



Cush Wind Farm
Phase II

Annex 1.9: Schedule of Mitigation & Monitoring Measures

Cush Wind Limited

DOCUMENT CONTROL

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1.0 INTRODUCTION

Galetech Energy Services (GES) has prepared this collated and consolidated Schedule of Mitigation Measures for Cush Wind Farm Phase II (the project), on behalf of Cush Wind Limited (the Developer).

The proposed wind farm is located approximately 4km north of Birr and 28km southwest of Tullamore, in the townlands of Galros East, Whigsborough, Ballycollin and Eglish, Co. Offaly.

The project assessed in the EIAR comprises the following main components:-

- 3 no. wind turbines, T9–T11, with an overall tip height of 199.1m–200m, rotor diameter of 158m–175m and hub height of 111.6m–120.9m, together with associated foundations, crane hardstands and ancillary infrastructure;
- Associated site development, access tracks, internal electrical and communications cabling, drainage, peat/spoil management, landscaping and reinstatement works;
- An electrical switch room and approximately 5km of 33kV underground electricity line connecting to the separately proposed Mullanafawnia 110kV substation; and,
- Temporary and permanent accommodation works along the turbine component haul route. The underground electricity line will be subject to a separate future planning application; the separately proposed Mullanafawnia substation is outside this project and application.

1.1 PURPOSE OF THIS REPORT

This report has been prepared to provide a concise document of all mitigation measures proposed within the Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS).

Article 8(a)(4) of the Environmental Impact Assessment (EIA) Directive 2014/52/EU states:-

'...Member States shall ensure that the features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment are implemented by the developer...'

This document therefore provides a list of all mitigation measures proposed within **Volume I** of the EIAR (**Section 1.3** below) and NIS (**Section 1.4**) which will be implemented during the pre-construction, construction, operation, and decommissioning phases of the project.

1.2 IMPLEMENTATION OF MITIGATION MEASURES

Cush Wind Limited will implement the scheduled measures, the embedded design measures in Chapter 3 and the conditions of consent through contractor appointments, management plans and operating procedures.

Implementation will be overseen by appropriately qualified personnel, including:-

- Project Supervisor for the Construction Stage (PSCS);
- Civil Works Contractor;
- Electrical Works Contractor;

- Ecological Clerk of Works;
- Environmental Manager;
- Geotechnical Clerk of Works;
- Archaeological Clerk of Works;
- Acoustics Consultant; and,
- Shadow Flicker Consultant.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) MITIGATION MEASURES

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Population & Human Health	<p>Landowner agreements</p> <p>As identified above, a series of measures has been agreed with involved landowners regarding the management of agricultural activities during the construction phase. These measures have been incorporated into signed legal agreements with the landowners and will be implemented in full.</p>	Construction
Biodiversity	<p>Environmental supervision and construction practice</p> <p>A CEMP (Annex 3.4) has been prepared for the project to ensure adequate protection of the water environment. All personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the CEMP.</p> <p>During the construction phase, all works associated with the construction of the project will be undertaken in accordance with the guidance contained within CIRIA Document C741 'Environmental Good Practice on Site' (CIRIA, 2015). Any groundwater encountered will be managed and treated in accordance with CIRIA C750, 'Groundwater control: design and practice' (CIRIA, 2016).</p>	Construction
Biodiversity	<p>Habitats and replacement planting</p> <p>Any treelines or hedgerows removed will be replaced in-situ or elsewhere in the Project at appropriate locations (i.e. designed to maximise ecological connectivity and outside of bat mitigation buffers). All new treelines or hedgerows will be planted using native species and in a similar composition to treelines or hedgerows lost.</p> <p>To avoid widespread disturbance to habitats, access within the project will be restricted to the footprint of the proposed works corridor and no access between different parts of the project will be permitted, except via the proposed works corridor. An Ecological Clerk of Works (ECoW) will be employed throughout the construction phase to ensure that construction activities do not encroach, unnecessarily, into any important habitats outside of the footprint of the Project.</p>	Construction

Biodiversity	<p>Vegetation clearance and water protection</p> <p><u>Mitigation by Avoidance.</u> There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage.</p> <p>During the construction phase, a self-imposed conservative buffer zone of 50m will be maintained for all Rapemills River and West Galros Stream where possible.</p> <p>The large distance between the majority of the felling areas and sensitive aquatic zones means that any poor quality runoff arising from felling areas can be adequately managed and attenuated prior to even reaching the aquatic buffer zone and primary drainage routes. Where tree felling is required in the vicinity of streams, the additional mitigation measures outlined below will be employed.</p> <p><u>Mitigation by Design.</u> Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods, as follows:-</p> <ul style="list-style-type: none"> • Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; • Checking and maintenance of tracks and culverts will be ongoing through any felling operation. No tracking of vehicles through watercourses will occur. Where possible, existing drains will not be disturbed during felling works; • Ditches which drain from the areas to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and avoid being placed at right angles to the contour; • Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in the spoil disposal areas. All new silt traps will be constructed on even ground and not on sloping ground; • In areas particularly sensitive to erosion or where felling inside the 50m buffer is required, it will be necessary to install double or triple sediment traps; • All drainage channels will taper out before entering the 50m buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer zone; • 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. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled; 	Construction
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	<ul style="list-style-type: none"> • Brash or bog mats will be used to support vehicles on soft ground, reducing topsoil and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place before 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; • Timber will be stacked in dry areas, and outside the 50m watercourse buffer. Straw bales and check dams will be emplaced on the down gradient side of timber storage/processing sites; • Works will be carried out during periods of no, or low, rainfall in order to minimise entrainment of exposed sediment in surface water run-off; • Checking and maintenance of roads/tracks and culverts will be ongoing through the felling operation; • Refuelling or maintenance of machinery will not occur within 50m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; • A permit to refuel system will be adopted; • 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; • Trees will be cut manually from along streams and using machinery to extract whole trees; and • Travel will only be permitted perpendicular to and away from surface water features. <p><u>Silt Traps.</u> 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.</p> <p><u>Drain Inspection and Maintenance.</u> The following items will be carried out during pre-felling inspections and regularly thereafter:-</p> <ul style="list-style-type: none"> • Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual waterlogging 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. Where possible, the pre-felling inspection will be carried out during rainfall; • Following tree felling, all main drains will be inspected to ensure that they are functioning; • Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; • Culverts on drains exiting the site, if impeded by silt or debris, will be unblocked; and 	
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Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> 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. <p><u>Surface Water Quality Monitoring.</u> Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling will be conducted within 4-weeks of the felling activity commencing, preferably in medium-to-high water flow conditions. The 'during' sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e. where an impact has been shown).</p> <p>Details of the proposed surface water quality monitoring programme are outlined in the Water Quality Monitoring Plan (Annex 3.4).</p> <p>The surface water sampling locations used in this EIAR for the project site and grid connection (i.e. SW1 – SW4) will also be used as sampling locations during felling activities.</p> <p>Also, daily surface water monitoring forms (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.</p>	
Biodiversity	<p>Invasive species biosecurity</p> <ul style="list-style-type: none"> Prior to working on the Site, all contractors will be briefed on invasive species and will be provided with information on identification, and of the need to prevent further spread of invasive species, as well as details of the biosecurity protocol. Any additional positive or suspected identification of invasive non-native species during Site works shall be reported to an ecologist for verification, so that appropriate advice can be given. Cleaning operations will take place in a designated area to prevent further spread. Mud and organic debris will not be allowed to accumulate on tracks, tyres or under wheel arches. Personnel shall check and clean their footwear and tools each day before leaving the area to work on other Sites, or other parts of the Site. 	Construction
Biodiversity	<p>Nesting birds and vegetation clearance</p> <p>The following will be implemented to reduce the possibility of damage and destruction (and disturbance to sensitive species) to occupied bird nests:-</p>	Pre-construction & Construction

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> clearance of woodlands and uncultivated vegetation i.e. trees and hedgerows (including vegetation removal for creation/maintenance of bat mitigation buffers), will be undertaken outside the main breeding season from March to August inclusive; if other site clearance and construction activities are required to take place during the main breeding bird season, pre-commencement survey work will be undertaken to ensure that nest destruction and disturbance is avoided; once vegetation has been removed from the works corridor, these areas will be retained in a condition that limits suitability for nesting birds for the remainder of the construction phase e.g. vegetation cover for ground nesting species will be kept short by cutting or tracking over with an excavator; and a suitably experienced Ecologist will be employed for the duration of the construction period to make contractors aware of the ornithological sensitivities of the Project and to undertake surveys for nesting birds throughout the construction period, enforcing exclusion areas as required. 	
Biodiversity	<p>Breeding wader buffers</p> <p>In addition to the general measures set out above, species-specific disturbance-free buffers will be applied around any active nests of northern lapwing, common snipe and common ringed plover identified through pre-construction survey, reflecting the confirmed or probable breeding presence of these species within or adjacent to the site during baseline surveys.</p> <p>Accordingly, where pre-commencement or construction-phase survey identifies an active nest or breeding territory of these species within 500m of proposed works, a buffer will be established around the confirmed nest location, informed by the published disturbance distances applicable to each species (108m for northern lapwing (Hoetker et al., 2006) and 100–200m for common ringed plover (Goodship et al., 2022)). No published disturbance buffer exists for common snipe; in the absence of a quantified figure, a precautionary buffer of 100m will be applied, informed by the species' documented tolerance of close approach and the concentration of recorded foraging movements by incubating birds within 70m of the nest (Green, 1988). No construction activity will take place within the relevant buffer until breeding has concluded or the nest is confirmed to have failed, as determined by the site ECoW.</p>	Pre-construction & Construction
Biodiversity	<p>Protected mammals</p> <p>Habitat features important for mammals will be retained as much as possible (e.g. hedgerows, treelines and scrub).</p> <p>A pre-construction walkover survey of the project will be undertaken. This will search for mammal resting/breeding places, which could change over time. If any are identified, then appropriate exclusion zone(s) will be</p>	Pre-construction & Construction

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<p>implemented and construction activities timed to avoid sensitive periods, such as the breeding season or hibernation, as relevant.</p> <p>The following will be implemented to reduce the possibility of direct and indirect effects on mammals:-</p> <ul style="list-style-type: none"> • limiting constructions works to daylight hours. Proposed construction hours are 07:00 and 19:00 Monday to Friday, excluding public holidays, and between 07:00 and 13:00 on Saturdays. Should these fall outside daylight hours, coving and directional lighting will be used to avoid light spillage beyond the footprint of works; • providing exit points for any excavations (e.g. escape planks or spoil runs) so mammals do not become trapped; and • a suitably qualified Ecologist will be employed for the duration of the construction period to make contractors aware of the mammalian sensitivities of the Project and to undertake surveys for breeding or resting mammals throughout the construction period, enforcing exclusion areas as required. Though currently not required based on the baseline data, if this changes during pre-construction surveys, these are 50m for red squirrel, 100m for pine marten, 150m for otter and 50m for badger. • Vegetation/brush clearance will be undertaken outside November-March to avoid the hibernation period. 	
Biodiversity	<p>Bats and roost safeguards & Lighting</p> <p>Similarly, trees within the works corridor will be re-assessed for bat roosting potential, with any emergence surveys carried out as required.</p> <p>Along the grid connection, immediately in advance of construction works, an ecologist will undertake a comprehensive survey of bridges / structures / trees with bat roosting potential (see Annex 5. 6) and emergence surveys will be carried out to determine if bats are present following Collins (2023) guidelines.</p> <p>No destruction or disturbance of active bat roosts is predicted to be required. While one PRF-I tree was recorded within the UGL study area, this was located c. 11m from the proposed UGL and will be retained. No roosting bat, nor evidence of use by bats was observed. Regardless, 'soft felling' measures will still be implemented (BCT,2018). This will be carried out in suitable weather conditions and at appropriate times of year. Briefly, this involves the following:-</p> <ul style="list-style-type: none"> • removal of the tree in sections, starting with the top branches and working down the trunk avoiding cutting through cavities; • lowering of any sections with potential roost features with care, positioning them on the ground with potential entrances to roosts facing upwards to allow bats to exit the roost; and 	Pre-construction & Construction

