# Technical Appendix 15.1: Summary of Mitigation Measures

An outline Construction Environmental Management Plan (CEMP) and an outline Surface Water Management Plan (SWMP) are appended to the EIAR in **Technical Appendix 2.1** and **Technical Appendix 2.3** respectively. This document will be developed into a site-specific Barnesmore CEMP post consent/pre-construction once a contractor has been appointed and will cover both the decommissioning of the Operational Barnesmore Windfarm and the construction of the Development. It will include all of the mitigation recommended within the EIAR. For the purpose of this application, a summary of the mitigation measures (and respective chapter location outlined for comprehensive detail) is included. Embedded Mitigation measures are set out in the individual technical chapters of this EIAR.

**Table 1: Summary of Significant Effects and Associated Mitigation Measures**

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| **Initial Decommissioning / Construction Phase** | | | | | |
| Chapter 6: Biodiversity | Lough Eske and Ardnamona Wood SAC<br>Site Code: 000163 | Water quality impacts | Significant | • Section 5.1 - 5.6 of the outline CEMP<br>• Measures outlined in the NIS will be implemented.<br>• Measures outlined in the outline SWMP will be implemented.<br>• Mitigation measures outlined within **Technical Appendix 6.5** (FPM, 2019)<br>• Mitigation measures identified in Chapter 9 *Hydrology and Hydrogeology* will be implemented.<br><br>The relevant recommendations provided within the following reports will be implemented in full:<br>• *Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters* (Inland Fisheries Ireland, 2016)[1]<br>• *Control of water pollution from construction sites - Guidance for consultants and contractors* (Masters-Williams et al. 2001)<br>• *Control of water pollution from linear construction projects* (Murnane et al. 2006) | Negligible |
| | River Foyle and Tributaries SAC | Water quality impacts | Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |

[1] Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Available online at: https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html Accessed on [28/11/2019]

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | Site Code: UK0030320 | | | | |
| | River Finn SAC Site Code: 002301 (in RoI) | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |
| | Barnesmore Bog NHA Site Code: 002375 | Permanent loss of partial NHA | Habitat loss: Permanent significant impact upon habitats at a local to national scale. | • The full extent of the infrastructure footprint will be marked out prior to the commencement of works, with an appropriately robust and visible fencing / marker system. Where this meets Annex I habitats, this will also be the full extent of the works corridor, with no machinery access (access will only be allowed on foot and only for the purposes of silt / pollution control if required), storage or other works allowed outside this area.<br>• All measures, including restoration will be undertaken in line with the Draft HMP.<br>• A pre-construction Invasive Species Survey will be conducted during the optimal growing season (May to August immediately prior to works occurring at this site for the Development) and shall include data on all locations, extents and potential construction impacts in relation to scheduled and non-scheduled Alien Invasive Species (IAS). This survey will be completed along with reporting on the best course of action to be implemented to avoid the spread of such IAS on the Site of further afield. Advice will be required from an invasive species specialist, particularly in relation to the appropriate treatment / removal or waste disposal of potentially contaminated materials. | Significant temporary impact on a feature of National Importance.<br><br>Long-term residual impact will depend on the success of the bog restoration measures. With successful mitigation, there is potential for a long-term impact of low significance on a feature of National Importance.<br>this could result in a surplus of approx. 1.55 ha of enhanced/restored peatland habitat |
| | Killeter Forest and Bogs and Lakes ASSI 357 | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | Watercourses and downstream ecology | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented.<br>• For the protection of FPM lagoon-type sediment trap and plant filtration beds as described in Altmüller and Dettmer (2006) will be installed.<br>• There will be no crossing of rivers or stream by machinery during the construction phase and all machinery must stay within designated routes (working corridor) in the Site Boundary.<br>• There will be no direct dewatering to watercourses onsite during the construction phase. All outflows from drainage associated with construction will be by diffuse overland drainage at appropriate locations and through settlement ponds.<br>• There will be no active dewatering of excavations into settlement ponds, with any such dewatering being filtered through 'silt socks' / dewatering bags or a *'Siltbuster'* or similar, prior to diffuse overland discharge appropriate locations. | Negligible |
| | Fisheries | Potential for the deleterious impacts of sediment or hydrocarbon pollution / deposition which could affect the downstream habitats and species including trout and potentially Atlantic Salmon. | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented.<br>• Specific notice of Mitigation measures identified in Chapter 8 *Soils and Geology* will be implemented. | Negligible |
| | Annex I habitats:<br>[4060] Alpine and Boreal Heath<br>[4010] Wet Heath | Permanent loss of partial Annex I habitats. | Permanent significant impact upon habitats at a local to national scale. | • As per Barnesmore Bog NHA above | Significant temporary impact on a feature of National Importance. |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | [7130] Active Blanket Bog | | | | Long-term residual impact will depend on the success of the bog restoration measures. This could result in a surplus of approx. 1.55 ha of enhanced/ restored peatland habitat |
| | Non-Annex I habitats (including Gravel spoil and the revegetated Acid Grassland associated with this). | Permanent loss of habitats. | Significant | • Section 5.1 – 5.6 of the outline CEMP | Significant permanent impacts upon locally important habitats that are significant at the Site level. |
| | Otter | Disturbance or impact to prey species | Significant | • Mitigation outlined for Fisheries will be implemented. | Negligible |
| | Reptiles | Direct mortality and loss of foraging habitat. | Significant | • Works in potential hibernacula areas (adjacent to existing infrastructure) will commence outside the core hibernation period (October to March inclusive).<br>• Where this is not feasible, works will be preceded by a programme of capture and translocation of common lizards, under licence, this will be employed, in conjunction with the use of a reptile barrier to ensure non-return of individuals into the works area. | Negligible |
| | Amphibian | Direct mortality and loss of breeding ponds. | Significant | • An Ecologist will visit the site during spring (late February / March / early April) ahead of the proposed works in order to identify any key amphibian breeding areas.<br>• Wildlife barriers to be installed where necessary to minimise impacts upon such features where these are likely to be indirectly affected by the works. | Negligible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC and Annex I habitats will be implemented. | |
