traffic management plan. • All wind farm vehicles shall have roof mounted flashing beacons when working on the public road network or will use their hazard lights within the Site. • A speed limit of 25 km/h shall apply to all vehicles within the Site.		
NIS		3.4.1.2	Prior to the commencement of road upgrades (or new road/hardstand or turbine base installs) the following key temporary drainage measures will be installed: • All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps. • Clean water diversion drains will be installed upgradient of the works areas. • Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains. • A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. The following silt control measures will be used as required throughout the construction phase of the Project: **Silt Fences:** Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to the existing drainage network of sand and gravel-sized		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			sediment, released from the excavation of mineral sub-soils of glacial and glacio-fluvial origin and entrained in surface water runoff. Inspection and maintenance of these structures during the construction phase are critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. **Silt Bags:** Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. **Settlement Ponds**: The Project footprint will be divided into drainage catchments and stormwater runoff rates based on the 10-year return period rainfall event will be calculated for each catchment. These flows will then be used to design settlement ponds for each drainage catchment. The settlement ponds will either be designed for 4.1hr or 24hr retention times used to settle out medium silt (0.01mm) and fine silt (0.004mm) respectively (EPA, 2006). **Level Spreaders and Vegetation Filters:** The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. This makes use of the natural vegetation of the Wind Farm Site to provide a polishing filter for the wind farm drainage prior to reaching the downstream watercourses. **Water Treatment Train:** If the discharge water from construction areas fails to be of a high quality, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply to all of the construction phase.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Weather Warnings: The works programme for the construction stage of the Proposed Development will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of peat/subsoil or peat stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. (available forecasting systems are detailed in Chapter 9: section 9.7.2.1) **Management of Runoff from Spoil Storage Area:** It is proposed that excavated peat/subsoil will be stored in a spoil storage area to the east of the L2034 or used for landscaping throughout the Site. The proposed spoil storage area is located outside of the delineated 50 m hydrological buffer zone which was applied to EPA mapped watercourses. As described in Chapter 8, Section 8.5.2.3, the waterlogged Spoil Storage Area will be drained and appropriate drainage added to increase load bearing capacity of the underlying soil prior to constructing the edge berms which will be brought down to competent ground.		
NIS		3.4.1.2	Additional Measures for Works within Buffer Zone: In addition to the above mitigation measures, where works are proposed within the delineated hydrological buffer zones the following additional mitigation measures will be implemented: • Double row silt fences will be emplaced immediately down-gradient of the construction areas.		
NIS		3.4.1.2	**Additional Measures along the GCR:** The GCR will require excavation of cable trenches in existing roadways. These works are transient in nature with very limited excavation at any one time. Any excess spoil from trenches in public roadways will be removed as it is excavated and transported to a licenced facility. A silt fencing filtration system will be installed on all existing drainage channels for the duration of the cable construction to prevent contamination of any watercourse.		
NIS		3.4.1.2	**Additional Measures along the TDR**: Verge and road strengthening (rock aggregate) along the L2036 will involve removing the verge material, placing geotextile and geogrid at		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			the base of the verge and backfilling the verge with granular material compacted in layers. Silt fencing will be placed around works areas and at watercourse crossings steel plates will be placed on the verge for 10 m each side of watercourse crossings to avoid excavation and disturbance of the existing ground.		
NIS		3.4.1.3	**Mitigation for use of Cement-based Products**• No batching of wet-cement products will occur onsite. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place.• Where possible pre-cast elements for culverts and concrete works will be used.• Vehicles will undergo a visual inspection prior to being permitted to the wind farm Site to ensure that there is no excess cementitious material which could be deposited on site.• Where concrete is delivered onsite, only the chute will be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. A dedicated bunded area will be created to cater for concrete wash-out and this will be located in the Temporary Construction Compound.• The contractor will use weather forecasting to plan dry days for pouring concrete.• The contractor will ensure the pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event.• No surplus concrete will be stored or deposited anywhere on Site.• Raw or uncured waste concrete will be disposed of by removal from the Site and returned to the source location or disposed of appropriately at a suitably licensed facility.• Where shuttering is required to be installed in order contain the concrete during pouring, it will be installed to a high standard with minimal potential for leaks. Additional measures will be taken to ensure minimal potential of leaking, these measures are the use of plastic sheeting and the use of sealing products at joints.		