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> leaving these sections in place for at least 24 hours in suitable weather. The following will also be implemented to reduce the possibility of direct and indirect effects on bat species: lighting will be limited to daylight hours. However, where this cannot be avoided, directional lighting and cowlings will be used, avoiding light spill onto linear habitats and trees. 	
Biodiversity	<p>Amphibian safeguards</p> <p>Pre-construction checks will be undertaken for spawning frogs if construction works are undertaken in February.- April Adults and spawn will be translocated under NPWS licence (currently available without application as licence no. 04/2026 and this would be revised in 2027, as available) to suitable alternative locations if present. Pitfall traps and drift fences will be used to capture adult frogs.</p> <p>Amphibian-proof fencing close to any waterbodies will be used to prevent frogs or smooth newts from accessing any parts of the Project most hazardous to amphibians during the construction phase.</p>	Pre-construction & Construction
Biodiversity	<p>Operation phase aquatic safeguards</p> <p>Maintenance of the wind farm drainage system will ensure the system is operating effectively and will be undertaken following the CIRIA C753 SuDS and Maintenance Manual. A review of the ecological mitigation measures will be required during the operation phase and project specific mitigation will be provided as appropriate where further measures are required to ensure no significant environmental effects on aquatic receptors and designated sites. The following mitigation measures will be implemented and can be added to:</p> <ul style="list-style-type: none"> site access will be restricted by gates to prevent illegal dumping, use by off road vehicles etc; and, as during construction, any stockpiled material will be within the proposed site compound or a minimum of 50m from any surface water drainage. 	Operation
Biodiversity	<p>Adaptive bird curtailment</p> <p>Based on the bird survey data collated, curtailment is not considered necessary. However, curtailment for birds may be implemented depending on the results of the proposed monitoring programme (see EIAR Chapter 5 — Biodiversity, Section 5.7.3.3). If required, curtailment will be implemented via a system of adaptive management. Thus, if bird carcasses are recorded during post-construction monitoring, curtailment will be implemented where appropriate during 'at-risk' time periods and as discussed and agreed with NPWS.</p> <p>No significant collision effects on IEF birds are predicted (EIAR Chapter 5 — Biodiversity, Section 5.5.3.3), so no bird-specific operational mitigation is required from commissioning, and the residual effect conclusions for birds do not rely on curtailment. Curtailment is a precautionary, adaptive measure that would be implemented only where post-commissioning monitoring demonstrates a notable adverse effect on IEF birds.</p>	Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures						
Topic	Mitigation Measure				Phase of Development for Implementation	
Biodiversity	Bat buffers NatureScot (2021) guidelines state that a 50m distance from the blade tips of the turbine to the nearest habitat feature must be maintained free of trees and shrubs for the duration of wind farm operation. The turbine buffer areas are already open, and no initial vegetation clearance is required. Their management will maintain separation between turbine blades and surrounding bat commuting and foraging habitat features and prevent the establishment of trees or scrub closer to the turbines. No reduction in recorded bat activity arising from initial vegetation clearance has therefore been assumed.				Pre-operation & Operation	
	Turbine Number	Habitat Feature	Buffer (m) Minimum	Maximum		Area (ha) or length (m) to be removed
	T9	Cutover bog	45	80.32		0
	T10	Cutover bog	45	80.32		0
	T11	Cutover bog	45	80.32		0
Biodiversity	Bat feathering and adaptive curtailment Feathering of Blades: there is evidence that bat casualties at wind farms is reduced by pitching the blades out of the wind ("feathering") to reduce rotation speeds below 2 rpm. while idling. As such, the feathering of blades to prevent 'idling' below the turbine cut-in wind speed will be implemented at all turbines from commissioning, from sunset to sunrise during the bat activity season (April–October), in line with NatureScot (2021). Feathering may be limited further to weather conditions suitable for bat activity (for example, above a minimum air temperature and in low rainfall), with parameters agreed with the planning authority. Where post-construction activity and fatality monitoring in years 1 and 2 (Section 5.7.3 of the project EIAR – Chapter 5) demonstrates low collision risk at a turbine, feathering may be relaxed at that turbine with the agreement of the planning authority; and Curtailment: this involves raising the cut-in speed with associated loss of power generation. This also involves reducing the blade rotation below the cut-in speed, as above. The curtailment is achieved by feathering/pitching the blade out of the wind (not the actual braking of the turbine) so that the blades continue to rotate slowly (at ~2 r.p.m. or less). Curtailment will be implemented via a system of adaptive management. Thus, where post-construction activity or fatality monitoring (Section 5.7.3 of the project EIAR – Chapter 5) indicates elevated collision risk or bat fatalities at any turbine, cut-in speeds will be increased at the relevant turbine(s) during the bat activity season (April–October) and where temperatures are suitable for bat activity, with parameters agreed with the planning authority and NPWS.				Operation	

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Biodiversity	<p>Replacement planting and enhancement</p> <p>Any treelines or hedgerows removed will be replaced in-situ or elsewhere in the Project at appropriate locations (i.e. designed to maximise ecological connectivity and outside of bat mitigation buffers). All new treelines or hedgerows will be planted using native species and in a similar composition to treelines or hedgerows lost. Temporary habitat losses and reinstatement requirements are set out in EIAR Chapter 5 — Biodiversity, Table 5.18: Mitigation for Temporary Habitat Loss.</p> <p>To compensate for permanent habitat loss, compensation planting will be carried out within the Project site. The placement of these will be designed to ensure connectivity between habitat features at the project is maintained and enhanced. The replacement of treelines and hedgerows will also ensure that there is no net loss as a result. The placement of these replacement hedgerows will also be used to help enhance biodiversity (see EIAR Chapter 5 — Biodiversity, Section 5.7.2). A balance sheet is presented in EIAR Chapter 5 — Biodiversity, Table 5.20: Compensation for Habitat Loss.</p> <p>Enhancement measures are detailed in the Habitat and Species Management Plan, EIAR Annex 5.7, with a balance sheet presented in EIAR Chapter 5 — Biodiversity, Table 5.21: Enhancement Measures – Habitats.</p>	Construction & Operation
Biodiversity	<p>Bird collision monitoring and adaptive response</p> <p>A targeted range of flight activity (VP) surveys and collision monitoring (carcass searching) will be undertaken during the breeding and non-breeding seasons in years 1, 2 and 3 post-construction, to monitor the rate of avian turbine collisions and identify any significant unforeseen adverse effects.</p> <p>VP surveys will be undertaken using the methodology outlined in NatureScot (2025c) guidance, involving six hours of survey per vantage point per month, annually for each survey year, with vantage point viewsheds covering the Project site.</p> <p>Carcass searches will be undertaken at least once per month around each turbine location, annually for each survey year. Searches will be carried out by qualified ecologists and may be human- or dog-led. Methods to correct for bias in searcher efficiency and scavenger removal of carcasses will be incorporated.</p> <p>Data from VP surveys and carcass searches will be reviewed annually by a suitably qualified ornithologist, with findings reported to Offaly County Council at the end of each survey year. If the rate of turbine strikes recorded is as low as predicted by the CRM (which is highly precautionary), monitoring should no longer be required beyond year 3. Should annual review identify results that depart materially from the predictions of this assessment (e.g. evidence of collision mortality, or flight activity data indicating materially elevated collision risk during particular periods), the following adaptive response will apply:-</p>	Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> The circumstances and magnitude of the departure from predicted effects will be assessed by a suitably qualified ornithologist; Where warranted, the monitoring programme itself may be revised (e.g. adjustment of vantage point coverage, survey frequency, or seasonal focus) to better characterise the issue identified; Where monitoring indicates a credible risk to a species or population, mitigation measures will be developed and implemented (including the possibility of turbine curtailment, targeted at the specific turbine(s), time period(s) and/or weather conditions associated with the elevated risk); and, The effectiveness of any curtailment or other mitigation response will itself be monitored and reported on. <p>Should monitoring results indicate a need for continued monitoring beyond this period, this would be identified through the annual review process and agreed with Offaly County Council accordingly. Proposed mitigation and monitoring measures will be agreed with the planning authority prior to implementation.</p>	
Biodiversity	<p>Northern lapwing breeding monitoring</p> <p>In addition to the collision monitoring set out above, targeted breeding wader survey monitoring will be undertaken for northern lapwing, reflecting the residual uncertainty identified in this assessment regarding the location and population context of the breeding territory recorded within and adjacent to the Project site across the 2022–2024 survey seasons, and its relationship to a further breeding record at the adjacent Cush Wind Farm Phase I site.</p> <p>Breeding wader surveys, following the same methodology applied during the baseline survey programme (following the methodology set out in O'Brien & Smith (1992)), will be undertaken during the breeding season (April–July) in years 1, 2 and 3 post-construction, to confirm the continued location of this territory relative to Project, Cush Wind Farm Phase I infrastructure, and Bord Na Móna's Galros rehabilitation infrastructure and activity, and to verify breeding activity levels against those recorded during baseline surveys.</p> <p>Data will be reviewed annually by a suitably qualified ornithologist, with findings reported to Offaly County Council at the end of each survey year alongside the collision monitoring results above. Should annual review identify that the territory has relocated to a position within the relevant disturbance buffer distance of Project or Phase I infrastructure (108m; Hoetker et al. (2006)), or that breeding activity levels or success have declined materially relative to the baseline, the same adaptive response process set out above will apply, which may result in additional mitigation such as further habitat management, revised site access/maintenance scheduling during the breeding season, or other measures agreed with the planning authority.</p>	Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	Monitoring is proposed for a period of 3 years post-construction in the first instance, on the same basis and subject to the same review mechanism as set out above.	
Biodiversity	<p>Bat monitoring and buffer maintenance</p> <p>The post-construction monitoring programme will consist of:-</p> <ul style="list-style-type: none"> • Static detector surveys: these surveys will allow for a valid comparison of bat activity and project site usage with pre-construction levels. Following NatureScot (2021) guidance, the surveys are to be conducted during years 1, 2 and 3 post construction to allow for annual variation and cumulative effects. Reports will be submitted to the competent authority and NPWS following each year of surveys. Surveys will follow baseline survey methods, as outlined in NatureScot (2021) guidance. After three years of post-construction surveys, the monitoring programme may be extended or halted based on the results and following agreement with the competent authority and NPWS; and • Fatality monitoring: this will be conducted during years 1, 2 and 3 post construction to allow for annual variation and cumulative effects. The comprehensive fatality monitoring programme for birds as described above will be extended and duplicated to bats for the first three years per the post-construction monitoring requirements recommended by NatureScot (2021). After three years of post-construction surveys, the monitoring programme may be extended or halted following agreement with the competent authority and NPWS. Search intervals for bats will reflect the faster removal of small carcasses by scavengers, and searcher efficiency and carcass persistence trials will be undertaken. <p>The results of the post-construction monitoring surveys will be used to determine whether further mitigation measures, such as turbine curtailment, are required. Curtailment will be triggered where either activity monitoring (for example, a material increase in activity relative to baseline) or fatality monitoring indicates elevated collision risk, and the results will also inform any relaxation of feathering. The programme will be aligned with, and may be delivered jointly with, the post-construction bat monitoring programme required for Cush Wind Farm Phase I under Condition 11 of ABP-318816-24, so that a consistent approach applies across both phases..</p> <p>Bat mitigation buffers will need to be monitored in years 1, 2 and 3 following construction to ensure vegetation clearance is maintained and management measures have resulted in maintaining the desired habitat conditions. Habitats will be maintained in this manner for the duration of the project lifespan. The monitoring programme will help ensure there are no significant adverse effects on bats.</p>	Operation
Biodiversity	<p>Decommissioning safeguards</p> <p>Mitigation measures for decommissioning will be similar to those for the construction phase; however, the magnitude required will be less, as track and turbine installation will not be required.</p>	Decommissioning