| Chapter 8: Soils and Geology | Soils / Geology | Significant soil and slope stability issues leading to mass movement or landslides | Significant | • Peat Stability Risk Assessment (Chapter 8: *Soils and Geology* - Technical Appendix 8.3) indicates that the risk of significant peat or slope stability issues arising on the site is negligible to low.<br>• Mitigation by avoidance. | NA (unlikely impact) |
| | Soils / Geology | Localised stability issues arising from excavation activities and vehicular movement (Localised displacement) | Moderate to Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC and Annex I habitats will be implemented.<br>Other mitigation measures include:<br>• Vehicle movement will be limited to the footprint of the Development. Furthermore, vehicular movements will be restricted to existing hardstands associated with the Operational Barnesmore Windfarm wherever and whenever possible.<br>• Machinery will be kept on established hardstands wherever possible, and no vehicles will be permitted outside of the footprint of the Development, including when advancing excavations beyond existing hardstands, and will not move onto land that is not proposed for the Development if it can be avoided.<br>• No permanent stockpiles will remain on the Site. All excavated materials from the Site or introduced materials for construction must be either used or removed from the Site.<br>• No temporary stockpiles will be positioned or placed on peat. All temporary stockpiles will be positioned on established and existing hardstand areas.<br>• No temporary stockpile placed on established hardstands in areas of deeper peat will be in excess of 1 m in height.<br>• Temporary stockpiles will be removed for reuse/remediation purposes or disposed offsite as soon as possible.<br>• All Site excavations and construction will be supervised by a geotechnical engineer/engineering geologist. | Negligible (avoidable) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | • The contractor's methodology statement (Decommissioning and Construction Environmental Management Plan) will be reviewed and approved by a suitably qualified geotechnical engineer/engineering geologist prior to Site operations.<br>• Particular attention and pre-construction assessment and mitigation planning should be given to any new infrastructure, for example; the proposed new Access Tracks, culverted watercourse crossing, and hardstand associated with T13.<br>• Any excavations that have the potential to undermine the up-slope component of a peat and / or unstable subsoil slope will be sufficiently supported by buttress, frame or rampart to resist lateral slippage. To this end, all new turbine foundation excavation locations will incorporate a safe angle of repose, however with a view to minimising the impact of the Development it is recommended that excavation in peat of >1 m depth be supported by a restraining / support wall during the construction phase.<br>• All turbine foundations located within the footprint of existing infrastructure will be assessed on a case by case basis, that is; it is recommended that trial pits are carried out and supervised by a suitably qualified geo-scientist at each and any proposed turbine location which is located within the footprint of the existing infrastructure (Note: some may be in very shallow peat or bedrock, thus reducing the mitigation requirements set here).<br>• In such excavations, pore water pressure will be kept low at all times and careful attention will be given to the existing drainage and how structures might affect it. In particular, ponding of water should not be allowed to occur in recent excavations, particularly in any areas encountered where peat is >1 m. All deliberate or incidental sumps must be drained to carry water away from the sump following rainfall. Otherwise, this water will increase hydraulic heads locally, | |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | increase pore water pressure and can potentially lead to instability.<br>• It should be noted that for areas with extensive deeper peat (e.g. T4 and T11), draining the excavation area ahead of works will likely be difficult considering the topography of the areas in question (low lying), therefore it is recommended that alternatives are considered and incorporated into the CEMP. For example; sheet piling and advanced dewatering.<br>• Due to peat's fluid-like properties, all peat excavated will be immediately removed from sloping areas. If peat is required for reinstatement, then acrotelm peat will be stripped off the surface of the bog and placed carefully at the margins of the Development along the Site track and hardstand margins that are characterised by near-horizontal slopes (<6°).<br>• Construction activities will not occur during periods of sustained significant rainfall events, or directly after such events (allowing time for work areas to drain excessive surface water loading and discharge rates reduce).<br>• Following heavy rainfall events, and before construction works recommence, the Site will be inspected and corrective measures implemented to ensure safe working conditions, for example; dewatering of standing water in open excavations, etc. | |
| | Soils / Geology | Compaction, erosion and degradation of peat arising from vehicular movement | Moderate to Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Vehicle movement will be limited to the footprint of the Development. Furthermore, vehicular movements will be restricted to existing hardstands associated with the Operational Barnesmore Windfarm wherever and whenever possible.<br>• Machinery will be kept on established hardstands wherever possible, and no vehicles will be permitted outside of the | Negligible (avoidable) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | footprint of the Development, including when advancing excavations beyond existing hardstands, and will not move onto land that is not proposed for the Development if it can be avoided. | |
| | Soils / Geology | Wastewater Sanitation contamination. | Significant | • Section 5.3 of the outline CEMP | NA (unlikely) |
| | Soils / Geology | Soil Contamination - Hydrocarbon contamination | Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Section 5.4 of the outline CEMP details Waste and Resource Management. Section 5.6 deals with Spill kits and Emergency Environmental Spill Response.<br>• Vehicles coming onto the Site will be required to be inspected and cleaned before leaving the original depot, and at the Temporary Construction Compound before advancing to the destined construction area.<br>• Collector drainage (Chapter 9: Hydrology and Hydrogeology) will be established prior to construction activities, the need for drainage as an emergency response will be limited, however 'dig and dump' remediation processes will likely be required. | Negligible (avoidable) |
| | Soils / Geology | Construction Material contamination | Moderate to Significant | • Section 5.4 outline CEMP<br>• Measures outlined in the outline SWMP will be implemented.<br>• Excess packaging and other materials will be discarded appropriately at the Temporary Construction Compound before advancing to the destined construction area.<br>• All excavated earth materials must either be re-used in an environmentally appropriate and safe manner e.g. landscaping and bog restoration or removed from the Site at the end of the construction phase.<br>• Any surplus of natural materials (e.g. peat) to be used as backfill or deposited elsewhere in the Site will not be deposited to above existing ground level for the area in question. This implies that peat used as backfill around newly | Negligible (avoidable) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | established turbine foundations will not exceed local ground level, and any peat or natural materials deposited elsewhere, for example peat cutting areas, will not exceed original ground level. In essence, no permanent stockpiles will be established as a product of the construction phase of the Development, or associated restoration activities.<br>• Any excess introduced semi-natural (road building materials) or artificial (PVC piping, cement materials, electrical wiring etc.) will be taken offsite at the end of the construction phase.<br>• Any accidental spillage of solid state introduced materials will be removed from the Site. | |