NIS		3.4.1.4	**Mitigation for use of Hydrocarbons** • During construction, all refuelling on site will be within the temporary compound within the dedicated re-fuelling area.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• All plant will be inspected and certified to ensure they are leak free and in good working order prior to use onsite. • Site vehicles will be refuelled offsite where possible. • Only essential refuelling will be completed outside of the dedicated re-fuelling area but not within 50m of any watercourses. Onsite re-fuelling of plant and machinery will be carried out using a mobile double skinned fuel bowser: • Onsite refuelling will be carried out by trained personnel only; • A permit to fuel system will be put in place; aps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; • All fuel storage areas will be bunded appropriately for the duration of the construction phase. Fuels will be stored in the Temporary Construction Compound and bunded to at least 110% of the storage capacity of fuels to be stored. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; • The electrical control building (at the substation) will be bunded appropriately to 110% of the volume of oils that will be stored, and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; • The plant used during construction will be regularly inspected for leaks and fitness for purpose; • An emergency plan for the construction phase to deal with accidental spillages is included within the Construction and Environmental Management. Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.		
NIS		3.1.4.5	**Mitigation for Grid Connection Water Crossing by Trenching** • All existing roadside drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps. • Culverts, manholes and other drainage inlets will also be temporarily blocked.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone.		
NIS		3.1.4.5	**The following mitigation measures are proposed for the crossing works:** • No stockpiling of construction materials will take place along the grid route. • No refuelling of machinery or overnight parking of machinery is permitted in this area (within 50 m of the watercourse crossings). • No concrete truck chute cleaning is permitted in work area (within 50 m of the watercourse crossing). • Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast. • Local road drainage, culverts and manholes will be temporarily blocked during the works. • Machinery deliveries will be arranged using existing structures along the public road. • All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur. • Any excess construction material will be immediately removed from the area and sent to a licenced waste facility or spoil storage area depending on whether it was excavated from the public roadway • No stockpiling of materials will be permitted in the constraint zones. • Spill kits will be available in each item of plant required to complete the stream crossing. • Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required.		
NIS		3.1.4.6	**Mitigation for Horizontal Directional Drilling** • No in-stream works will be permitted. • Works shall not take place at periods of high rainfall and shall be scaled back or suspended if heavy rain is forecast. • A floating hydrocarbon boom and spill kit will be available. • Plant will travel slowly across bare ground at a maximum of		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			5k m/hr. If truck rutting is observed, then bog mats or rolling road will be employed. • Silt fencing will be erected at a setback distance of 5 m from the works during excavation. • Any excess construction material shall be removed from the works areas and disposed of in a fully licensed landfill. • No re-fuelling of machinery will take place on site or within 50 metres of any watercourse. • All construction workers will be given a toolbox talk addressing the environmental topics concerning the drilling prior to commencement of construction.		
NIS		3.1.4.7	**Mitigation for Clear-felling** • Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance. • All machinery will be operated by suitably qualified personnel. • Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works. • Machines will traverse the site along specified off-road routes (referred to as racks). • The location of racks will be chosen to avoid wet and potentially sensitive areas. • Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall. • Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat and spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground. • In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction. • Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses. • Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. • Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites. • Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff. • Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required. • Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		
NIS		3.1.4.8	**Mitigation for Bare Peat Surfaces** A comprehensive vegetation restoration programme will be implemented on disturbed peat surfaces to minimise the risk of run-off from bare peat surfaces at the end of the construction phase and to encourage revegetation. This will be achieved by removing suitable areas of the vegetated cutover bog surface		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			(cut out as sods or 'turves') within the work footprint at T02 and including the section of access track over the cutover bog. This material will be stored appropriately on-site and reused to re-instate areas around the turbine, hardstand margins and along the edges of the access track. It is noted that wet areas of the bog surface (such as along old drains) and/or undulating areas at old peat banks are unlikely to be suitable for the removal of peat turves (however, such surfaces will be removed and stored separately from sub-soils for later surface re-instatement works. The surface turves of vegetated bog will be dug out to a minimum depth of approximately 30 cm using a dumper/digger with a bucket. Care will be taken to keep the turve as intact as possible and the vegetated side upwards. The turves will be loaded to a trailer and transported to a pre-identified storage area. The storage area will be located in an area of Site (not vegetated bog) where disturbance during the storage period will not occur. The turves will be off-loaded from the trailer and placed side by side and vegetation side upwards. They will be placed in single layers, i.e. not piled on top of each other. Should storage be for prolonged periods (months), the turves may need to be watered during dry spells. When ready for placement at the finished turbine/hardstand/track, they will be lifted with a dumper and bucket and taken to the destination. Here they will be off-loaded, placed side by side on the disturbed bog surface with vegetation side up. The turves will be bedded in with the bucket of a dumper so that they form a continuous layer without gaps between them. This approach will provide almost immediate cover of the bare surfaces and is highly effective in reducing the potential for surface erosion. All of the above will be monitored by the ECoW.		