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Land & Soils	<p>Excavation and erosion control</p> <p>The excavation and long term storage of materials will be completed in accordance with best practice for the management and treatment of such materials.</p> <ul style="list-style-type: none"> • Mats will be used, as necessary, to support construction plant and machinery on soft ground, thus reducing the likelihood of soil and subsoil erosion and avoiding the formation of rutted areas. This will substantially reduce the likelihood for surface water ponding to occur; • Excavated material required for reinstatement or landscaping will be temporarily stored only in locations identified as suitable in the Peat Stability Assessment and Peat and Spoil Management Plan, outside identified peat-stability exclusion areas and applicable surface-water buffers. Material not required for reinstatement or landscaping will be transported directly to the designated spoil deposition areas; • Silt fences, and all necessary surface water management measures (including upslope interceptor drains), will be installed around all temporary stockpiles to limit movement of entrained sediment in surface water runoff. All slopes will be sealed with the bucket of an excavator; • In order to minimise erosion during the construction phase, works will not take place during periods of intense or prolonged rainfall (to prevent increased silt laden runoff). Drainage systems, as outlined in Chapter 7, will be implemented to limit runoff effects during the construction phase; • At the designated spoil deposition areas, material will be placed in layers to ensure stability is maintained and works will be undertaken in accordance with best practice construction methodologies. Works at the spoil deposition areas will be monitored, on a weekly basis during the construction phase and monthly for a 6 no. month period thereafter, by an appropriately qualified Geotechnical Engineer. In the event that any ground stability issues arise, the Engineer will have the power to cease works until such time as remedial works have been completed to his/her satisfaction; • Permanently mounded spoil; for example, berms surrounding turbines and hardstands, berms located along access tracks and at the spoil deposition areas; will be seeded and grassed over at the earliest opportunity to prevent erosion; and, • The underground electricity line trench will be reinstated to the required specification and in accordance with landowner requirements and will be reseeded or allowed to vegetate naturally (on agricultural land) or topped with tarmacadam (or similar along public roads) at the earliest opportunity to prevent erosion. 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
Land & Soils	<p>Fuel, chemicals and spill protection</p> <ul style="list-style-type: none"> • The volume of fuel and oil stored on site will be minimised. Fuel and oil will be stored within appropriately bunded areas at the temporary construction compounds permitted as part of Cush Wind Farm Phase I and used during construction of the project. The bunded areas will be roofed to prevent rainfall ingress and will have a capacity of at least 110% of the volume stored; • Refuelling of plant and machinery will be undertaken using a mobile double-skinned fuel bowser operated by trained and competent personnel. The bowser will be filled and stored at the construction compounds when not in use. Drip trays, absorbent mats and spill-response materials will be used during refuelling. Fuel and chemicals will not be stored or handled, and refuelling will not take place, within 50m of a surface-water feature; • All plant and machinery used during construction will be regularly inspected for leaks and fitness for purpose; • Spill kits will be available to deal with any accidental spillages within the temporary construction compound and during re-fuelling; • All asphalt or other road-cutting material arising from the haul-route accommodation works will be removed from the site and delivered to an appropriately authorised waste facility. This material will not be used for reinstatement or deposited within the spoil deposition areas; and • An emergency plan for the construction phase to deal with accidental spillages is contained within the Planning-Stage Construction and Environmental Management Plan (Annex 3.4). This emergency plan will be further developed by the contractor prior to the commencement of construction. 	Construction
Land & Soils	<p>Reinstatement</p> <p>Areas of temporarily disturbed or levelled soil will be reinstated and allowed to revegetate. Silt fencing will be installed, where required, to prevent the mobilisation of soil into surrounding drains while vegetation becomes established.</p>	Construction
Land & Soils	<p>Peat stability controls</p> <p>Sections of access roads to the nearest infrastructure element will be subject to the same mitigation/control measures that apply to the nearest infrastructure element.</p> <ul style="list-style-type: none"> • Appointment of experienced and competent contractors; • The site will be supervised by experienced and qualified personnel; 	Pre-construction & Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> • Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); • Prevent undercutting of slopes and unsupported excavations; • Maintain a managed robust drainage system; • Prevent placement of loads/overburden on marginal ground; • Implementation of safety buffers around deep peat areas; • Adhere to the spoil and peat storage restriction areas detailed in the Peat Stability Assessment (FT, 2026); • Set up, maintain and report findings from monitoring systems as outlined in the Peat Stability Assessment (FT, 2026); • Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; and, • Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction. 	
Land & Soils	<p>Kilcormac Esker crossing safeguards</p> <p>The following measures will be implemented where the underground electricity line crosses the mapped Kilcormac Esker County Geological Site:</p> <ul style="list-style-type: none"> • The extent of the working area will be clearly demarcated before construction and will be kept to the minimum area required to safely complete the works; • Excavation will be confined to the underground electricity line trench and associated working area, and unnecessary disturbance of the adjoining esker slopes and landform will be avoided; • Topsoil, subsoil and underlying geological material will be excavated and stored separately to prevent mixing; • Excavated material will be reused within the trench, where technically suitable, and reinstated in its original sequence so far as practicable. Imported material will be limited to any bedding and surround required for the laying of the underground electricity line; • Excavated material will not be permanently deposited within the mapped geological heritage site; 	Construction

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	<ul style="list-style-type: none"> Following installation of the underground electricity line, the trench and working area will be reinstated to the original ground levels, contours and surface condition as soon as practicable; The works will be carried out in accordance with a site specific method statement reviewed by a suitably qualified geotechnical engineer or engineering geologist before construction; and A photographic record of the crossing locations will be prepared before, during and following completion of the works to confirm that the landform and surface profile have been appropriately reinstated. 	
Land & Soils	Oil containment Any oil-filled turbine or switch-room transformers will be provided with secondary containment capable of retaining at least 110% of the stored oil volume. Where solid cast-resin transformers are selected, bunding will not be required. Oils and lubricants stored at the switch room will be contained within an appropriately bunded area.	Operation
Land & Soils	Decommissioning and restoration During decommissioning, it may be possible to reverse or at least reduce some of the likely effects caused during construction by rehabilitating construction areas such as turbine foundations and hardstanding areas. This will be done by removing wind farm infrastructure and restoring disturbed ground with previously excavated material where possible. Decommissioning of the underground electricity line will involve the removal of the cabling from the ducting; however, the ducting will remain in situ to avoid further excavations and prevent environmental effects. Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. Some of the effects will be avoided by retaining some elements of the project in place where appropriate; for example, access tracks within the site may be retained for agricultural uses. Mitigation measures, to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant and machinery, will be implemented as per the construction phase mitigation measures.	Decommissioning

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Land & Soils	<p>Geotechnical monitoring</p> <p>Monitoring of land, soils and peat stability will be undertaken during the construction phase and for a six-month period following completion of construction. All excavated or raised areas, including cut-and-fill areas, reinstated or landscaped ground and the spoil deposition areas, will be inspected for signs of erosion or instability by an appropriately qualified Geotechnical Engineer appointed by the Developer. Inspections will be undertaken weekly during the construction phase and monthly for six months following completion of construction. The monitoring systems specified in the Peat Stability Assessment (Annex 6.1) will also be installed and maintained, with the findings recorded and reported in accordance with the requirements of that assessment. Where signs of erosion or instability are identified, appropriate remedial measures will be implemented under the direction of the Geotechnical Engineer.</p>	Construction & Post-construction
Land & Soils	<p>Restoration monitoring</p> <p>Following completion of decommissioning and restoration works, reinstated areas will be monitored for a period of two years. Any erosion, instability or defects in reinstatement identified during this period will be appropriately remediated.</p>	Post-decommissioning
Water	<p>Surface water drainage design</p> <p>The SWMP has regard to Greenfield runoff rates and is designed to mimic same and is sufficient to accommodate a 1-in-100 year rainfall event.</p> <ul style="list-style-type: none"> • All surface water runoff will be directed to specially constructed swales surrounding all areas of ground proposed to be disturbed (including the area for the temporary storage of material); • The swales will direct runoff into settlement ponds/silt traps where silt/sediment will be allowed to settle; • Following treatment, clean water will be discharged indirectly to the local drainage network via buffered outfalls thus ensuring that no scouring occurs; and, <p>The suite of proposed surface water drainage infrastructure will include interception drains, collector drains swales, sediments, flow attenuation and filtration check dams, settlement ponds/silt traps, and buffered outfalls.</p>	Pre-construction & Construction

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Water	<p>Watercourse buffers</p> <p>The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas by using a 50m buffer. From the constraints map (Annex 7.4) it is evident that only the underground electricity line is within a 50m buffer zone. In relation to hydrological constraints, a 50m hydrological buffer has been applied to natural watercourses within the wind farm site. All wind farm infrastructure is located outside this buffer. Sections of the underground electricity line necessarily pass within 50m of the Rapemills River and cross beneath it at two locations using HDD; the specific controls set out in Chapter 7 of the EIAR will apply to those works. Artificial bog and field drains are not treated as natural-watercourse constraints and will be maintained using appropriately sized culverts or cross-drains where crossed.</p> <p>As described above and at Chapter 3, specific mitigation measures, incorporated into the design of the project and through implementation of best practice methodologies (discussed below) will be employed where work inside buffer zones is proposed.</p> <ul style="list-style-type: none"> • Avoidance of physical damage to watercourses, and associated release of sediment; • Avoidance of excavations within close proximity to surface water courses; • Avoidance of the entry of suspended sediment from earthworks into watercourses; and, • Avoidance of the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone. 	Construction
Water	<p>Sediment source and treatment controls</p> <ul style="list-style-type: none"> • Source controls to limit the likelihood for 'dirty water' to occur: <ul style="list-style-type: none"> ○ Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with clean washed gravel, filter fabrics, and other similar/equivalent or appropriate systems; ○ Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. • In-Line controls to ensure appropriate management of silt laden water: <ul style="list-style-type: none"> ○ Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
	<p>fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.</p> <ul style="list-style-type: none"> • Treatment systems to fully attenuate silt laden waters prior to discharge: <ul style="list-style-type: none"> ○ 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; and ○ The existing settlement ponds lagoons on the BnM lands. 	
Water	<p>Existing drains and controlled discharge</p> <p>It should be noted for this site that an extensive network of bog drains already exists, and these will be integrated and enhanced as required and used within the wind farm drainage system.</p> <ul style="list-style-type: none"> • Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction and attenuation for flow management) of runoff from the wind farm drainage into the existing site drainage network. This will reduce the likelihood of any increased risk of downstream flooding or sediment transport/erosion; • Silt traps will be placed in the existing drains upstream of any streams where construction works is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; and • Buffered outfalls, which will be numerous over the site, will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site. 	Construction
Water	<p>Additional water treatment and filtration</p> <p>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 water treatment train will apply for the entirety of the construction phase.</p> <p>Silt fences will be emplaced within drains down-gradient of all construction areas.</p> <p>Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be emplaced within drains down-gradient of all construction areas inside the hydrological buffer zones to provide an additional layer of protection in these areas.</p>	Construction