| Chapter 9: Hydrology and Hydrogeology | Surface water | Entrainment of suspended solids during earthworks | Moderate to Significant | • Section 5.1-5.6 of the outline CEMP. All mitigation measures outlined above for Chapter 8: *Soils and Geology* will be implemented.<br>• Collector drains and/or soil berms will be established to direct/divert surface water runoff from Development areas, including temporary stockpiles, and direct same into established stilling ponds, buffered discharge points or other surface water runoff control infrastructure as appropriate. This is particularly important in relation to plan effectively for surface water management associated with proposed infrastructure within 50 m surface water buffer zones.<br>• Silt fences will be established in the drainage network, and in existing natural drains and degraded peat areas which are likely to receive surface water runoff. This will reduce the potential for surface water runoff loaded with suspended solids to rapidly infiltrate towards and be intercepted by drainage or significant surface water features. It is recommended that multiple silt fences are used in drains discharging to the surface water network.<br>• A Materials Management Plan will be established and form part of the Construction Management Plan with a view to establishing material balance during the construction phase, | Imperceptible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | thus minimising the potential for, or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff.<br>• Temporary stockpiles will be limited to one m height and removed for reuse/remediation purposes or disposed offsite as soon as possible.<br>• No permanent, or semi-permanent stockpile will remain on the Site during the construction or operational phase of the Development.<br>• Suitable locations for temporary stockpiles will be identified on a case-by-case basis. The suitability of any particular location will consider characteristics of the Site including; slope incline and topography, drainage networks in the vicinity and proximity to same, other relevant characteristics which are likely to facilitate, increase, or compound the potential for entrainment by surface water runoff. | |
| | Surface water | Increased entrainment of contaminants and other impacts arising due to localised stability issues | Moderate to Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Sections 5.1-5.6 of the outline CEMP.<br>• Section 8.5 of Chapter 8: *Soils and Geology*<br>• Section 9.5 of Chapter 9: *Hydrology and Hydrogeology* | Imperceptible |
| | Surface water | Catastrophic impacts arising from significant stability issues (Landslide – worst case) | Potentially Profound | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Sections 5.1-5.6 of the outline CEMP.<br>• Peat Stability Risk Assessment (Chapter 8: *Soils and Geology* - Technical Appendix 8.3) indicates that the risk of significant peat or slope stability issues arising on the site is negligible to low.<br>• Mitigation by avoidance. | NA (unlikely) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | Surface Water | Dewatering -Water quality impacts | Significant | • Mitigation outlined above for Lough Eske and Ardnamona Wood SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Sections 5.1-5.6 of the outline CEMP.<br><br>Further mitigation measures include:<br>• Section 9.5 of Chapter 9: *Hydrology and Hydrogeology*<br>• Areas of peat / subsoils to be excavated will be drained ahead of excavation works, thus reducing the volumes of water encountered during excavation works. However, considering the water content of peat and blanket bog, and the frequency of rainfall events in the region, there will likely be residual water within excavations which needs to be dewatered and managed despite preparation works.<br>• Engineered drainage and attenuation features will be established ahead of excavation works.<br>• Dewatering flow rate or pumping rate will be controlled by an inline gate valve or similar infrastructure. This will facilitate reduction of loading on the receiving drainage and attenuation network, thus enhancing the attenuation and settlement of suspended solids.<br>• In some areas of the Development constraints related to incline and/or stability, or construction activities within the 50 m buffer zone will likely limit the potential for installation of engineered attenuation features. In such instances, it is recommended that water arising from dewatering activities is pumped to a settlement tank before being discharge to the receiving drainage network or pumped to an area of the Site where the installation of attenuation features is suitable.<br>• Any water pumped from excavations, or any waters clearly heavily laden with suspended solids will be pumped through ‘silt dewatering bags’, or through a settlement tank | Imperceptible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | before the treated water is discharged to the established drainage network.<br>• No extracted or pumped water will be discharged directly to the surface water network associated with the Site (this is in accordance with The Irish Water Pollution Acts (1977 & 1990). | |
| | Surface water | Watercourse crossings – Water quality impacts | Significant | • Section 5.2 of the outline CEMP: Oil and Chemical Delivery and Storage.<br>• Proposed bridges will be designed in such a way as to minimise, in so far as practical, but to the extent deemed acceptable by the competent authority, the disturbance or alteration of water flow, erosion and sedimentation patterns and rates. This will be done following and adhering to relevant available guidance and will be reviewed and consented (or otherwise) by the OPW, thus mitigating against any significant impact in terms of surface water flow and in turn the risk of flooding locally or indeed elsewhere.<br>• A detailed method statement and risk assessment (RAMS), will be drafted and will include details of the bridge design and construction methodology, including the environmental risk/s involved (as identified in this report) and how each can be minimised using best practice techniques.<br>• An oil absorbent boom will be installed downstream (within 25m) of construction works, before works commence.<br>• Construction management plans and methodology, including RAMS, will be included with the application submitted to the OPW requesting consent to construct said watercourse crossing / bridge.<br>• All construction works related to watercourse crossing, i.e. any construction works within 50m surface water buffer zones (e.g. trackways leading to crossings), will be incorporated in watercourse crossing construction plans | Negligible to Slight |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | and considerations, and the above mitigation measures will be applied in these instances also. | |