NIS		3.1.4.9	**Mitigation for Peat Stability** • Mitigation measures include limiting all works to the development footprint as far as practical (vehicle movements, personnel movements, temporary storage, etc) and otherwise		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			avoiding areas of elevated risk or close to sensitive receptors. This includes avoiding the area to the west and south of T2. • Earthworks will not occur during sustained or intense rainfall events. • All works are to be supervised and monitored by a competent person (e.g. Geotechnical Engineer) throughout the construction phase. • No temporary stockpiles will be positioned or placed on areas of peat which have not been assessed or are indicated as being geo-hazards, particularly in areas of unacceptable factor of safety / stability, including to the west and south of T2. • No temporary stockpiles will exceed 1 m. • No permanent stockpiles will remain on site following reinstatement work. Any material not reused on site will be removed to the designated permanent storage location. • Floating tracks will be used in areas where there is deeper peat (>1 m). • Stockpiles at the permanent storage location will not exceed 2 m for peat and 3.5 m for soil. • Currently most of the western side of the permanent spoil storage area is waterlogged. Drainage will be constructed in the permanent spoil area. • Retention berms will be used at the edge of the permanent storage location to prevent any movement of material from the storage location and mitigate against high organic material entering the surrounding surface water network. Settlement ponds and drainage will surround the berms/ • The stone retention berm will be brought down to firm ground, with peat and soft waterlogged soil removed. • The wind farm site is to be monitored at a reasonable frequency during the operational phase of the proposed development. The frequency of monitoring during the operational phase will be conducted at a high frequency (e.g. monthly) during the initial months and will reduce gradually (e.g. quarterly) over the following year minimum, or until site conditions are observed to be stable. • The spoil material at the permanent storage area will need to		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			dry out over a number of years to increase the shear strength. Therefore, the permanent spoil deposition area will require additional monitoring, including restricted access following the construction phase until the storage area is deemed to be stable.		
Electricity Networks	Chapter 15 Material Assets	15.6.5	• Confirmatory drawings for all existing services will be sought upon consultation with ESB Networks. • Immediately prior to construction taking place, the area where excavation is planned will be surveyed by CAT scan (sub-surface survey technique to locate any below-ground utilities) and all existing services will be verified. Temporary warning signs will be erected. • The as-built location of the installed ducts will be surveyed and recorded using a total station/GPS before the trench is backfilled to record the exact location of the ducts. The co-ordinates will be plotted on as-built record drawings for the Grid Connection cable operational phase. • Clear and visible temporary safety signage will be erected all around the perimeter of the live work area to visibly warn members of the public of the hazards of ongoing construction works.		
Air Navigation	Chapter 15 Material Assets	15.7.5	• An aeronautical lighting scheme for the Development will be agreed with the IAA and will be installed. • Details of 'as constructed' coordinates of turbines (WGS84 format), elevations and the promulgation of aeronautical data together with ground and tip height elevations at each wind turbine location will be provided to the IAA, Shannon Airport and AirNav Ireland. • The IAA, Shannon Airport and AirNav Ireland will be notified of intention to commence crane operations with at least 30 days prior notification of their erection. • All turbines should be illuminated by Type C, Medium intensity, Fixed Red. obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			light at the near Infra- Red (IR) range of the electromagnetic spectrum, specifically at or near 852 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.		
Quarries	Chapter 15 Material Assets	15.8.4	• Existing tracks have been utilised wherever possible, and the Site layout has been carefully planned to minimise the length of new track required, thereby reducing the demand for additional stone material. • The selected source quarry will be chosen based on stone that is chemically similar to the material found at the Site. This approach helps to mitigate potential hydrogeochemical impacts. • Any useable material that is won during site excavations will be reused elsewhere onsite, where appropriate.		
Waste	Chapter 15 Material Assets	15.9.7	**Concrete:**• Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Project where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Project where the use of precast concrete will be used include structural elements of the watercourse crossing (Bridge) as well as cable joint bays associated with the Grid Connection Route. Elements of the Project where the use of precast concrete is not possible include Turbine Foundations and joint bay pit excavations. Where the use of precast concrete is not possible the following mitigation measures will apply. • The acquisition, transport and use of any cement or concrete on Site will be planned fully in advance and supervised at all times. • Vehicles transporting such material will be relatively clean upon arrival on Site, that is; vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on vehicles which could be deposited on trackways or anywhere else on Site. To this end, vehicles will undergo a visual inspection prior to being permitted to drive onto the proposed Site or progress beyond the contractor's yard. Vehicles will also be in good working order.• Any shuttering installed to contain the concrete during pouring will be installed to a high standard with minimal		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			potential for leaks. Additional measures will be taken to ensure this, for example the use of plastic sheeting or other sealing products at joints.• Concrete will be poured during metrological dry periods/seasons. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. This will require limiting these works to dry meteorological conditions i.e. avoid foreseen sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any foreseen intense rainfall event (>3 mm/hour, yellow on Met Éireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Éireann. This also will avoid such conditions while concrete is curing, in so far as practical. • Ground crew will have a spill kit readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately. All contractors will comply with the Machinery Directive (Directive 2006/42/EC).• Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place. • Temporary storage of cement bound sand (if required) will be on hardstand areas only where there is no direct drainage to surface waters and where the area has been bunded e.g., using sand-bags and geotextile sheeting or silt fencing to contain any solids in run-off.• No surplus concrete will be stored or deposited anywhere on Site. Such material will be returned to the source location or disposed of off-site appropriately.		