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	<p>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. Silt bags will be used with natural vegetation filters or sedimats (sediment entrapment mats, consisting of coir or jute matting) placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.</p>	
Water	<p>Spoil deposition drainage</p> <p>It is proposed that excavated overburden/spoil will be utilised for reinstatement of excavated areas etc. and for landscaping purposes. Excess material, or material which is unsuitable for this purpose, will be stored, permanently, at 1 no. dedicated spoil deposition area located southeast of proposed turbine T11 as well as smaller deposition areas at each of the 3 no. turbine locations.</p> <p>All proposed spoil deposition areas are located outside the 50m stream buffer zone (refer to Annex 7.4).</p> <p>During the initial placement of spoil in the deposition areas, silt fences, straw bales and biodegradable matting will be used to control surface water runoff. Double silt fencing will be placed along the edge of each bog drain that intercepts the deposition areas.</p> <p>Drainage from overburden deposition areas will ultimately be into to the existing bog drain network where it is proposed that check dams will be installed every 20m or so to create a series of settlement ponds, before being discharged.</p> <p>Spoil deposition areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised, spoil deposition areas will no longer be a likely source of silt laden runoff. Surface water protection infrastructure will be left in place until the areas have stabilised.</p>	Construction

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Water	Underground electricity line works <ul style="list-style-type: none"> • All existing dry drains that intercept the works area will be temporarily blocked down-gradient of the works using temporary check dams/silt traps (e.g. straw bales); • Clean water diversion drains will be installed upgradient of the works areas, as required; • Check dams/silt fence arrangements (silt traps or straw bales) will be placed in all existing drains that have surface water flows and also along existing roadside drains; • A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zones; • At drain crossing locations, where open trenching is required, damming and over pumping method will be used to manage flows in the drain. 	Construction
Water	Horizontal directional drilling <ul style="list-style-type: none"> • Firstly, the crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance of vegetation; • A minimum 10m vegetated buffer will be maintained between the HDD working areas, including launch and receiving pits, and the riverbank. Plant entry into this buffer will be avoided. Where limited access within the buffer is demonstrably unavoidable, ground-protection mats will be used and the duration and extent of access will be minimised. There will be no storage of material/equipment, excavated material or overnight parking of machinery inside the 10m buffer zone; • Double silt fencing will be placed upslope of the buffer zone on each side of the watercourse. • Mats will be used underneath the excavator, inside the 10 metre vegetative buffer zone, to prevent soil erosion/rutting and potential surface water quality impacts from localised surface water runoff; • Temporary storage of excavated material will be undertaken outside of the 10m buffer on flat ground or within a local hollow area. A containment berm will be placed downslope of the excavated material which in turn will be surrounded by secondary silt fence protection to prevent saturated soil from flowing back into the watercourse; • Operation of machinery and use of equipment within the 10m buffer will be kept to a minimum to avoid any unnecessary disturbance; • There will be no refuelling allowed within 50m of the watercourse crossing; 	Construction

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	<ul style="list-style-type: none"> All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing; and, Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted. 	
Water	<p>Drilling fluid containment</p> <p>Mitigation Measures relating to the use of a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water for directional drilling include:</p> <ul style="list-style-type: none"> The area around the Clear Bore™ batching, pumping and recycling plants will be bunded using terram and sandbags in order to contain any spillages; One or more lines of silt fences will be placed between the works area and adjacent rivers and streams on both banks; Accidental spillage of fluids will be cleaned up immediately and transported off site for disposal at a licensed facility; and, Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush. 	Construction
Water	<p>Frac-out prevention and response</p> <p>A Fracture Blow-out (Frac-out) Prevention and Contingency Plan will be prepared by the drilling contractor prior to construction and will include the following measures:</p> <ul style="list-style-type: none"> 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; A double row 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; 	Construction

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	<ul style="list-style-type: none"> • 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; and, • If the risk of a further inadvertent return remains high, the drilling methodology and alignment will be reviewed within the assessed works corridor before drilling recommences. 	
Water	<p>Weather controls and suspension thresholds</p> <p>The works programme for the initial construction stage of the development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if prolonged or intense rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:</p> <ul style="list-style-type: none"> • General Forecasts • Meteo Alarm • 3 hour Rainfall Maps • Rainfall Radar Images • Consultancy Service <p>Works will be suspended if forecasting suggests either of the following is likely to occur:</p> <ul style="list-style-type: none"> • >10 mm/hr (i.e. high intensity local rainfall events); • >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, • >half monthly average rainfall in any 7 days. <p>Prior to works being suspended the following control measures will be completed:</p> <ul style="list-style-type: none"> • Secure all open excavations; • Provide temporary or emergency drainage to prevent back-up of surface runoff; and, 	Construction

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	<ul style="list-style-type: none"> Avoid working during heavy rainfall and for up to 24-hours after heavy events to ensure drainage systems are not overloaded. 	
Water	<p>Drainage installation and water quality monitoring</p> <p>The construction of the site drainage system will be carried out, at the respective locations, prior to other activities being commenced. The construction of the drainage system will only be carried out during periods of, where possible, no rainfall, therefore avoiding runoff. This will avoid 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 functional for all subsequent construction works.</p> <p>Prior to the commencement of development, a detailed Site Drainage Plan and SWMP will be prepared to detail the siting and composition of the surface water management measures. The respective plans, which will form part of a detailed Construction Environmental Management Plan (CEMP), will be prepared prior to the commencement of development.</p> <p>The CEMP will also include a detailed Water Quality Monitoring Plan for the monitoring of surface waters in the vicinity of the construction site by a designated Environmental Manager. The monitoring programme will comprise field testing and laboratory analysis of a range of agreed parameters. The civil works contractor, who will be responsible for the construction of the site drainage system, and Environmental Manager will undertake regular inspections of the drainage system to ensure that all measures are functioning effectively. The surface water sampling locations used in this EIAR (i.e. SW1 – SW4) will be used during construction activities. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.</p> <p>Any excess build-up of silt levels that may decrease the effectiveness of the drainage feature, will be removed and disposed of in an appropriate manner.</p>	Pre-construction & Construction
Water	<p>Excavation dewatering</p> <ul style="list-style-type: none"> Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations, will be put in place; The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters to ensure that Greenfield runoff rates are mimicked; If required, pumping of excavation inflows will prevent build-up of water in the excavation; 	Construction

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	<ul style="list-style-type: none"> The pumped water volumes will be discharged via volume and silt/sediment ponds and settlement lagoons 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 wind farm excavations by the Environmental Manager will occur during the construction phase. If high levels of seepage inflow occur, excavation work at this location will cease immediately and a geotechnical assessment undertaken; and, A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies. They will be used as final line of defence if needed. 	
Water	<p>Fuel storage, refuelling and spills</p> <ul style="list-style-type: none"> The volume of fuels or oils stored on site will be minimised. All fuel and oil will be stored in an appropriately bunded area within the temporary construction compound. Only an appropriate volume of fuel will be stored at any given time. The bunded area will be roofed to avoid the ingress of rainfall and will be fitted with a storm drainage system and an appropriate oil interceptor; All bunded areas will have 110% capacity of the volume to be stored; On site refuelling of 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 at the temporary compound and will be towed around the site by a 4x4 jeep to where plant and machinery is located. No refuelling will be permitted at works locations within the 50m hydrological buffer. The 4x4 jeep will also be fully stocked with fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations to avoid any accidental leakages; All plant and machinery used during construction will be regularly inspected for leaks and fitness for purpose; Spill kits will be readily available to deal with and accidental spillages; All waste tar material arising from road cuttings (from trenching or other works in public roads) will be removed off-site and taken to a licensed waste facility. Due to the potential for contamination of soils and subsoils, it is not proposed to utilise this material for any reinstatement works; and 	Construction

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	<ul style="list-style-type: none"> An outline emergency plan for the construction phase to deal with accidental spillages is contained within the Planning-Stage CEMP (Annex 3.4). This emergency plan will be further developed prior to the commencement of development, and will be agreed with the Planning Authority as part of the detailed CEMP. 	
Water	<p>Concrete and cement controls</p> <ul style="list-style-type: none"> No batching of wet-cement products will occur on site. Ready-mixed concrete will be brought to site as required and, where possible, emplacement of pre-cast products, will take utilised; All drain crossings will utilise pre-cast products and the use of wet-cement products within the hydrological buffer will be avoided; Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. Chute cleaning will be undertaken at lined cement washout ponds with waters being stored in the temporary construction compound, removed off site and disposed of at an approved licensed facility. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed; Weather forecasting will be used to ensure that prolonged or intense rainfall is not predicted during concrete pouring activities; and, The concrete pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 	Construction
Water	<p>Receiving water treatment standards</p> <p>With regard to treatment standards, the drainage system has been designed to achieve compliance with surface water Environmental Quality Standards (EQS) in the downstream receiving waters. Details of monitoring proposals, to ensure this compliance, is described in the Planning-Stage SWMP (Annex 3.4).</p>	Construction & Operation
Water	<p>Rath Group Water Scheme source protection</p> <p>No refuelling or handling of fuels/oil/lubricants/chemicals will be permitted within 100m of the mapped source protection area boundary.</p> <p>In addition, to prevent potential leaching of cement from the electricity cable trenching, a geotextile liner will be placed around the founding layer (lean mix concrete) where concrete is to be poured.</p> <p>Also, there will be clear signage in place inside the source protection area to remind construction workers that the area is inside a drinking water protection area and that there are restrictions around the use of fuels/oil/lubricants/chemicals.</p>	Construction – Underground Electricity Line

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Water	<p>Flood warnings and managed retreat</p> <p>The first point of mitigation is ongoing monitoring of weather forecasts and weather warnings. The project Environmental Manager (EM) or the site Ecological Clerk of Works (ECoW) will be responsible for monitoring weather forecasts during the construction phase.</p> <p>When the forecast indicates rainfall exceeding any of the works-suspension thresholds set out above, or where a Met Éireann Status Yellow or higher rainfall warning is issued, the planned responses detailed below will be implemented.</p> <p>A managed retreat from the fluvial flood zone will be implemented in the event of a forecasted high intensity rainfall event and/or weather warning related to rainfall. This will include the following:</p> <ul style="list-style-type: none"> 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. Existing sediment control measures will be removed, as these may be washed away and deposited elsewhere by the floodwaters. All plant, machinery and equipment will be removed from the flood zones. Works will be postponed in the event of flood or high flows in the river. <p>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).</p> <p>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 project site will be inspected and corrective measures implemented to ensure safe working conditions e.g. dewatering of standing water in open excavations, etc.</p>	Construction
Water	<p>Foul holding tank</p> <p>The sealed foul-water holding tank will be inspected and emptied as required by an appropriately authorised waste collector. No foul wastewater will be discharged to ground, surface water or the site drainage network.</p>	Operation