| | Surface water and Groundwater | Hydrocarbon contamination | Significant | • Section 5.2 of the outline CEMP: Oil and Chemical Delivery and Storage, Section 5.6 Spill Kits and Emergency Response.<br>• A suitably qualified management company will take responsibility for management and maintenance of the oil interceptor and associated drainage on a regular basis, including decommissioning.<br>• The plant equipment used onsite will require regular mechanical checks and audits to prevent spillage of hydrocarbons on the exposed ground (during construction).<br>• Two no. oil booms will be installed at each required location, this will facilitate changing out of booms if needed, without facilitating direct flow of floating product during such activities if present. Oil booms deployed will have sufficient absorbency relative to the hazard, for example, the volume of fuel in a particular construction vehicle.<br>• Suitable receptacles for hydrocarbon contaminated materials will also be at hand. | Negligible (avoidable) |
| | Surface water and Groundwater | Wastewater sanitation contamination | Significant | • Section 5.3 outline CEMP: Wastewater<br>• Wastewater from sanitation facilities will be mitigated by use of temporary and portable sanitary facilities that are self-contained. These facilities will not interact with the existing hydrological environment in any way and they will be maintained, serviced and removed from the Site at the end of the construction phase.<br>• Inorganic nutrients such as nitrogen and phosphorus compounds (if present in excavated sediment) will be controlled by attenuation of the suspended solids to which they adsorb to and by retention of discharge waters within stilling ponds to allow peak runoff to recede prior to discharge. It is noted that the baseline surface water | NA (unlikely) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | chemistry (under relatively high flow regime) indicates low Ammoniacal Nitrogen and low concentrations of Phosphate.<br>• Bacteriological contamination arising from availability of nutrients (e.g. sanitation, livestock etc.) will be mitigated by appropriate self-contained sanitation facilities (above) and livestock grazing control on the Site overall, but particularly on areas zoned for excavation and development.<br>• There is low risk of mobilising trace metals that may naturally be present. The potential impact may arise from introduced water percolation with excavated bedrock substrate. Concentrations of trace metals are usually low in the natural environment. However, water quality should be checked for metals concentration before, during and after the construction phase. | |
| | Surface water and Groundwater | Contamination with construction or cementitious materials | Significant | • Section 5.2 of the outline CEMP: Oil and Chemical Delivery and Storage, Section 5.6 Spill Kits and Emergency Response.<br>• Precast concrete will be used wherever possible i.e. formed offsite, however this is not likely to be possible in terms of significant concrete structures, for example, turbine foundations.<br>• Lean mix concrete will not be used.<br>• The acquisition, transport and use of any cement or concrete onsite will be planned fully in advance and supervised at all times.<br>• Vehicles transporting such material will be relatively clean upon arrival onsite, i.e. vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on the vehicle which could be deposited on trackways or anywhere else onsite. To this end, vehicles will undergo a visual inspection prior to being permitted to | Negligible (avoidable) |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | drive onto the Site or progress beyond the contractor's yard. Vehicles will also be in good working order.<br>• Any shuttering installed to contain the concrete during pouring will be installed to a high standard with minimal potential for leaks. Additional measures could be taken to ensure this, for example the use of plastic sheeting or other sealing products at joints.<br>• Concrete will be poured during periods of minimal precipitation. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete.<br>• Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place.<br>• No surplus concrete will be stored or deposited anywhere onsite. Such material will be returned to the source location or disposed of offsite appropriately. | |
| | Surface water and Groundwater | Release and transport of suspended solids – Water quality impacts. | Significant | • Mitigation outlined above for Lough Eske and Ardnamona SAC, Annex I habitats and Soils and Geology will be implemented.<br>• Sections 5.1 -5.6 of the outline CEMP.<br>Further specific measures include:<br>• Diffuse surface water runoff will be managed as follows:<br>• Collector drains and/or soil berms will be established to direct/divert surface water runoff from Development areas, including temporary stockpiles, and direct same into established stilling ponds, buffered discharge points or other surface water runoff control infrastructure as appropriate. This is particularly important in relation to plan effectively for surface water management associated with | Imperceptible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | proposed infrastructure within 50 m surface water buffer zones.<br>• Silt fences will be established in the drainage network, and in existing natural drains and degraded peat areas which are likely to receive surface water runoff. This will reduce the potential for surface water runoff loaded with suspended solids to rapidly infiltrate towards and be intercepted by drainage or significant surface water features. It is recommended that multiple silt fences are used in drains discharging to the surface water network.<br><br>Waters arising as a product of excavation activities will be managed as follows:<br>• Waters arising from dewatering practices during excavation works are highly likely to be significantly loaded with suspended solids. As such, constructed stilling ponds or buffered outfalls may be insufficient in controlling the release of suspended solids to the surface water network, or have the potential to clog due to significant volumes of settled or attenuated solids. Therefore, any water pumped from excavations, or any waters clearly heavily laden with suspended solids will be pumped through 'silt dewatering bags', or through a settlement tank before the treated water is discharged to the established drainage network.<br><br>Waters (likely loaded with suspended solids) intercepted by the established drainage network will be managed as follows:<br>• In line Stilling Ponds will buffer the run-off discharging from the drainage system during, by retaining water, thus reducing the hydraulic loading to watercourses. Stilling ponds are designed to reduce flow velocity to 0.3 m/s at which velocity silt settlement generally occurs. Note: this | |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | method of mitigation may not be feasible at some locations on the Site.<br>• In line Check Dams will be constructed across drains. Check dams will reduce the velocity of run-off in turn promoting settlement of solids upstream of the dam. Check dams will also reduce the potential for erosion of drains. Rock filter bunds may be used for check dams however, wood or straw/hay bales can also be used if properly anchored. It is recommended that multiple check dams are installed, particularly in areas immediately downgradient of construction areas.<br>• Surface water runoff will be discharged to land via buffered drainage outfalls. Buffered drainage outfalls will contain hard core material of similar or identical geology to the bedrock at the Site to entrap suspended sediment. In addition, these outfalls promote sediment percolation through vegetation in the buffer zone, reducing sediment loading to any adjacent watercourses and avoiding direct discharge to the watercourse. It is recommended that a relatively high number of discharge points are established, thus decreasing the loading on any particular outfall. Discharging at regular intervals mimics the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points.