Waste	Chapter 15 Material Assets	15.9.7	**Chemicals, Fuels and Oils** • All storage containers of over 200 litres will have a secondary containment of 110% capacity to ensure that any leaking oil is contained and does not enter the aquatic environment A Chemical and Waste Inventory will be kept. This inventory will include: • List of all substances stored on-site (volume and description). • Procedures and location details for storage of all materials listed.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			• Waste disposal records, including copies of all Waste Transfer Notes detailing disposal routes and waste carriers used. • Any tap or valve permanently fixed to the mobile unit through which oil can be discharged to the open or when delivered through a flexible pipe which is fitted permanently to the mobile unit, will be fitted with a lock and locked shut when not in use. • Sight gauges will be fitted with a valve or tap, which will be shut when not in use Sight gauge tubes, if used will be well supported and fitted with a valve. • Mobile units must have secondary containment when in use/out on Site.		
Waste	Chapter 15 Material Assets	15.9.7	**Packaging** In accordance with the waste hierarchy, packaging will be returned to the originator ahead of re-use or recycling. Where this is not possible, waste will be separated as appropriate and safely stored on Site appropriately in anticipation of recycling		
Waste	Chapter 15 Material Assets	15.9.7	**Metals** Waste metals from concrete reinforcing during construction and removal of metals during Decommissioning etc. will have commercial value and will be re-used or recycled with the appropriate licensed waste contractor		
			Operational Phase		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.1.1	Some sections of hedgerow (WL1) and coniferous plantation (WD4) removal is required to accommodate the development of the new site access tracks and buffer areas for bats. Also, NatureScot (2021) recommends a minimum 50m buffer from the blade tip to the nearest key habitat features (e.g. hedgerows) to be implemented to avoid encouraging bat activity within the 'blade-swept' area. These areas will be maintained vegetation-free during the operational life of the development. The clearance area surrounding each individual turbine was calculated using the formula presented below (after NatureScot 2021). For T1, a recommended minimum clearance distance of 87.6m from the centre of the tower was calculated.		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.2	In addition to the creation of buffers between the proposed turbines and surrounding vegetation (discussed above), reduced rotation speeds will be implemented at all three turbines when the turbines are idling, this is known as 'feathering' of idling blades. 'Feathering' of idling blades may reduce fatality rates by up to 50% and does not result in loss of output (NatureScot, 2021).		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.2	There will be 8 no. bat boxes erected at suitable locations, and outside of the clearance buffers, in consultation with a bat-licensed Ecologist. 'Woodcrete' bat boxes will be used as they are durable 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 will be installed on suitably large trees or specially installed poles. Boxes will be installed at a minimum height of 4 meters above ground level, at suitable aspects (not northern) and in locations which are inaccessible to unaided climbing and not vulnerable to artificial light or noise pollution.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.4	Although no evidence of current or historic roosting by bats was recorded along the TDR at the time of survey, the assessment was based on the design information to date and will be subject to future assessment and application, should a delay of more than 24 months occur between this survey (September 2024) and the proposed works. Surveys will be carried out according to Collins (2023). 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.		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.3	During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. The following measures will be implemented during the operational phase to ensure the ongoing protection of watercourses and water quality at the Site and in downstream reaches in regards		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			to the potential operational phase effects (downstream flood risk, runoff resulting in contamination of surface waters and wastewater contamination): • Stilling ponds will be designed to provide attenuation to greenfield run-off rates. • Monitoring of high-risk areas, including spoil storge area, flood compensation areas, on-site drainage and silt containment infrastructure • The spoil material at the permanent storage area will need to dry out over a number of years to increase the shear strength. Therefore, the permanent spoil storage area will require additional monitoring, including restricted access following the construction phase until the storage area is deemed to be stable. • The base level of turbine T1 will be set at an elevation of 9.6 mOD, which includes a 0.3-meter freeboard above the 1 in 100-year plus climate change flood level. This freeboard ensures that the turbine is not inundated during a 1 in 100-year flood event, even with climate change considerations factored in. It also ensures that the turbine can be accessed for essential maintenance during flood events if necessary. • Flood compensation areas will replace the lost flood zone capacity to ensure there is no displacement of floodwaters or increased downstream flood risk. • Culverts will maintain floodwater flow routes and prevent the blockage of natural flow paths during flood events. • The SWMP ensures effective management of surface water runoff to avoid exacerbating flooding risks. • Some of the construction phase drainage will be permanent for the lifetime of the Development and will be attenuated for greenfield run-off. As there is no direct discharge from the Project to downstream receiving waters. Mitigation for the protection of surface water during the operational phase will ensure the qualitative status of the receiving SWBs will not be altered by the Project.		