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Topic	Mitigation Measure	Phase of Development for Implementation
Water	Operation drainage <ul style="list-style-type: none"> • Interceptor drains will be installed up-gradient of all infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; • Swales/road side drains will be used to collect runoff from access tracks, turbine hardstanding areas and switch room compound areas which may contain entrained suspended sediment, and channel it to settlement ponds for sediment settling; • Transverse drains ('grips') will be constructed, where appropriate, in the surface layer of access tracks to divert any runoff into swales/track side drains; • Check dams will be used along sections of access tracks drains to intercept silts at source. Check dams will be constructed from a 40mm non-friable crushed rock or similar; • Swales and check dams will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, • Settlement ponds will be designed in accordance the greenfield runoff rate requirements; and, • Imported rock for construction purposes and road surfacing will be strong, well-graded limestone which will be resistant to erosion and have a low likelihood to generate fines in hardstand runoff. 	Construction & Operation
Water	Operation fuel and oil safeguards <ul style="list-style-type: none"> • Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume during the construction phase; • Any oil storage tanks will be located in a concrete bund, impervious to rainwater ingress, capable of holding 110% of the stored oil volume; • Turbine transformers will be located within the turbines, and any leaks will be fully contained within the turbine thus eliminating any pathway for leakages to affect land and soil; • Maintenance vehicles will be regularly inspected for leaks and fitness for purpose; and • An emergency plan for the operation phase to deal with accidental spillages will be contained within Environmental Management Plan. Spill kits will be available to deal with accidental spillages. 	Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water	<p>Decommissioning drainage and reinstatement</p> <p>As in the construction phase, temporary surface runoff control measures will again be put in place during decommissioning works. The drainage system will remain operational during the decommissioning phase and will serve to treat any sediment laden surface water run-off due to a renewed disturbance of soils. Following decommissioning, re-vegetation will be implemented as soon as practicable and monitored to ensure vegetation is established.</p> <p>Any diesel or fuel oils stored on site would be bunded.</p> <p>Following decommissioning, turbine foundations, hardstanding areas and access tracks will be rehabilitated in accordance with the methods outlined at Chapter 3. The access tracks may be left in place, subject to agreement with the Planning Authority and the landowner.</p>	Decommissioning
Air Quality	<p>Communications and complaints</p> <ul style="list-style-type: none"> • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. • Display the head or regional office contact information. • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook. 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
Air Quality	Site layout, maintenance and stockpiles <ul style="list-style-type: none"> Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Use localised screening or enclosure around specific dust-generating activities where necessary and practicable. Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. Cover, seed or fence stockpiles to prevent wind whipping. 	Construction
Air Quality	Vehicles and machinery <ul style="list-style-type: none"> Ensure all vehicles switch off engines when stationary – no idling vehicles. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. Impose and signpost a maximum-speed-limit of 25kph on surfaced and 15kph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
Air Quality	Dust-generating operations <ul style="list-style-type: none"> Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. 	Construction
Air Quality	Waste burning <ul style="list-style-type: none"> Bonfires and burning of waste materials are legally prohibited. 	Construction
Air Quality	Earthworks <ul style="list-style-type: none"> Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable. Only remove the cover in small areas during work and not all at once. 	Construction
Air Quality	Construction materials <ul style="list-style-type: none"> Avoid scabbling (roughening of concrete surfaces) if possible. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust. 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
Air Quality	Trackout <ul style="list-style-type: none"> Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Record all inspections of haul routes and any subsequent action in a site logbook. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Access gates to be located at least 10m from receptors where possible. 	Construction
Air Quality	Dust inspections <ul style="list-style-type: none"> Undertake daily on-site and off-site visual inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of construction works, with cleaning to be provided if necessary. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. 	Construction
Air Quality	Decommissioning dust controls and monitoring The construction phase dust and trackout mitigation measures set out in EIAR Chapter 8 — Air Quality, Section 8.5.1 will be applied, as relevant, during decommissioning. The applicable measures will be incorporated into the Decommissioning Plan to be prepared in advance of the decommissioning works, as described in EIAR Chapter 3 . The construction phase monitoring measures set out in EIAR Chapter 8 — Air Quality, Section 8.6.1 will be implemented, as relevant, during decommissioning and for the duration of dust generating activities.	Decommissioning
Climate	Plant and material efficiency <ul style="list-style-type: none"> Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. 	Construction

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Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> Ensuring that fossil fuel powered plant and equipment meet the Euro Stage V emission standard. Ensure all plant, machinery and vehicles are well maintained and inspected regularly. Ensuring, that site vehicles and delivery vehicles meet the Euro VI/Euro 6 standards for emissions. Excavated material will be reused within the project where suitable, with remaining peat and spoil managed within the designated peat/spoil deposition areas in accordance with the Peat and Spoil Management Plan. Specifying electrically powered plant and equipment where practicable and using grid connections for electric power when practicable instead of fossil fuel powered generators. On-site segregation of all waste materials into appropriate categories including, for example, topsoil, bedrock, concrete, bricks, tiles, oils /diesels, metals, dry recyclables e.g. cardboard, plastic, timber. Sourcing materials locally will be prioritised. This will help to reduce transport related CO₂ emissions and helps support local suppliers, further promoting economic sustainability. 	
Climate	<p>Low carbon procurement</p> <ul style="list-style-type: none"> For procurement of low carbon materials, the following low carbon material choices will be implemented unless there is a specific design practicality that prohibits it: <ul style="list-style-type: none"> a. Concrete: GGBS (Ground granulated blast-furnace slag), 30% lower clinker content cement, or better, where practicable; b. Fibre reinforced concrete or similar instead of steel reinforcement c. Steel: recycled or electric arc foundry steel, cross laminated timber; d. Bricks and aggregates: reclaimed or recycled. 	Pre-construction & Construction
Climate	<p>Maintenance emissions</p> <p>During the operation phase of the proposed project, the works onsite will be limited to maintenance. Although the intensity of activity will be only a small fraction of the construction phase, all employees and contractors that are on site will ensure that machinery used is properly maintained and is switched off when not in use to avoid unnecessary exhaust emissions from maintenance traffic.</p>	Operation

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Topic	Mitigation Measure	Phase of Development for Implementation
Climate	<p>Climate resilience in design</p> <ul style="list-style-type: none"> The wind farm drainage system has been designed to accommodate a 1-in-100-year rainfall event, as described in Chapter 7. The proposed turbines to be installed, are designed to the appropriate standards to account for the high wind loadings. High quality, durable building materials will be selected for the proposed project to reduce their sensitivity to extreme temperatures. Lightning protection conduits are integral to the construction of the blades. <p>The Proposed Project will be constructed having taken the most up to date Eurocodes, design practices and climate data into account prior to maximise resilience of the project against climate change hazards.</p>	Pre-construction & Construction
Climate	<p>Construction weather hazards</p> <p>In terms of impact on the proposed project due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding, extreme temperatures and wind and storms through site risk assessments, method statements and good site management practice. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction.</p>	Construction
Climate	<p>Operation resilience</p> <p>During the operation phase of the proposed project, the Operation and Maintenance (O&M) manual will include details regarding maintaining the functionality and resilience of the proposed project and all its components to ensure that the climate hazards do not pose a high risk.</p>	Operation
Climate	<p>Carbon and weather monitoring</p> <p>Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place.</p>	Construction

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	Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.	
Landscape	Embedded landscape measures <ul style="list-style-type: none"> • The colour will be industry standard off-white/light grey semi-matt non-reflective finish; • All internal wind farm electrical and communications cabling, together with the proposed c.5km underground electricity line, will be installed underground; • Special care will be taken to preserve any features, insofar as possible, which contribute to the landscape character of the study area; and, • Counter rotation of blade sets will be avoided. 	Pre-construction & Operation
Landscape	Construction management and reinstatement <p>All construction activities will follow best practice methods to reduce effects on the environment, as outlined in the Construction and Environmental Management Plan (CEMP) which will manage the environmental commitments of the project through the construction phase. It is noted that an Environmental Manager (EM) and Ecological Clerk of Works (ECoW) with appropriate experience will be appointed for the duration of the construction phase to ensure that the CEMP is effectively implemented.</p> <p>The appropriate management and reinstatement of excavations in a timely manner will ensure that any adverse effects caused, for example at site entrances or road upgrade locations, are minimised insofar as possible.</p> <p>Temporary construction working areas will be reinstated to their original condition, with all vegetation lost to facilitate works replaced. Replacement planting of hedgerows and treelines will be undertaken in accordance with the measures set out in Chapter 5 and the Habitat and Species Management Plan at Annex 5.7, under the supervision of the ECoW. All hedgerows and treelines lost during construction will be replaced within the Project, ensuring no net loss, with additional hedgerow planting providing a net gain. Planting locations will maintain and enhance connectivity between habitat features.</p>	Construction
Landscape	Landscape management and maintenance <p>It is reiterated that an EM and ECoW with appropriate experience will be appointed for the duration of the construction phase so that the CEMP is effectively implemented and that all landscape works will be subject to ongoing management and maintenance.</p>	Construction & Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Landscape	Decommissioning reinstatement Disturbed areas of landscape arising from decommissioning activities will be allowed to vegetate.	Decommissioning
Cultural Heritage	Advance archaeological testing <ul style="list-style-type: none"> Post-consent pre-construction test trenching shall be carried out within the footprint of the three turbine bases and hardstand areas. Test trenching will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland, and to the satisfaction of Offaly County Council. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during test trenching. 	Pre-construction
Cultural Heritage	Archaeological monitoring and boundary records <ul style="list-style-type: none"> Archaeological monitoring of all excavations associated with construction of the wind farm shall be carried out. Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland, and to the satisfaction of Offaly County Council. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring; Archaeological monitoring of all excavations associated with construction of the underground electricity line shall be carried out. Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland, and to the satisfaction of Offaly County Council. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring; Archaeological monitoring of all excavations at townland, parish and barony boundaries shall be carried out. Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland, and to the satisfaction of Offaly County Council. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring; Written and photographic records will be created of any townland, parish and barony boundaries that may be impacted on. The written and photographic records will be created in advance of excavations commencing on site. 	Construction
Cultural Heritage	Micrositing restriction It is recommended that micrositing associated with construction of the underground electricity line not be allowed within the historic garden recorded on the National Inventory of Architectural Heritage.	Construction – Underground Electricity Line