<br>• Buffered drainage outfalls will be located outside of 50 m surface water buffer zones. Similarly, outfalls will not be positioned in areas with extensive erosion and degradation.<br>• It is recommended that coagulant or flocculant is used to promote the settlement of finer solids prior to discharging to surface water networks (outline CEMP Section 5.1). Flocculant 'gel blocks' are available and can be placed in drainage channels. Gel blocks are passive systems, self-dosing, self-limiting, and are environmentally friendly. | |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | Monitoring and maintenance will include the following:<br>• Site water runoff quality will be monitored on a continuous basis at a reasonable frequency during both the decommissioning and construction, and operational phases of the Development. A relatively high frequency of monitoring (e.g. daily) is required during the decommissioning and construction phase, similarly the early stages of the operational phase will require a relatively high frequency of monitoring, however the frequency of monitoring can gradually reduce thereafter – presuming there are no issues with the quality of discharging water at that point in time.<br>• It is recommended that continuous monitoring systems are put in place, particularly in principal surface water features draining the Site. For example; remote sensing, or telemetric monitoring sensors (turbidity) can be employed in this regard. It is recommended that a handheld turbidity meter is at available to accurately measure the quality of water discharging from the Site. The meter should be maintained and calibrated frequently and will also be used to check and calibrate remote sensors if they are employed. It is recommended that quality thresholds are established for the purposes of escalating water quality issues as/if they arise. For example; TSS limit of 25mg/l (S.I. no. 293 of 1988 – Salmonid Regulations).<br>• Surface water runoff control infrastructure will be checked and maintained on a regular basis and stilling ponds and check dams will be maintained (desludged/settle solids removed) on a regular basis, particularly during the construction phase of the Development. It is important to minimise the agitation of solids during these works, | |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | otherwise it will likely lead to an acute significant loading of suspended solids in the drainage network.<br>• As part of the CEMP, regular checking and maintenance of pollution control measures are required, with an immediate plan for repair or backup if any breaches of design occur. In the event that established infrastructure and measures are failing to reduce suspended solids to an acceptable level, construction works will cease until remediation or upgrading works are completed. | |
| Chapter 12: Material Assets | Fisheries | Water quality pollution, including increased suspended solids | Significant | • As outlined above for all predicted effects for surface water.<br>• During operation, mitigation measures include blocking of temporary construction-phase drains, active revegetation and embedded drainage design to avoid potential erosion. | Not Significant |
| Chapter 12: Air and Climate | Air and Human Health | Dust and airborne particulate matter | Significant | • Section 5.6 of outline CEMP: Air, Noise, Vibration, Land and Flora and Fauna | Not Significant |
| Chapter 14: Traffic and Transport | Pedestrian and vulnerable road users. | Congestion on narrow local roads. | Significant | • A Traffic Management Plan (TMP) will be developed for the initial decommissioning and construction phases to determine working hours, routes and this will be prepared in consultation with Donegal County Council and An Garda Síochána as necessary. Where possible, HGV trips should be scheduled to avoid times when drop offs and pick-ups generally take place at schools, particularly Barnesmore Montessori school. All drivers will be made aware of the location and presence of schools and other sensitive receptors at an induction session prior to construction activities taking place.<br>• Priory to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Donegal County Council Roads Departments to discuss the requirement for a Garda escort. The Applicant will also outline the intended timescale for deliveries and efforts can be made to avoid peak times such as school drop off times, church services, peak traffic times | Not Significant |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | where it is considered this may lead to unnecessary disruption, and abnormal loads may travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents along the affected route will be notified of the timescale for abnormal load deliveries.<br>• A survey of the Turbine Component Haul Route will be undertaken to identify any overhead lines to identify if any overhead lines will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered.<br>• During the construction phase, clear construction warning signs will be placed on the L2095 and L2015 as necessary, which will advise road users of the presence of a construction site and of the likelihood of vehicles entering and exiting the Site. This will help improve road safety. The Site entry point will also be appropriately signed. Access to the construction site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security / Site personnel on entering and exiting the site. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. This is the current practice on entering the Operational Barnesmore Windfarm.<br>• Monitoring will be undertaken on the Civils Construction and Turbine Component Haul Route to identify any damage which may have been caused by traffic from the Development and any maintenance required can be identified. This monitoring will also identify any repairs which may be required to be undertaken once construction activities have ceased. | |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | • The L2015 Road will be resurfaced with a double layer of tar and chip in accordance with IAT guidelines for a distance of four kilometres from the junction with the L-2095-6 towards the Site. | |
| **Operational Phase** | | | | | |
| Chapter 6: Biodiversity | Barnesmore Bog NHA Site Code: 002375 | Permanent loss of partial NHA | Significant | • Management of habitat restoration as outlined in the Draft HMP. | Significant temporary impact on a feature of National Importance.<br><br>Long-term residual impact will depend on the success of the bog restoration measures. With successful mitigation, there is potential for a long-term impact of low significance on a feature of National Importance.<br>this could result in a surplus of approx. 1.55 ha of enhanced/restored peatland habitat |
| | Lough Eske and Ardnamona Wood SAC<br>Site Code: 000163 | Water quality impacts | Significant | • Re-seeding / re-vegetation of all areas of bare ground or the placement of Geo-jute (or similar) matting should take place as practically possible at the start of the operational phase to prevent run-off.<br>• Silt traps erected during the construction phase within roadside and artificial drainage should be replaced with stone check dams for the lifetime of the project. These stone check | Negligible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | dams should only be placed within artificial drainage systems such as roadside drains and not natural streams or ditches.<br>• A full review of construction stage temporary drainage will be undertaken by the Developer (in conjunction with the Project Hydrologist/ Site Engineer and the Project Ecologist) following the completion of construction, and drainage removed or appropriately blocked where this will not interfere with infrastructure.<br>• The site compound / office must house all chemicals within a secure bunded COSSH store for the operational phase of the project.<br>• All onsite wastewater treatment facilities should be as per regulations to prevent nutrient overloading of aquatic environments. | |