Soils and Geology	Chapter 8 Soils and Geology	8.5.3	Maintenance and monitoring during the operational phase of the Project pose similar potential effects to those associated		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			with the construction phase but to a far lesser extent. The operational team will carry out maintenance works (to site tracks, onsite substation and turbines) and will put in place control measures to mitigate the risk of hydrocarbon or oil spills during the operational phase of the wind farm. Any vehicles utilised during the operational phase will be maintained on a weekly basis and checked daily to ensure any damage or leakages are corrected. The likely significant effects on the land, soil and geology during the operational phase of the Project will be mitigated through good site practice, management of vehicular movements, hydrocarbon controls.		
Hydrology and Hydrogeology	Chapter 9 Hydrology and Hydrogeology	9.7.3.1	The operational phase drainage system will be installed and constructed in conjunction with the existing site drainage network and will include the following:• Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed into downstream drains.• Collector drains will be used to gather runoff from access roads and turbine hardstanding areas of the Site likely to have entrained suspended sediment, and channel it to new local settlement ponds for sediment settling.• On sections of access road transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/roadside drains.• Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock.• Settlement ponds, emplaced downstream of access road sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to existing drains.• Settlement ponds will be designed in consideration of the greenfield runoff rate and soil type.• All surface water runoff from the development will have to pass		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			through the proposed settlement ponds prior to release via buffered outfalls.		
Hydrology and Hydrogeology	Chapter 9 Hydrology and Hydrogeology	9.7.3.2	Proposed Flood Resilience Measures include: • The turbine finished base level will be at an elevation of 9.6 mOD which includes a 0.3m freeboard above the 1 in 100-year plus climate change flood level. This will ensure that the T1 can still be accessed for essential maintenance during flood events if required. • Analysis has shown that the volume of the proposed permanent infrastructure within the flood zone equates to 3,150m3 in a 1 in 100-year flood event plus climate change (plus 30%). The Project includes 2 no. flood compensation areas which involve reducing ground levels in the floodplain to replace the lost flood zone capacity. This will ensure that there is no displacement of floodwaters or increase in the downstream flood risk associated with the Project. • In addition, a number of culverts along access tracks within the flood zone will be installed to ensure that flood water flow routes will not be completely impeded. This will ensure that the flood hydrological regime and flowpaths are not completely blocked by the proposed access tracks and hardstands during flood events. • Furthermore, the SWMP has been designed to ensure that surface water runoff at the Site is managed effectively and does not exacerbate flood risk to the surrounding areas upstream and downstream. • The associated drainage will be attenuated for greenfield run-off, the proposed Development will not increase the risk of flooding elsewhere in the catchment. With the use of the 2 no. proposed compensation area and the proposed wind farm drainage control measures/SuDs, no additional mitigation measures are required with regard to flood risk.		
Hydrology and Hydrogeology	Chapter 9 Hydrology and Hydrogeology	9.7.3.4	It is proposed to install a sealed underground holding tank for effluent (wastewater) from the Substation compound. The tank will be routinely emptied by a licensed contractor. A level sensor will be installed in the tank which will be linked		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			to the on-site SCADA system. If the level of the tank contents rise to a predetermined 'high level' a warning will appear on the overall SCADA system for the site and automatic notification will be sent to the facility manager. A formal service agreement will be entered into with a suitably permitted waste contractor, in relation to the servicing and de-sludging of the wastewater holding tank on site. There will be no discharge of wastewater to ground at the Site, and therefore there is no potential to impact groundwater or surface water quality.		
Noise	Chapter 10 Noise	10.13.3	The Development has been designed to comply with the 2006 noise Guidelines. The operational noise emissions are predicted to be compliant and well within these guidelines with no special mitigation required apart from fitting rotors with STE which is now considered best practice. All turbines will have STE fitted as standard to reduce noise emission levels. Mitigation is not considered necessary.		