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Topic	Mitigation Measure	Phase of Development for Implementation
Cultural Heritage	Decommissioning archaeology <ul style="list-style-type: none"> Archaeological monitoring of decommissioning phase works shall be carried out in areas which were not subject to ground disturbance during the construction phase of the project. Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland, and to the satisfaction of Offaly County Council. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. 	Decommissioning
Noise & Vibration	Construction controls <ul style="list-style-type: none"> The contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. Evening, night-time, and Sunday working will be required during certain periods to facilitate large turbine component deliveries. The planning of such works will take consideration of sensitive receptors, in particular any nearby residential receptors. Construction activities will be scheduled in a manner that reflects the location of the site and the nature of neighbouring properties. Construction activities / plant items will be considered with respect to their potential to exceed CNTs at NSLs and will be scheduled according to their noise level, proximity to NSLs, and possible options for noise control. In situations where an activity with the potential to exceed CNT is scheduled, other construction activities will be scheduled to not result in significant cumulative noise levels. To ameliorate any potential noise effects that may present during the construction phase, a schedule of noise control measures has been formulated in accordance with best practice guidance, and the contract documents will require the Contractor to implement these measures. These are outlined in the Construction and Environmental Management Plan (CEMP) that has been prepared for the proposed project (see Annex 3.4). 	Construction
Noise & Vibration	Phase II turbine controls <p>Where operational mitigation is required for the proposed project, it will be implemented solely through operational controls applied to the three proposed Phase II turbines, T09–T11.</p> <p>Prior to the commencement of the operation phase, a turbine-specific curtailment strategy for T09–T11 will be prepared and verified by the manufacturer of the turbine model ultimately selected. The strategy will specify the operating modes and, where required, shutdown conditions necessary to ensure that the contribution from the proposed project, when considered cumulatively with the permitted Cush Wind Farm Phase I and the other</p>	Pre-operation & Operation

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	<p>relevant wind farm developments, remains within the applicable noise criteria. This commitment will apply regardless of the turbine model ultimately selected within the proposed turbine dimension range.</p> <p>Prior to the commencement of the operation phase, the manufacturer of the turbine model ultimately selected will verify the turbine-specific operating modes and curtailment settings required for T09–T11 to achieve the noise limits established for the proposed project. Only a turbine model capable of achieving those limits through verified operational controls will be selected. The final curtailment strategy will be implemented and maintained as necessary to ensure compliance with the applicable noise criteria. This commitment will apply regardless of the turbine model ultimately selected within the proposed turbine dimension range.</p>	
Noise & Vibration	<p>Amplitude modulation and tonality</p> <p>If an ongoing issue with excessive AM is established, a mitigation strategy to reduce the level of AM will be implemented through engineering methods, operational changes and/or curtailment of specific turbines. The operator will first appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (9 August 2016) or subsequent revisions.</p> <p>The measurement method outlined in the IOA AMWG document, known as the 'Reference Method', provide a robust and reliable indicator of AM and yield important objective information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions including methods , determined in liaison with the turbine manufacturer, to minimise the occurrence of excessive AM. Examples of mitigation measures which could be considered include turbine blade modifications, the implementation of specific operational controls for the relevant turbine type or operating turbines in different operational modes or turbine curtailment under specific operational conditions. The aim of the mitigation will be to minimise adverse impacts from excessive AM associated with the proposed project as much as is reasonably practicable.</p> <p>Similarly, if the complaints suggest the potential occurrence of clearly audible tonality in the wind turbine noise, the audibility of the tones will be investigated from measured data with a robust, objective method such as that included in ISO 1996-2:2017. If persistent occurrence of clearly audible tonality is identified, then the operator will liaise with the turbine manufacturer to investigate and implement measures to mitigate or minimise the occurrence of tonality as much as is reasonably practicable. This may also involve engineering methods or turbine operational changes for example.</p>	Operation

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Noise & Vibration	<p>Compliance monitoring and corrective action</p> <p>Prior to the commissioning of the wind farm, the developer will submit a Noise Compliance Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for the noise measurements, procedures for recording results and locations at which noise is to be monitored.</p> <p>Commissioning noise surveys will be undertaken to verify compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of a wind farm being commissioned. The guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be implemented.</p> <p>In the unlikely event that an exceedance of the noise criteria is identified as part of the compliance assessment, a detailed investigation will be carried out and corrective actions taken. For example, noise reduced operational modes resulting in curtailment of turbine operation can be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criteria or conditions on turbine noise. Such curtailment can be applied using the wind farm SCADA system with a marginal reduction of the wind turbine performance. After the implementation of the mitigation measures, the noise survey will be repeated to confirm compliance with the planning conditions.</p>	Pre-operation & Operation
Noise & Vibration	<p>Noise complaints</p> <p>In the event of a complaint associated with noise for example, tonality or amplitude modulation from the proposed project, in line with the NCMP documents to be submitted and agreed with the local authority, the operator will fully investigate the complaint through review of the meteorological periods and conditions.</p>	Operation
Noise & Vibration	<p>Decommissioning controls</p> <p>The contract documents will specify that the Contractor undertaking the decommissioning works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Noise' and BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Vibration'.</p> <p>To ameliorate any potential noise impacts that may present during the decommissioning phase, a schedule of noise control measures has been formulated in accordance with best practice guidance. These are outlined in the CEMP (Annex 3.4) that has been prepared for the Proposed Project.</p>	Decommissioning
Shadow Flicker	<p>Zero shadow flicker and automatic shutdown</p> <p>While the Draft 2019 Guidelines have not been formally adopted, the Developer has committed to the implementation of design/mitigation measures to fully eliminate shadow flicker at all dwellings.</p>	Pre-operation & Operation

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	<p>The proposed wind turbines will each be fitted with automated turbine shut down software, inherent to their design, to facilitate their shut down as required.</p> <p>The shut-down software will be programmed with a set of predetermined times when shadow flicker could theoretically occur; if the wind is blowing and the sun is shining. The software will determine; based on the operation, or otherwise, of each turbine; whether the wind is blowing and; based on a sunlight sensor fitted within the wind farm; whether the sun is shining.</p> <p>If the wind is blowing and the sun is shining during the set of predetermined times discussed above, the software will temporarily switch off a turbine (or turbines) which is (or are) predicted to give rise to shadow flicker effects at a particular receptor. Having switched off a turbine (or turbines), the software will then recognise when the generation of shadow flicker at a receptor can no longer occur and will switch on the turbine (or turbines). This automated process will ensure that no shadow flicker, whatsoever, is experienced at any dwelling.</p> <p>In establishing the final shadow flicker control schedules, regard will also be had to the final turbine configuration of the permitted Cush Wind Farm Phase I development. This will ensure that the operation and curtailment strategy for the proposed 3 no. wind turbines appropriately accounts for the wider Cush Wind Farm configuration and the cumulative shadow flicker assessment presented in EIAR Chapter 13 — Shadow Flicker, Section 13.4.4.</p> <p>The final control schedule will be based on the turbine model ultimately installed and will therefore ensure that the mitigation measures remain applicable irrespective of the final turbine selected within the turbine dimension range assessed in this EIAR.</p>	
Shadow Flicker	<p>Verification, complaints and monitoring programme</p> <p>Within 12-months of the commencement of commercial operations, a shadow flicker survey will be undertaken by a suitably qualified person to verify the implementation of the turbine shut down software. Monitoring will be undertaken when and where the model predicts shadow flicker is expected to occur.</p> <p>The data which will be collected during the survey will include:-</p> <ul style="list-style-type: none"> • The date, time, location (turbine ID) and duration of the measurement; • Sunlight intensity and direction; • Wind speed and direction/rotor angle; and, • Time, date and duration of any sensor triggered shut down. <p>A site visit will be carried out by a suitably qualified person during each calendar season, to obtain representative samples of year-round conditions, to monitor the site when shadow flicker is predicted to occur to verify the effectiveness of the shut-down software.</p>	Operation

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	<p>In addition, should any third party complaints be raised in respect of shadow flicker at any time during the lifetime of the project, additional specific monitoring will be undertaken as per the methods described above.</p> <p>A Planning-Stage Shadow Flicker Monitoring Programme has been prepared and is provided at Annex 13.4. This programme will be further developed, and agreed in writing with the Planning Authority, as part of the discharge of pre-commencement conditions process.</p>	
Material Assets Transport & Access	<p>Construction hours and traffic controls</p> <ul style="list-style-type: none"> • Traffic movements will be limited to 07:00-19:00 Monday to Friday and 07:00–13:00 on Saturdays with no movements on Sundays or public holidays. It may be occasionally necessary to undertake works outside of these hours to avail of favourable weather conditions or during extended concrete pours. Where construction activities are necessary outside of the normal working hours, local residents and the Planning Authority will receive prior notification; • A wheel washing facility will be provided, as necessary, to prevent any debris being transferred from site to the adjacent public roads. All drivers will be required to ensure that their vehicle is free from dirt and stones prior to departure from the project site. Where conditions exist for dust to become friable, techniques such as damping down of the affected areas will be employed and vehicles/loads will be covered to reduce dust emissions; • A Traffic Management Plan shall be agreed as part of the Construction Environmental Management Plan (CEMP) with the Local Authority prior to the commencement of development. The Traffic Management Plan shall include inter alia confirmed details of construction material haul routes; confirmed details of vehicle specifications; a materials delivery programme; traffic management measures including details of 'Stop/Go' systems, signage, road closures and diversionary routes; and road reinstatement details; • All works to the public road shall be undertaken in consultation with, and agreed in advance with, the relevant local authority; and • All reasonable steps shall be taken to ensure that only national and regional routes are used to transport all materials to the site, in so far as is possible. 	Construction & Decommissioning

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Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Transport & Access	Road surveys and repairs As described above; prior to and post construction, pavement condition surveys will be undertaken along all non-national access routes proposed to be utilised in the delivery of construction materials. Following the completion of the pre-construction survey, any works (additional to those which have been identified and described at Chapter 3) which are assessed as necessary to facilitate the delivery of components and materials to the project site shall be undertaken. Any deterioration of carriageways or structures identified in the post-construction survey shall be put right at the expense of the Developer and to the satisfaction of the relevant local authority.	Pre-construction & Post-construction
Material Assets Transport & Access	Signage, parking and access <ul style="list-style-type: none"> Adequate signage shall be provided at entrances providing access, safety and warning information; Speed limit compliance; particularly along the local roads (including the L300321 local road); will be emphasised to all staff and contractors prior to the commencement of construction during site induction, and will be strictly enforced throughout the construction phase; Sufficient car parking spaces will be available at the temporary construction compound during the construction phase. Additionally, during construction of the proposed grid connection, it is likely that agricultural premises will be used for the temporary storage of materials (e.g. ducting, cabling, etc.) and for the parking of construction plant, machinery, and work vehicles (cars, vans, etc.). No parking of cars by persons associated with the project will be permitted on any part of the public road that is not closed to traffic. All staff will be instructed to ensure that private entrances remain unobscured (particularly along the grid connection route); Road sweeping, particularly along the proposed grid connection route, will be carried out as appropriate to ensure construction traffic does not adversely affect road conditions; Traffic restrictions shall be kept to minimum duration and extent; Appropriate traffic management; including maintenance of local access, pedestrian access (where safe to do so) and diversions (where required); shall be implemented to facilitate continued public use of roads where temporary traffic restrictions have to be put in place. Precise details of these measures will be detailed in the Traffic Management Plan to be agreed with the Planning Authority prior to the commencement of development. 	Construction & Decommissioning