| | River Foyle and Tributaries SAC Site Code: UK0030320 | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |
| | River Finn SAC Site Code: 002301 (in RoI) | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |
| | Watercourses and downstream ecology | Water quality impacts | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |
| | Otter | Disturbance or impact to prey species | Significant | • Mitigation outlined for Lough Eske and Ardnamona Wood SAC will be implemented. | Negligible |
| | Reptiles | Direct mortality and loss of foraging habitat. | Significant | • Works in potential hibernacula areas (adjacent to existing infrastructure) will commence outside the core hibernation period (October to March inclusive).<br>• Where this is not feasible, works will be preceded by a programme of capture and translocation of common lizards, under licence, this will be employed, in conjunction with the use | Negligible |

| Chapter | Receptor | Predicted Effect | Potential Significance prior to Mitigation | Mitigation Proposed | Residual Effect |
|---|---|---|---|---|---|
| | | | | of a reptile barrier to ensure non-return of individuals into the works area. | |
| | Annex I habitats:<br>4060 Alpine and Boreal Heath<br>4010 Wet Heath<br>7130 Active* Blanket Bog | Permanent loss of partial Annex I habitats. | Permanent significant impact upon habitats at a local to national scale. | • As per Barnesmore Bog NHA above | Significant temporary impact on a feature of National Importance.<br><br>Long-term residual impact will depend on the success of the bog restoration measures. With successful mitigation, there is potential for a long-term impact of low significance on a feature of National Importance.<br>this could result in a surplus of approx. 1.55 ha of enhanced/ restored peatland habitat |

**Table 2: Summary of Mitigation Measures for Non-Significant Effects**

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| **Initial Decommissioning and Construction Phase** | | | | | |
| Chapter 6: Biodiversity | Annex I Dystrophic Lakes | Water quality impacts | Not Significant | • Section 5.1 – 5.6 of the outline CEMP<br>• Measures outlined in the outline SWMP will be implemented.<br>• Mitigation measures identified in Chapter 9 *Hydrology and Hydrogeology* will be implemented.<br><br>The relevant recommendations provided within the following reports will be implemented in full:<br>• *Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters* (Inland Fisheries Ireland (IFI), 2016)<br>• *Control of water pollution from construction sites - Guidance for consultants and contractors* (Masters-Williams et al. 2001)<br>• *Control of water pollution from linear construction projects* (Murnane et al. 2006) | Negligible |
| | Drains and Ditches | Water quality impacts | Not Significant | • Section 5.1 – 5.6 of the outline CEMP<br>• Mitigation measures identified above in Chapter 8 *Soils and Geology* will be implemented.<br>• Mitigation measures identified above in Chapter 9 *Hydrology and Hydrogeology* will be implemented. | Negligible |
| Chapter 7: Ornithology | Golden Eagle<br>Hen harrier<br>Merlin<br>Peregrine<br>Buzzard<br>Kestrel<br>Sparrowhawk<br>White-tailed eagle<br>Curlew | Disturbance | Not Significant | • Mitigation measures outlined above in Table 1, Chapter 7 Ornithology.<br>• Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*.<br>• Implement CMS as per Section 7.9.2, Chapter 7 *Ornithology* | Imperceptible |
| | Golden eagle<br>Merlin<br>Peregrine | Displacement | Not Significant | • Mitigation measures identified above for Chapter 7 Ornithology – Disturbance. | Imperceptible |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | Buzzard<br>Kestrel<br>Sparrowhawk<br>White-tailed eagle<br>Curlew | | | | |
| | Hen harrier | Displacement | Slight (Minor) | • Mitigation measures identified above for Chapter 7 Ornithology – Disturbance.<br>• Measures outlined in the draft HMP will be implemented. | Not Significant |
| | Common sandpiper<br>Whooper swan<br>Cormorant<br>Heron<br>Meadow pipit<br>Skylark<br>Ring ouzel | Disturbance and Displacement | Slight (Minor) | • Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology*<br>• Implement measures outlined in the outline SWMP.<br>• Implement measures outlined in the HMP. | Not significant |
| | Red grouse | Disturbance | Slight (Minor) | • Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology* | Not significant |
| | Red grouse | Displacement | Not Significant | • Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology* | Imperceptible |
| | Snipe | Disturbance and Displacement | Moderate – Slight (Minor) | • Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology*<br>• Implement measures outlined in the HMP. | Slight to Not significant |
| | Small passerines | Disturbance and Displacement | Slight (Minor) – Not Significant | • Implement mitigation measures outlined above for Snipe (Disturbance and Displacement). | Not significant - Imperceptible |
| | Golden plover | Disturbance | Slight | • Implement mitigation measures outlined above for Snipe (Disturbance and Displacement). | Not Significant |
| | Golden plover | Displacement | Moderate – Slight (Minor) | • Implement mitigation measures outlined above for Snipe (Disturbance and Displacement). | Slight to Not Significant |
| Chapter 8: Soil and Geology | Soil and Geology | Subsoil and Bedrock Removal | Moderate | • Section 5.1 – 5.6 of the outline CEMP<br>• Every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the impact on the geotechnical and hydrological balance of the Site. | Moderate |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | • Excavation of peat in areas where there is >1.0m in peat depth should follow appropriate engineering controls such as the drainage of the peat along the proposed new Access tracks in advance of excavation activity (1 month in advance where possible) so as to reduce pore water content and thus instability of the peat substrate prior to excavation. Such drains should be positioned at an oblique angle to slope contours to ensure ground stability. Drains should never be positioned parallel to slope contours.<br>• In those parts of the Site where excavation may intercept areas of peat that are >1.0m depth, a geotechnical engineer/engineering geologist will be onsite to supervise and manage the excavation works and confirm the necessity for supporting newly excavated peat exposures or redirect initial decommissioning and construction phase drainage to maintain ground stability.<br>• For side walls in all excavations a safe angle of repose will be established, this will ensure the potential for side wall collapse will be minimised. For peat, the safe angle of repose is approximately 15°, which equates to a c. 10 m horizontal distance if excavating to 2.5 m depth, however given the quality of the peat, and the potential residual water content after pre excavation drainage works, or increased water content following heavy rainfall events, there remains a risk of localised stability issues arising in areas of deeper peat (>2.0 m depth e.g. T4, T5 and T11). Therefore, for excavation in areas of deeper peat (e.g. T4, T5 and T11) it is recommended that excavation supports are incorporated into the CEMP for the Development, for example; temporary sheet piling, or similar. This will minimise the effect of excavation to the minimum required.