Shadow Flicker	Chapter 13 Shadow Flicker	13.4.2	Unless otherwise required by a condition of planning, the turbines will be controlled to eliminate shadow flicker at sensitive receptors in the Study Area. To mitigate shadow flicker effects, shadow flicker control modules, consisting of light sensors and specialised software, will be installed on the turbines as part of a system to prevent operation during periods when shadow flicker may occur. Appendix 13.1 contains all calculated potential shadow flicker periods for each turbine. The calculated potential shadow flicker periods will be input into the turbine control software and when the correct conditions are met e.g. the light intensity is sufficient, turbine orientation is correct etc. during these periods, individual turbines will cease operation until the conditions for shadow flicker are no longer present. These are standard, widely accepted control modules that are installed in most wind turbines		
NIS		3.4.2	Operational Phase Mitigation • The Site compound / office will house all potential pollutants within a secure bunded COSSH store for the operational phase of the Project. • All on-site wastewater treatment facilities will function in full compliance with current water quality requirements (Building		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			Regulations 2010 as amended S.R. 66:2015) to prevent nutrient loading entering aquatic environments. It is proposed to install a sealed underground holding tank for effluent from the Substation compound. The tank shall be routinely emptied by a licensed contractor.		
Decommissioning Phase					
Flora & Fauna	Chapter 6 Biodiversity	6.4.8	A Decommissioning and Restoration Plan has been prepared as part of the planning application for the Development (see Appendix 2.1 CEMP: Appendix D Decommissioning Plan). The key targets of the Plan are as follows: • Ensure decommissioning works and activities are completed in accordance with relevant updated mitigation and best practice approach presented in the accompanying Environmental Impact Assessment Report (EIAR) and associated planning documentation, and relevant surveys to accompany the works program. • Ensure decommissioning works and activities have minimal impact/disturbance to local landowners and the local community. This will relate to transport, particularly of material off site with noise and dust also impacting on receptors at time of decommissioning to a lesser extent. • Ensure decommissioning works and activities have minimal impact on the natural environment. Disturbance to habitats will be avoided and the use of existing infrastructure and drainage will ensure silt does not enter waterways. • Adopt a sustainable approach to decommissioning. This means comparing alternative methods for turbine disassembly and taking the relevant best practice approach with the least impact on the natural environment; and, • Provide toolbox talks, environmental training and awareness of sensitive receptors, informed by updated surveys and waste management within the Site for all project personnel.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.5	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. The site		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			compound will conform to the construction phase mitigation measures including those related to lighting design.		
Flora & Fauna	Chapter 6 Biodiversity	6.5.6.2	the mitigation that will be undertaken for minimising disturbance to nesting birds during construction will also be applied during the decommissioning phase (taking into account changes that may have occurred locally during the operational life of the Project).		
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.5.4	A Site-specific Decommissioning Management Plan (DMP) (Appendix D) has been developed and will be amended prior to the commencement of any Decommissioning activities. The implementation of all mitigation measures detailed for the construction phase will be adopted in full during the Decommissioning phase to ensure all such significant effects are avoided. As a minimum measure during Decommissioning, areas where freshly placed soil material as part of Turbine Foundation reinstatement work will be surrounded by silt fencing if deemed necessary until the area has naturally revegetated. Restoration of the Site following Decommissioning of infrastructure will require the prior establishment of the new baseline conditions at the Site which will have developed over the intervening 40-year life of the Project. These studies will inform any modification or additional sensitivities that may need to be factored in restoration and site-specific measures.		
NIS		3.4.3	Decommissioning Phase Mitigation Decommissioning of the proposed wind farm development will be scheduled to take place after the proposed 40-year operational life of the Project. Potential effects on European sites from the Decommissioning phase of the proposed Development are likely to be broadly similar to construction phase effects but of a reduced magnitude due to the reduced scale of the proposed works in comparison to the construction phase works. The implementation of all mitigation measures		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Audit Result	Action Required
			relevant to the protection of ground and surface waters within the wind farm Site as detailed for the construction phase will be adopted in full (as relevant) during the Decommissioning phase to ensure all such effects are avoided.		