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Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Transport & Access	Abnormal loads and coordination <ul style="list-style-type: none"> The timing of oversized/abnormal loads shall be agreed with the relevant local authorities and An Garda Síochána, and all relevant licenses and permits shall be obtained in advance. All oversized/abnormal loads shall be accompanied by escort vehicles to ensure the maintenance of public safety; Maximum axle loadings for abnormal/oversized loads shall be strictly enforced in accordance with the Road Traffic (Construction and Use of Vehicles) Regulations 2003 (S.I. No. 5 of 2003); A designated contact point and coordinator will be put in place to manage all access arrangements and to interface with the public and the respective local authorities; and The site shall be closed, and strictly secured, to the public during the construction phase. 	Construction & Decommissioning
Material Assets Aviation	Crane notification and lighting As requested by the IAA in its consultation response, a minimum of 30-days prior notification will be provided regarding the commencement of crane operations at the project site. Additionally, as is best practice and implemented as standard, warning lights will be fitted to cranes during the erection of the wind turbines.	Construction

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Aviation	<p>Turbine lighting and as-constructed information</p> <p>The proposed wind turbines will, as requested by the IAA in their consultation response and implemented as standard, be fitted with aviation warning lighting in accordance with specification to be agreed with the IAA and the Planning Authority prior to the commencement of development.</p> <p>At a maximum of 30-days following the installation of all proposed turbines, 'as-constructed details' will be provided to the IAA to allow for the updating of mapping charts, including:-</p> <ul style="list-style-type: none"> • The number of wind turbines; • WGS-84 coordinates of each turbine; • Ground elevation of each turbine (Malin Head OD); • Blade tip elevation of each turbine (Malin Head OD); • Height of Turbine; • Contour maps at the requisite scale; and • A note of which turbines have been fitted with obstacle warning lights. <p>The aviation warning lighting will also comply with the Department of Defence requirements specified in its response of 30 January 2026 (Annex 1.7 of the project EIAR).</p>	Pre-construction & Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Aviation	<p>Lighting failures and backup power</p> <p>In the event that the obstacle warning lights fail or if there are plans to withdraw them from use for a period of time, the IAA will be contacted, via AISOPs@iaa.ie, as a matter of urgency, to request that a NOTAM (Notice to Airmen) is issued concerning the absence of obstacle lighting. The following information will be provided to the IAA:-</p> <ul style="list-style-type: none"> • Obstacle ID; • Obstacle type; • Obstacle Position; • Elevation; and • Colour of Light. <p>It should also be noted, however, that the proposed wind turbines will be fitted with an uninterruptable power supply (UPS) to ensure that the aviation warning lights remain operation even in the event of a power outage. This UPS is sufficient for a period of 12-hours; after which, the warning lights can be powered by a small generator should the power outage continue.</p>	Operation
Material Assets Aviation	In the event that the development causes negative impacts on future military radar systems, the owner will engage with the Department of Defence and provide suitable mitigation as soon as practicable.	Operation
Material Assets Aviation	<p>Decommissioning safeguards</p> <p>Mitigation measures proposed during the construction phase will also be implemented during the decommissioning phase.</p>	Decommissioning
Material Assets Telecommunications	<p>ESB link protection</p> <p>The developer will continue to consult with ESB to ensure that interference and degradation of any ESB link does not occur.</p>	Pre-construction & Operation

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Telecommunication s	<p>2rn protocol and interference remediation</p> <p>In its consultation response, 2rn confirmed that a protocol agreement was already in place with Cush Wind Limited, the applicant and developer for Cush Wind Farm Phase II. The signed protocol covers the Phase II development and provides for the investigation and appropriate remediation of any interference to television reception attributable to the development, including the management of complaints received from members of the public. A signed copy of the protocol, together with the 2rn consultation response confirming its applicability, is enclosed at EIAR Annex 14.3.</p> <p>While assessed to be unlikely, if significant signal interference in any form is identified and is directly attributed to the project, appropriate remedial measures will immediately be undertaken. A range of technical measures are available to mitigate any instances of interference including signal amplifiers, active deflectors and relay transmitters, repeater stations, booster units, realignment of domestic aerials, installation of higher quality aerials and the installation of suppression equipment. Remedial works will be promptly undertaken, at the Developer's expense, to ensure uninterrupted telecommunication, broadcasting and mobile phone service provision.</p>	Operation
Material Assets Resources & Utilities	<p>Existing services and aggregate sourcing</p> <p>As identified above, accidental collision with overhead wires, sub-surface cables/pipes and/or forestry will be mitigated through the implementation of good construction practice and procedures.</p> <p>The sourcing of aggregates locally and from facilities which have been subject to EIA, will mitigate against the likelihood of significant effects during the construction phase.</p> <p>Additionally, during the process of connecting the project to the national grid, EirGrid will balance the loading on the network to ensure that no significant disruption occurs, and likely significant effects do not arise.</p>	Construction
Material Assets Waste Management	<p>Construction waste</p> <p>Construction waste will be segregated and stored in suitable receptacles within designated areas of the construction compounds. Materials will be reused or recycled where practicable, while waste requiring removal from site will be transported by appropriately permitted contractors to suitably authorised waste facilities. Records of waste removed from site will be maintained in accordance with applicable requirements. Further details are provided in the Waste Management Plan in the planning-stage CEMP at Annex 3.4.</p> <p>In the event that material is generated which is unsuitable for the deposition areas (e.g. asphalt) or excess material arises which cannot be accommodated on-site, it will be removed from the site to an appropriately licensed waste facility.</p>	Construction

Environmental Impact Assessment Report – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Material Assets Waste Management	<p>Decommissioning materials</p> <p>Turbine components will be reused, recycled or recovered where practicable. Components which cannot be reused, recycled or recovered will be removed from site and managed at appropriately authorised waste facilities in accordance with the regulatory requirements and waste management practices applicable at the time of decommissioning.</p> <p>Concrete removed from the foundations will be processed for reuse or recycling where practicable, with any residual material removed to an appropriately authorised waste facility. The resulting excavations will be backfilled with suitable material and reinstated to reflect the surrounding ground conditions.</p> <p>The building will be demolished using conventional methods, with foundations and associated services removed to a depth of approximately 1 m below ground level. Demolition materials will be segregated and reused or recycled where practicable, with residual materials removed to appropriately authorised waste facilities. Excavations will be backfilled with suitable material and the affected area reinstated to reflect the surrounding ground conditions.</p>	Decommissioning

1.4 NATURA IMPACT STATEMENT MITIGATION MEASURES

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Implementation	Implementation responsibilities The Developer will be responsible for implementing proposed avoidance and mitigation measures during construction and the operator will be responsible for the same during operation and decommissioning.	All phases
Water Quality	CEMP and construction practice A CEMP has been prepared for the Project to ensure adequate protection of the water environment. All personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the CEMP. During the construction phase, all works associated with the construction of the project will be undertaken in accordance with the guidance contained within CIRIA Document C811 'Environmental Good Practice on Site'. Any groundwater encountered will be managed and treated in accordance with CIRIA C750, 'Groundwater control: design and practice'.	Construction
Water Quality	Aquatic buffers The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas by using a 50m buffer. Specific mitigation measures, incorporated into the design of the project (embedded mitigation) and through implementation of best practice methodologies (discussed below) will be employed where work inside buffer zones is proposed. <ul style="list-style-type: none"> • Avoidance of physical damage to watercourses, and associated release of sediment; • Avoidance of excavations within close proximity to surface water courses; • Avoidance of the entry of suspended sediment from earthworks into watercourses; and, • Avoidance of the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone. 	Construction
Water Quality	Sediment source and treatment controls Source controls to limit the likelihood for 'dirty water' to occur: <ul style="list-style-type: none"> • Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with clean washed gravel, filter fabrics, and other similar/equivalent or appropriate systems; and 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. <p>In-Line controls to ensure appropriate management of silt laden water:</p> <ul style="list-style-type: none"> Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sandbags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. Treatment systems to fully attenuate silt laden waters prior to discharge: 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; and The existing settlement ponds lagoons on the BNM lands. 	
Water Quality	<p>Existing drains and controlled discharge</p> <p>It should be noted for this site that an extensive network of bog drains already exists, and these will be integrated and enhanced as required and used within the wind farm drainage system.</p> <ul style="list-style-type: none"> Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction and attenuation for flow management) of runoff from the wind farm drainage into the existing site drainage network. This will reduce the likelihood of any increased risk of downstream flooding or sediment transport/erosion; Silt traps will be placed in the existing drains upstream of any streams where construction works is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area; and Buffered outfalls, which will be numerous over the site, will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site. 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water Quality	<p>Additional water treatment and filtration</p> <p>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 water treatment train will apply for the entirety of the construction phase.</p> <p>Silt fences will be emplaced within drains down-gradient of all construction areas.</p> <p>Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be emplaced within drains down-gradient of all construction areas inside the 50m hydrological buffer zones to provide an additional layer of protection in these areas.</p> <p>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. Silt bags will be used with natural vegetation filters or sedimats (sediment entrapment mats, consisting of coir or jute matting) placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.</p>	Construction
Water Quality	<p>Spoil deposition drainage</p> <p>It is proposed that excavated overburden/spoil will be utilised for reinstatement of excavated areas etc. and for landscaping purposes. Excess material, or material which is unsuitable for this purpose, will be stored, permanently, at 1 no. dedicated spoil deposition area located southeast of proposed turbine T11 as well as smaller deposition areas at each of the 3 no. turbine locations.</p> <p>All proposed spoil deposition areas are located outside the 50m stream buffer zone.</p> <p>During the initial placement of spoil in the deposition areas, silt fences, straw bales and biodegradable matting will be used to control surface water runoff. Double silt fencing will be placed along the edge of each bog drain that intercepts the deposition areas.</p> <p>Drainage from overburden deposition areas will ultimately be into to the existing bog drain network where it is proposed that check dams will be installed every 20m or so to create a series of settlement ponds, before being discharged.</p> <p>Spoil deposition areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised, spoil deposition areas will no longer be a likely source of silt laden runoff. Surface water protection infrastructure will be left in place until the areas have stabilised</p>	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water Quality	Electricity line trenching and drain crossings <ul style="list-style-type: none"> All existing dry drains that intercept the works area will be temporarily blocked down-gradient of the works using temporary check dams/silt traps (e.g. straw bales); Clean water diversion drains will be installed upgradient of the works areas, as required; Check dams/silt fence arrangements (silt traps or straw bales) will be placed in all existing drains that have surface water flows and also along existing roadside drains; A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zones; At drain crossing locations, where open trenching is required, damming and over pumping method will be used to manage flows in the drain. 	Construction
Water Quality	Horizontal directional drilling <ul style="list-style-type: none"> Firstly, the crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance of vegetation; A minimum 10m vegetated buffer will be maintained between the HDD working areas, including launch and receiving pits, and the riverbank. Plant entry into this buffer will be avoided. Where limited access within the buffer is demonstrably unavoidable, ground-protection mats will be used and the duration and extent of access will be minimised. There will be no storage of material/equipment, excavated material or overnight parking of machinery inside the 10m buffer zone; Double silt fencing will be placed upslope of the buffer zone on each side of the watercourse. Mats will be used underneath the excavator, inside the 10 metre vegetative buffer zone, to prevent soil erosion/rutting and potential surface water quality impacts from localised surface water runoff; Temporary storage of excavated material will be undertaken outside of the 10m buffer on flat ground or within a local hollow area. A containment berm will be placed downslope of the excavated material which in turn will be surrounded by secondary silt fence protection to prevent saturated soil from flowing back into the watercourse; Operation of machinery and use of equipment within the 10m buffer will be kept to a minimum to avoid any unnecessary disturbance; There will be no refuelling allowed within 50m of the watercourse crossing; 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing; and, Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted. 	
Water Quality	<p>Drilling fluid containment</p> <p>Mitigation Measures relating to the use of a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water for directional drilling include:</p> <ul style="list-style-type: none"> The area around the Clear Bore™ batching, pumping and recycling plants will be bunded using terram and sandbags in order to contain any spillages; One or more lines of silt fences will be placed between the works area and adjacent rivers and streams on both banks; Accidental spillage of fluids will be cleaned up immediately and transported off site for disposal at a licensed facility; and, Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush. 	Construction
Water Quality	<p>Frac-out prevention and response</p> <ul style="list-style-type: none"> A Fracture Blow-out (Frac-out) Prevention and Contingency Plan will be prepared by the drilling contractor prior to construction and will include the following measures: 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; A double row 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; 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> 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; and, If the risk of a further inadvertent return remains high, the drilling methodology and alignment will be reviewed within the assessed works corridor before drilling recommences. 	
Water Quality	<p>Weather controls and suspension thresholds</p> <p>The works programme for the initial construction stage of the project will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if prolonged or intense rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:</p> <ul style="list-style-type: none"> General Forecasts Meteo Alarm Hourly Rainfall Maps Rainfall Radar Images Consultancy Service <p>Works will be suspended if forecasting suggests either of the following is likely to occur:-</p> <ul style="list-style-type: none"> >10 mm/hr (i.e. high intensity local rainfall events); >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, >half monthly average rainfall in any 7 days. <p>Prior to works being suspended the following control measures will be completed:</p> <ul style="list-style-type: none"> Secure all open excavations; Provide temporary or emergency drainage to prevent back-up of surface runoff; and, 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> Avoid working during heavy rainfall and for up to 24-hours after heavy events to ensure drainage systems are not overloaded. 	
Water Quality	<p>Drainage installation</p> <p>The construction of the site drainage system will be carried out, at the respective locations, prior to other activities being commenced. The construction of the drainage system will only be carried out during periods of, where possible, no rainfall, therefore avoiding runoff. This will avoid 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 functional for all subsequent construction works.</p>	Pre-construction & Construction
Water Quality	<p>Excavation dewatering</p> <ul style="list-style-type: none"> Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations, will be put in place; The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters to ensure that Greenfield runoff rates are mimicked; If required, pumping of excavation inflows will prevent build-up of water in the excavation; The pumped water volumes will be discharged via volume and silt/sediment ponds and settlement lagoons 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 wind farm excavations by the Environmental Manager will occur during the construction phase. If high levels of seepage inflow occur, excavation work at this location will cease immediately and a geotechnical assessment undertaken; and, A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies. They will be used as final line of defence if needed. 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water Quality	Fuel storage, refuelling and spills <ul style="list-style-type: none"> The volume of fuels or oils stored on site will be minimised. All fuel and oil will be stored in an appropriately bunded area within the temporary construction compound. Only an appropriate volume of fuel will be stored at any given time. The bunded area will be roofed to avoid the ingress of rainfall and will be fitted with a storm drainage system and an appropriate oil interceptor; All bunded areas will have 110% capacity of the volume to be stored; On site refuelling of 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 at the temporary compound and will be towed around the site by a 4x4 jeep to where plant and machinery is located. No refuelling will be permitted at works locations within the 50 m hydrological buffer. The 4x4 jeep will also be fully stocked with fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations to avoid any accidental leakages; All plant and machinery used during construction will be regularly inspected for leaks and fitness for purpose; Spill kits will be readily available to deal with and accidental spillages; All waste tar material arising from road cuttings (from trenching or other works in public roads) will be removed off-site and taken to a licensed waste facility. Due to the potential for contamination of soils and subsoils, it is not proposed to utilise this material for any reinstatement works; and An outline emergency plan for the construction phase to deal with accidental spillages is contained within the Planning-Stage CEMP. This emergency plan will be further developed prior to the commencement of project and will be agreed with the Planning Authority as part of the detailed CEMP. 	Construction
Water Quality	Concrete and cement controls <ul style="list-style-type: none"> No batching of wet-cement products will occur on site. Ready-mixed concrete will be brought to site as required and, where possible, pre-cast products will be utilised; All drain crossings will utilise pre-cast products and the use of wet-cement products within the hydrological buffer will be avoided; 	Construction