<br>• Adopting good practices, planning ahead and real time monitoring in more sensitive (>1m peat depth) areas will ensure that any excavations associated with the Development | |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | will have minimal impact, that is; the risk of the activity of excavation having an increasing or variable impact will be reduced. Similarly, application of the above mitigation measures will reduce the risk of stability issues arising at a localised scale.<br>• Subsoil and bedrock which are excavated as part of the initial decommissioning and construction phase will be reused onsite wherever possible.<br>• Bedrock will be reused as backfill in areas previously excavated, or as backfill in cut and fill operations. Using the local geology as fill will ensure that impacts to hydrochemistry are minimised.<br>• Geotechnical testing on the rock arising from excavation/construction activities will be carried out prior to its reuse onsite particularly for reuse as a running or load bearing surface and will only be reused for those purposes if the suitability of same is conforms to relevant standards.<br>• Peat will be reused as backfill in areas previously excavated, or for restoration works elsewhere on the Site. To facilitate this the acrotelm (living layer) and the catotelm (lower layer) will be treated as two sperate materials. Catotelm peat will be used to backfill, for example; around turbine foundation pads once established. Acrotelm peat will be used as a dressing on top of deposited catotelm peat in order to promote and re-establish flora and ensure the acrotelm layer becomes relatively cohesive in terms of localised peat stability (vegetated). | |
| Chapter 9: Hydrology and Hydrogeology | Waterbodies | Increase in hydraulic loading by surface water runoff. | Not Significant | • Section 5.1 – 5.6 of the outline CEMP<br>• Measures outlined in the outline SWMP will be implemented.<br>• In line Check Dams will be constructed across drains. Check dams will reduce the velocity of run-off in turn promoting settlement of solids upstream of the dam. Check dams will also reduce the potential for erosion of drains. Rock filter bunds may be used for check dams however, wood or | Negligible |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | straw/hay bales can also be used if properly anchored. It is recommended that multiple check dams are installed, particularly in areas immediately downgradient of construction areas.<br>• Surface water runoff will be discharged to land via buffered drainage outfalls. Buffered drainage outfalls will contain hard core material of similar or identical geology to the bedrock at the Site to entrap suspended sediment. In addition, these outfalls promote sediment percolation through vegetation in the buffer zone, reducing sediment loading to any adjacent watercourses and avoiding direct discharge to the watercourse. It is recommended that a relatively high number of discharge points are established, thus decreasing the loading on any particular outfall. Discharging at regular intervals mimics the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points.<br>• Buffered drainage outfalls will be located outside of 50 m surface water buffer zones. Similarly, outfalls will not be positioned in areas with extensive erosion and degradation.<br>• Existing and newly established drainage infrastructure will be maintained to ensure blockages or other anomalies are addressed and rectified as the need arises. | |
| | Groundwater | Groundwater and sensitivities associated with same | Moderate | • The borehole / well will be drilled to a relatively significant depth and will target bedrock aquifer groundwater for the purposes of extraction. Preferential flow from the bedrock aquifer will be facilitated by the elevated transmissivity of weathered bedrock fissures compared to that of overburden peat or till. This in turn will reduce the potential impact to overburden pore water pressure.<br>• Upon completion of the well, a pumping test will be conducted to properly evaluate the yield of same. The data obtained will be used to set pumping or extraction limits with a view to limiting the impact of groundwater extraction relative to the | Slight to Imperceptible |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | yield, that is; groundwater extraction will be limited to 2% per day. For example; as per preliminary calculations (EIAR Section 9.4.4.8), if the yield is found to be low (c. 20 $m^3$ per day) the impact during the operational phase is likely to be Slight (1.5%), however an alternative source may be required to supplement the well during the Construction phase (higher demand). If the yield is found to be relatively high (c. 100 $m^3$ per day) the impact during Construction and Operational phases is likely to be Slight (1.5%) to Imperceptible (0.3%) respectively, that is; no control required at the assumed demand. Limiting the extraction of groundwater will minimise the cone depression / zone of influence, thus reducing the potential impact to overburden pore water pressure. Under these conditions the area impacted is likely to be less than 50m radius from the well location. | |
| Chapter 10: Noise | Residential Properties | Decommissioning / Construction noise | Negligible | • Section 5.5 of the outline CEMP<br>• The site contractors shall be required to employ the best practicable means of reducing noise emissions from plant, machinery and activities, as advocated in BS 5228. | Not significant |
| Chapter 13: Cultural Heritage | Cultural Heritage - Potential sub-surface archaeological features | Damage to archaeological finds/remains | Potential High | • A programme of archaeological monitoring shall be undertaken by a suitably qualified archaeologist, during all ground reduction works/topsoil stripping associated with the proposed hardstands/turbine locations T4, T10, T11, T12 and T13, Energy Storage Unit and the upgrade of the onsite Substation.<br>• In addition, the areas of proposed T1 and T2 are adjacent to the environs of 2 no. recorded possible crannog sites. These areas are considered locations that have higher potential for associated sub-surface archaeological finds or features. As such, the areas pertaining to T1 and T2 shall be subject to archaeological monitoring during the initial decommissioning and construction phase.<br>• In the event of an archaeological find or feature being discovered during the initial decommissioning and | Not significant |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | construction phase works, the archaeologist shall evaluate, characterise and determine the extent of the remains. Thereafter, an agreed mitigation framework including a Method Statement and Programme of Works shall be required in order to adequately preserve and/or record the archaeological resource, with consultation from the National Monuments Service (NMS). Whilst determination is being sought to mitigate the find/feature, the area shall be appropriately buffered with temporary fencing and an adequate works exclusion zone created in order to minimize any potential indirect damage during the site works.<br>• Should archaeological remains be encountered during the initial decommissioning and construction phase, these direct impacts shall be mitigated by either preservation in situ (avoided) or preservation by record (fully archaeologically excavated), per consultations and agreements with National Monuments Service (NMS). | |