Table 17.2: Monitoring Schedule

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Flora & Fauna	Chapter 6 Biodiversity	6.8.1	Pre-construction surveys will be carried out by an experienced bat ecologist immediately prior to the commencement of any required vegetation clearance to establish if the baseline conditions reported herein remain valid, given the potential for delays between reporting and the commencement of construction. This will ensure that any changes in site context in relation to suitability for bats will be highlighted and that any additional mitigation measures which are then required are applied.	Pre-Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.8.2	While there was no evidence of badger presence during the baseline surveys in 2023 and 2024, if three years lapse from between the planning-stage surveys and the installation of the wind turbines, it will be necessary to carry out a pre-construction survey for badger as the local distribution may have changed in that period. Such a survey would be carried out be an ecologist with experience with badgers and would focus on a 100m minimum distance of the wind farm infrastructure. Should a badger sett be located within a distance of 50m of a work area, mitigation may be required involving the closure of the sett (in consultation with NPWS) or the enforcement of a restrictive zone to prevent disturbance to underground tunnels. The surveyor would advise on the appropriate mitigation taking into account the type of sett (i.e. main, secondary, outlier) and the proximity of the works.	Pre-Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.8.3	While otter was not recorded along the section of the Moyasta River which passes alongside the site for the proposed Development, and	Pre-Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			including the Grid Connection cable route crossing, if three years lapse from between the planning-stage surveys in 2023 and 2024 and the commencement of works on site, it will be necessary to carry out a pre-construction survey for otter along the Moyasta River as the local distribution of otter may have changed in that period.			
Flora & Fauna	Chapter 6 Biodiversity	6.8.4	Pre-construction confirmatory breeding surveys will take place within suitable habitat for the following species: • Merlin • Kestrel • Snipe • Barn owl The purpose of the surveys is to establish if breeding is occurring at the time, which could be affected by disturbance during the construction phase. The surveys will take place to a distance of at up to 500m from the Development area. Surveys will be carried out by an experienced ornithologist following standard methods. Following on from the surveys, guidance will be provided, if considered necessary, to the contractor on where restrictive zones are required during the bird nesting season.	Pre-Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.8.5	a survey for the presence of Third Schedule listed invasive species will be undertaken prior to the commencement of any works. This will be carried out during the main growing season (April-September) and will focus particularly on Japanese knotweed and	Pre-Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Gunnera spp., species known to be in the study area and widespread in County Clare.			
Flora & Fauna	Chapter 6 Biodiversity	6.5.2.2	Inevitably the construction works will cause disturbance to cutover bog habitat around the turbine and hardstand for the T02 turbine and along the access road, as an area will be needed by the Contractor to facilitate the works. To minimise disturbance to the bog and to ensure good recovery, as well as to minimise areas of bare peat which would be prone to erosion, a programme of ongoing monitoring and rehabilitation will be followed during construction phase.	Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.8.6	An Ecological Clerk of Works (ECoW) will be on site for the duration of the construction phase to ensure that all mitigation measures described herein are implemented. In particular, the ECoW will monitor on a continual basis the works within the cutover bog at turbine T2 and within the Molinia meadow fields where T3 is located.	Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.2	Monitoring of proposed bat boxes will be carried out by a bat-licensed Ecologist, and relocation of any boxes with no evidence of use in the first year after construction.	Operation		
Flora & Fauna	Chapter 6 Biodiversity	6.5.5.2	All 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 with potential to be used by roosting bats to prevent disturbance to bats roosting within upon emergence and re-entry. To reduce the ecological disturbance from artificial lighting, the following guidance is recommended:	Operation		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			• Reduce non-essential external night lighting. • Lower the angle of external night lighting. • Use of LEDs, as these emit minimal ultra-violet light. • White and blue wavelengths should be avoided; wavelength will be <2,700 kelvin. • Lights should peak higher than 550nm.			
Flora & Fauna	Chapter 6 Biodiversity	6.9.1	Post-construction monitoring will focus on the cutover bog which had been disturbed by construction of T2 turbine (the Molinia meadow will be monitored through the BEMP programme). When all ground works are complete at the T02 location, a vegetation survey will take place by an ecologist. This will describe the state of the vegetation in the disturbed area and for a distance of up to 50 m beyond that where drying effects may occur as a result of the disturbance from construction works. A series of monitoring quadrats will be established to accurately describe the vegetation, including bare areas, at the time (Year 1) and in subsequent years. Details will be worked out by the ecologist, but it is likely that quadrats will be 2 m x 2 m in size for the cutover bog and will be geo-referenced and photographed. As disturbance will be limited to one area of bog, it is expected that the number of quadrats would not exceed 10. Vegetation recovery in the cutover bog area will be monitored over a period as follows: Years 1, 2, 3, 5, 10, 15, 20 and 25. Reports will be prepared for each year of monitoring and issued to Clare County Council.	Post-Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
Flora & Fauna	Chapter 6 Biodiversity	6.9.2	Post-construction fatality monitoring and activity surveys will be carried out in years 1, 2, 3, 5 and 10 post-construction. Post-construction monitoring 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 (2021) or subsequent updates.Post-construction monitoring data will be analysed and presented in report format to the planning authority. Recommendations will be made in relation to curtailment strategy if required.	Post-Construction		
Flora & Fauna	Chapter 6 Biodiversity	6.9.3	Flight activity surveys Flight activity surveys will be undertaken using the Vantage Point method (Scottish Natural Heritage 2017). The purpose of the surveys is to determine if the presence of the turbines is causing species such as hen harrier and kestrel to avoid the Site. This will use the same Vantage Points as used for the baseline EIAR surveys so that a valid comparison can be made between the two periods. The surveys will be undertaken monthly in Years 1, 2, 3, 5, 10 and 15 of the lifetime of the project (in accordance with Scottish Natural Heritage Guidance 2009). Collision searches The objective of collision monitoring and corpse search is to establish whether bird fatalities are occurring as a result of collision with turbine blades.	Post-Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			Carcass search was traditionally completed by human observers whose efficiency is influenced by several factors including carcass type, environmental conditions and observer competence. Numerous studies have been conducted demonstrating that dogs have a superior ability to detect bird and bat carcasses than humans, particularly with small carcasses or in dense vegetation. A trained dog under the control of a handler will be used. The post-construction monitoring will be carried out in Years 1, 2, 3, 5 and 10 Note: A combined monitoring programme will be undertaken to detect both bat and bird carcasses, i.e. both bats and birds will be monitored during the same site visits/surveys. However, specific surveys for birds will be required in the winter period as well (when bat surveys are not required).			