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. Chute cleaning will be undertaken at lined cement washout ponds with waters being stored in the temporary construction compound, removed off site and disposed of at an approved licensed facility. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed; Weather forecasting will be used to ensure that prolonged or intense rainfall is not predicted during concrete pouring activities; and, The concrete pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. 	
Otter Protection	<p>Otter surveys and safeguards</p> <p>A pre-construction walkover survey of the project will be undertaken. This will search for otter holts/couches, which could change over time. If any are identified, then appropriate exclusion zone(s) will be implemented and construction activities timed to avoid sensitive periods, such as the breeding season.</p> <p>The following will be implemented to reduce the possibility of direct and indirect effects on otters:</p> <ul style="list-style-type: none"> limiting construction works to daylight hours; providing exit points for any excavations (e.g. escape planks or spoil runs) so otters do not become trapped; and a suitably qualified Ecologist will be employed for the duration of the construction period to make contractors aware of the otter sensitivities of the project and to undertake surveys for breeding or resting otters throughout the construction period, enforcing exclusion areas (150 m) as required. If in the unlikely event that exclusion zones cannot be implemented, advice will be sought from NPWS, and appropriate avoidance and mitigation measures will be put in place and an application will be made to NPWS for a derogation licence if required. 	Pre-construction & Construction
Water Quality	<p>Operation drainage</p> <ul style="list-style-type: none"> Interceptor drains will be installed up-gradient of all infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader; 	Construction & Operation

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
	<ul style="list-style-type: none"> Swales/road side drains will be used to collect runoff from access tracks, turbine hardstanding areas and substation compound areas which may contain entrained suspended sediment, and channel it to settlement ponds for sediment settling; Transverse drains ('grips') will be constructed, where appropriate, in the surface layer of access tracks to divert any runoff into swales/track side drains; Check dams will be used along sections of access tracks drains to intercept silts at source. Check dams will be constructed from a 40mm non-friable crushed rock or similar; Swales and check dams will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, Settlement ponds will be designed in accordance the greenfield runoff rate requirements; and, Imported rock for construction purposes and road surfacing will be strong, well-graded limestone which will be resistant to erosion and have a low likelihood to generate fines in hardstand runoff. 	
Water Quality	<p>Operation fuel and oil safeguards</p> <ul style="list-style-type: none"> Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction; Any oil storage tanks will be located in a concrete bund, impervious to rainwater ingress, capable of holding 110% of the stored oil volume; Turbine transformers will be located within the turbines, and any leaks will be fully contained within the turbine thus eliminating any pathway for leakages to affect land and soil; Maintenance vehicles will be regularly inspected for leaks and fitness for purpose; and An emergency plan for the operational phase to deal with accidental spillages will be contained within Environmental Management Plan. Spill kits will be available to deal with accidental spillages. 	Operation

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water Quality	<p>Rath Group Water Scheme source protection</p> <p>No refuelling or handling of fuels/oil/lubricants/chemicals will be permitted within 100m of the mapped source protection area boundary.</p> <p>In addition, to prevent potential leaching of cement from the electricity cable trenching, a geotextile liner will be placed around the founding layer (lean mix concrete) where concrete is to be poured.</p> <p>Also, there will be clear signage in place inside the source protection area to remind construction workers that the area is inside a drinking water protection area and that there are restrictions around the use of fuels/oil/lubricants/chemicals.</p>	Construction - UGL

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Water Quality	<p>Flood warnings and managed retreat</p> <ul style="list-style-type: none"> The first point of mitigation is ongoing monitoring of weather forecasts and weather warnings. The project Environmental Manager (EM) or the site Ecological Clerk of Works (ECoW) will be responsible for monitoring weather forecasts during the construction phase. When the forecast indicates rainfall exceeding any of the works-suspension thresholds set out at Natura Impact Statement, Section 5.5.1.1, Works in Wet Weather, or where a Met Éireann Status Yellow or higher rainfall warning is issued, the planned responses detailed below will be implemented. A managed retreat from the fluvial flood zone will be implemented in the event of a forecasted high intensity rainfall event and/or weather warning related to rainfall. This will include the following: <ul style="list-style-type: none"> 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. Existing sediment control measures will be removed, as these may be washed away and deposited elsewhere by the floodwaters. All plant, machinery and equipment will be removed from the flood zones. Works will be postponed in the event of flood or high flows in the river. 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). 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 project site will be inspected and corrective measures implemented to ensure safe working conditions e.g. dewatering of standing water in open excavations, etc. 	Construction - UGL
NIS Safeguards	<p>Decommissioning safeguards</p> <p>Mitigation measures for decommissioning will be similar to those for the construction phase; however, the magnitude required will be less, as track and turbine installation will not be required.</p>	Decommissioning

Natura Impact Statement – Schedule of Mitigation Measures		
Topic	Mitigation Measure	Phase of Development for Implementation
Bird Protection	<p>Pre-construction and seasonal bird checks</p> <p>Checks for nesting birds and/or wintering birds will be required for construction undertaken during the bird breeding season and/or winter season, respectively. If nests/wintering birds are recorded, ongoing monitoring and appropriate exclusion zones will be implemented to determine when and where works can proceed. If exclusion zones cannot be implemented, NPWS will be contacted and based on their advice, additional avoidance and mitigation measures will be implemented, with relevant licences applied for, if required.</p>	Pre-construction & Construction
Bird Monitoring	<p>Bird collision monitoring and adaptive response</p> <p>Based on current best-practice guidelines, a targeted range of flight activity surveys and collision monitoring (carcass searching) will be undertaken during the breeding and non-breeding seasons in years 1, 2 and 3 post construction, to monitor the rate of avian turbine collisions and identify any significant unforeseen adverse effects. Thereafter, if the rate of turbine strikes is as low as predicted by the CRM (which is highly precautionary), the monitoring should no longer be required. If monitoring indicates potentially significant levels of collision mortality for IEF birds, potential mitigation measures will be developed and implemented (including the possibility of turbine curtailment), and further monitoring will also be identified, to ensure there are no significant effects on any IEF birds. Proposed mitigation and monitoring measures will be agreed with the planning authority prior to implementation.</p>	Operation
Water Monitoring	<p>Drainage plans and water quality monitoring</p> <p>Prior to the commencement of development, a detailed Site Drainage Plan and Surface Water Management Plan will be prepared to detail the siting and composition of the surface water management measures. The respective plans, which will form part of a detailed Construction Environmental Management Plan (CEMP), will be prepared prior to the commencement of development.</p> <p>The CEMP will also include a detailed Water Quality Monitoring Plan for the monitoring of surface waters in the vicinity of the construction site by a designated Environmental Manager. The monitoring programme will comprise field testing and laboratory analysis of a range of agreed parameters. The civil works contractor, who will be responsible for the construction of the site drainage system, and Environmental Manager will undertake regular inspections of the drainage system to ensure that all measures are functioning effectively. The surface water sampling locations used in the project Environmental Impact Assessment Report (i.e. SW1 – SW4) will be used during construction activities. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.</p> <p>Any excess build-up of silt levels that may decrease the effectiveness of the drainage feature, will be removed and disposed of in an appropriate manner.</p>	Pre-construction & Construction



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