| Chapter 14: Traffic and Transport | Air Quality | Impact to human health | Imperceptible | • Section 5.6 of outline CEMP: Air, Noise, Vibration, Land and Flora and Fauna<br>• Any dust generating activities will be minimised where practical during windy conditions | Not Significant |
| | Driver Delay | Slowing traffic due to vehicles accessing the site. | Not Significant | • Section 5.8 of the outline CEMP<br>• A Traffic Management Plan (TMP) will be developed for the initial decommissioning and construction phases to determine working hours, routes and this will be prepared in consultation with Donegal County Council and An Garda Síochána as necessary. Where possible, HGV trips should be scheduled to avoid times when drop offs and pick-ups generally take place at schools, particularly Barnesmore Montessori school. All drivers will be made aware of the location and presence of schools and other sensitive receptors at an induction session prior to construction activities taking place.<br>• Priory to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An | Not Significant |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | Garda Síochána and Donegal County Council Roads Departments to discuss the requirement for a Garda escort. The Applicant will also outline the intended timescale for deliveries and efforts can be made to avoid peak times such as school drop off times, church services, peak traffic times where it is considered this may lead to unnecessary disruption, and abnormal loads may travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents along the affected route will be notified of the timescale for abnormal load deliveries.<br>• A survey of the Turbine Component Haul Route will be undertaken to identify any overhead lines to identify if any overhead lines will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered.<br>• During the construction phase, clear construction warning signs will be placed on the L2095 and L2015 as necessary, which will advise road users of the presence of a construction site and of the likelihood of vehicles entering and exiting the Site. This will help improve road safety. The Site entry point will also be appropriately signed. Access to the construction site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security / Site personnel on entering and exiting the site. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. This is the current practice on entering the Operational Barnesmore Windfarm.<br>• Monitoring will be undertaken on the Civils Construction and Turbine Component Haul Route to identify any damage which may have been caused by traffic from the Development and any maintenance required can be identified. This monitoring | |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | | | | will also identify any repairs which may be required to be undertaken once construction activities have ceased.<br>• The L2015 Road to be resurfaced with a double layer of tar and chip in accordance with IAT guidelines for a distance of four kilometres from the junction with the L-2095-6 towards the Site. | |
| | Road users | Mud and Debris on local roads | Not Significant | • Section 5.5 and 5.8 of the outline CEMP<br>• Wheel cleaning equipment will be used at the exit to the Site on the access track near the site entrance to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to see that their vehicle is free from dirt and stones prior to departure from the construction site. | Not Significant |
| **Operation Phase** | | | | | |
| Chapter 7: Ornithology | Golden eagle<br>Hen harrier<br>Merlin<br>Peregrine<br>Buzzard<br>Kestrel<br>Sparrowhawk<br>White-tailed eagle<br>Common sandpiper<br>Golden plover<br>Curlew<br>Snipe<br>Red grouse<br>Whooper Swan<br>Cormorant<br>Heron<br>Meadow pipit<br>Skylark<br>Ring ouzel<br>Small passerines | Collision | Not Significant (unlikely risk) | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*. | Imperceptible (Golden eagle and Hen harrier)<br><br>Imperceptible; monitoring post construction (Merlin, Peregrine, sparrowhawk, white-tailed eagle, curlew, Cormorant and Heron)<br><br>Not Significant (Whooper Swans)<br><br>Not Significant; monitoring post-construction (All other birds listed) |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| | Buzzard<br>Kestrel | Collision | Slight (Minor) – Not significant | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*. | Not Significant; monitoring post-construction |
| | Merlin<br>Peregrine<br>Kestrel<br>Sparrowhawk<br>White-tailed eagle<br>Curlew<br>Red grouse | Displacement | Not significant | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*.<br>• Implement measures outlined in the HMP (Curlew and Red grouse). | Imperceptible |
| | Buzzard<br>Whooper swan<br>Small passerines | Displacement | Slight (Minor) – Not significant | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*.<br>• Implement measures outlined in the draft HMP (Small passerines).<br>• Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology* (Small passerines and Whooper swan). | Not Significant<br><br>Not Significant to Imperceptible (Buzzard) |
| | Golden Eagle<br>Common sandpiper<br>Cormorant<br>Heron<br>Meadow pipit<br>Skylark<br>Rind ouzel | Displacement | Slight (Minor) | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*.<br>• Implement measures outlined in the outline SWMP (Common sandpiper, Cormorant and Heron)<br>• Implement measures outlined in the draft HMP (Common sandpiper, Meadow pipit and Skylark)<br>• Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology* (Sand piper, Cormorant, Heron and Ring ouzel) | Not Significant |
| | Hen harrier<br>Golden plover | Displacement | Moderate – Slight (Minor) | • Maintain set-back specific to each species as outlined in Chapter 7: *Ornithology*.<br>• Implement measures outlined in the draft HMP (Golden plover).<br>• Implement measures outlined in the CMS as per Section 7.9.2, Chapter 7 *Ornithology* (Golden plover). | Slight to Not Significant |

| Chapter | Receptor | Predicted Effect | Significance prior to Mitigation | Mitigation | Residual Effect |
|---|---|---|---|---|---|
| Chapter 9: Hydrology and Hydrogeology | Groundwater | Groundwater and sensitivities associated with same | Moderate | • Water extraction and consumption rates will be monitored by an inline flow meter. Corrective measures and/or pumping limits will be prescribed if excessive use is observed (>2% of yield).<br>• An alternative source (for example; importation of tanked water) will be used during periods of sustained dry metrological conditions, for example; extraction of groundwater will cease during drought conditions (15 consecutive days with less than 0.2 mm rain fall per day).<br>• Groundwater obtained from the well will be sampled and samples sent for analysis at an accredited laboratory. Analysis scheduled will be inline with drinking water legislative reference limits, and results will be screened against those limits for the purposes of establishing whether the groundwater is safe for human consumption without treatment. | Slight to Imperceptible |
| Chapter 12: Air and Climate | Air Quality and Human Health | Improved Air quality | Not Significant | • The Development will have a significant positive effect on carbon savings and cumulatively, a significant positive effect when considered with Ireland's renewable energy deployment. | Not Significant |
| Chapter 12: Material Assets | Telecommunications | Temporary electromagnetic emissions | Not Significant | • Embedded mitigation in the design phase relocated Turbine 5 and Turbine 6 to a distance accepted by telecommunications operator. | Not Significant |