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.7.1	• During the construction phase daily inspection of silt traps, settlement ponds, buffered outfalls and drainage channels will be undertaken. Routine measurement of total suspended solids, electrical conductivity, pH, and water temperature at selected water monitoring locations at the Site will be carried out. Monitoring of locations where excavations are being dewatered (likely high in solids) will be done in real time. • Daily monitoring of excavations by the Geotechnical Engineer will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped, and a geotechnical assessment undertaken.	Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			• During the construction phase of the project, the development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process. • An Ecological Clerk of Works ("ECoW") / Environmental Officer with an appropriate level of experience relevant to aquatic ecology will be present to supervise the water crossings during the strengthening works along the turbine delivery route. This approach for crossing the Tullagower stream at this part of the Doonbeg catchment for turbine delivery will not make any direct or indirect contact with the watercourses and potential for effects on the freshwater pearl mussels in the lower Doonbeg catchment are considered to be negligible. Similarly, an ECoW will be present to supervise the GCR works at the No. 1 watercourse crossing over the Moyasta River. • Monitoring after heavy rain /prolonged rain events required on major points (including spoil storage area and flood compensation area, and drainage swales around the site to assess the ongoing efficacy of the instream mitigation measures).			
Aquatic Ecology	Chapter 7 Aquatic Ecology	7.7.2	• During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected during maintenance visits to the Site. • Water monitoring on nearby natural watercourses will be undertaken during and	Post-Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			post construction to determine if any pollution has migrated off-site, and if so, measures will be implemented to rectify the impact, as agreed with relevant statutory agencies (e.g. Inland Fisheries Ireland (IFI)). • The spoil material at the permanent storage will need to dry out over a number of years to increase the shear strength. Therefore, ongoing monitoring of spoil storage area and associated drainage, flood compensation area and drainage swales will be undertaken until the storage area is deemed to be stable.			
Soils and Geology	Chapter 8 Soils and Geology	8.5.3.1	The spoil material at the permanent storage area will need to dry out over a number of years to increase the shear strength. Therefore, the permanent Spoil Storage Area will require additional monitoring during the operational phase, including restricted access following the construction phase until the storage area is deemed to be stable. The drainage of the Spoil Storage Area will remain for the operational phase.	Post-Construction		
Hydrology and Hydrogeology	Chapter 9 Hydrology and Hydrogeology	9.7.5	The monitoring programme during the course of construction works (unless otherwise specified by any required planning condition) will include:• One baseline monitoring visit (in advance of construction), including upstream and downstream biological Q value sampling and reporting.• Once daily general visual inspections by site EM at all sample sites identified.• Weekly grab sample inspections by site EM (Sample parameters will include, suspended solids, and on-site measurement of: turbidity, pH, temperature, electrical conductivity). At two locations within the WF site in man-made drains, and at SW3 and SW4.• Monthly grab sampling by site EM at	Construction		

Reference Heading	EIAR Chapter	Section	Mitigation Measure	Phase	Audit Result	Action Required
			locations SW3, and SW4 (refer to Figure 9.3). Analysis suite will include (same as Table 9.12 including suspended solids, BOD, nitrite, nitrate, ammonia, orthophosphate and chloride).• Monthly inspections and grab sampling during post construction for 3 months.• Annual upstream and downstream biological Q value sampling and reporting, including one post construction event.The Site Environmental Manager (EM) will have a stop works authority. Weekly site meeting will include for scheduling of works according to weather forecast. Suitable locations (further downstream) for biological Q-Value sampling will be identified by Site EM.			