# Drumlins Park Wind Farm Substation & Grid Connection

# Schedule of Mitigation Measures

## Drumlins Park Limited

Galetech Energy Services

Clondargan, Stradone, Co. Cavan Ireland

Telephone +353 49 555 5050

www.galetechenergy.com

# Contents



## 1.0 Introduction

Galetech Energy Services (GES) has prepared this collated and consolidated Schedule of Mitigation Measures in respect of the proposed Drumlins Park Wind Farm Substation & Grid Connection.

The proposed development site is located in northwest County Monaghan approximately 4km southwest of the village of Newbliss, 8km southeast of Clones and 7km northwest of Cootehill. The proposed development will be located within the townlands of Drumanan and Cornawall, County Monaghan; and approximately centred at Irish Transverse Mercator (ITM) Grid Reference 655369, 819888.

The proposed development will include:-

- A 110 kilovolt (kV) 'loop-in/loop-out' Air-Insulated Switchgear (AIS) electrical substation, including 2 no. single-storey control buildings (with a Gross Floor Area of 623 square metres); 1 no. transformer bay; 2 no. line bays; and all associated electrical equipment, services and lighting within an up to 2.95 metre high fenced compound (with a total footprint of 12,765 square metres);
- An Electricity Storage System (ESS) comprising containerised energy storage modules; transformer and inverter modules; heating, ventilation and air condition units; and associated underground electricity cabling;
- Approximately 300m of on-site access tracks with associated site entrances from local public road (LT62013);
- Approximately 700m of 110kV underground electricity lines and communication cabling and all associated infrastructure;
- Replacement of 1 no. existing wooden pole-set with 2 no. lattice-type end masts, to a maximum height of up to 16m, to facilitate connection of the proposed 110kV underground electricity lines to the existing Lisdrum-Shankill 110kV overhead electricity transmission line; and
- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works, including upgrade works to the LT62013 and the provision of site drainage infrastructure and surface water protection measures.

## 1.1 Purpose of this Report

This report has been prepared to provide a concise document of all mitigation measures proposed within **Volume I** of the Drumlins Park Wind Farm Substation & Grid Connection Environmental Impact Assessment Report (EIAR). 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 which will be implemented during the construction, operational and decommissioning phases of the development.

## 1.2 Mitigation Measures

Drumlins Park Limited ('the Applicant') can confirm that all mitigation measures outlined below will be implemented except as may be required in order to comply with relevant conditions of consent.

It should be noted that a number of the below measures will be supervised and overseen by personnel who have not yet been appointed. Such personnel include:-

- Project Supervisor for the Construction Stage (PSCS);
- Civil Works Contractor;
- Electrical Works Contractor;
- Environmental Manager;
- Geotechnical Clerk of Works; and
- Archaeological Clerk of Works.

Prior to the commencement of development, each of the above will be procured by the Applicant who will have ultimate responsibility for the implementation of all mitigation measures.

## 1.3 Schedule of Mitigation Measures

| Environmental Impact Assessment Report | | |
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| **Topic** | **Mitigation Measure** | **Timing of Implementation** |
| **Population & Human Health** | Allowing for the implementation of mitigation set out elsewhere within this EIAR, no likely significant adverse effects have been identified in respect of socio-economic receptors arising from construction, operation or decommissioning of the proposed development and therefore no mitigation measures are required to reduce or remedy any effect. | Construction/Operation |
| **Biodiversity** | In the first instance, water quality will be protected through best practice construction phase management process. For example, excavation works will not be undertaken during times of prolonged or intense rainfall or if such weather events are forecast and no development works will be commenced at a specific location until such time as the drainage management system is in place, to the satisfaction of the Environmental Manager, for the relevant works. | Construction |
| **Biodiversity** | Secondly, the implementation and management of the drainage network will be subject to strict control measures set out in the Construction Environmental Management Plan (CEMP) and Surface Water Management Plan (SWMP) (see **Annex 3.5**). Outline plans, which will be developed further prior to the commencement of development to include precise details of water quality protection measures, have been prepared and have had regard to the 'Guidelines for the crossing of watercourses during the construction of national road schemes' (NRA, 2008b) and 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (IFI, 2016). The (detailed) SWMP will set out measures to avoid siltation, erosion, surface water run-off and accidental pollution events which all have the potential to adversely affect water quality within the site during the construction phase. The implementation of these measures will ensure that no surface water runoff is discharged to any watercourse without being fully treated in advance. | Construction |
| **Biodiversity** | Where access tracks pass close to drainage ditches, silt fencing will be used to protect the drainage ditches. The maintenance and monitoring of such silt fences will be subject to an on-site quality management system which will be outlined in the detailed CEMP. | Construction |
| **Biodiversity** | Erosion and sediment control will be put in place to protect agricultural drains before | Construction |

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| | commencement of any site clearance and earthworks. Exposed soil will be kept to a minimum throughout construction to further reduce risk of sediment release during rainfall events. Silt fences and bunds where necessary will be kept in place until exposed soil can be revegetated naturally in the growing season. Erosion and sediment controls will be monitored and maintained on a continuous basis throughout the construction phase. | |
| **Biodiversity** | Prior to the commencement of construction activities, silt fencing will be placed along the southern boundary of the proposed substation site which is up-gradient of the main drain to the south of the proposed substation and spoil deposition area. Silt fencing will also be installed around the proposed end mast works area. | Construction |
| **Biodiversity** | Interceptor and collector drains will be installed up-gradient and down-gradient respectively of the earthworks areas. | Construction |
| **Biodiversity** | Surface water will pass through interception infrastructure, such as silt traps, to ensure suspended solids will not reach any watercourses. | Construction |
| **Biodiversity** | Silt traps/settlement ponds and temporary interceptors and traps will be put in place on site prior to any site clearance/earthworks and will be used until such time as permanent facilities are constructed. | Construction |
| **Biodiversity** | The silt fences will be embedded into the local soils to ensure all site water is captured and directed to the surface water drainage system. | Construction |
| **Biodiversity** | All fuels, lubricants and hydraulic fluids will be kept in secure bunded areas, within the permitted Drumlins Park Wind Farm construction compound (also used for the proposed development), away from watercourses. The bunded area will accommodate 110% of the total capacity of the containers within it. | Construction |
| **Biodiversity** | Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure will be put in place and spill kits provided with all staff properly briefed and trained. | Construction |
| **Biodiversity** | Any waste oils or hydraulic fluids will be collected, stored in appropriate containers and disposed of offsite in an appropriate manner. | Construction |
| **Biodiversity** | Fuelling and lubrication will not be conducted within 50m of any surface water feature. | Construction |
| **Biodiversity** | Spoil heaps from the excavations required will be covered with geotextile and | Construction |

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| | surrounded by silt fences. | |
| **Biodiversity** | Secure concrete washout areas will be designated on site. | Construction |
| **Biodiversity** | Wheel washing facilities will be provided at the site entrance draining to silt traps. | Construction |
| **Biodiversity** | Two existing agricultural drains on site will be realigned to facilitate the construction of the proposed substation. The outfall channel of the existing drains and proposed realigned drains will be temporarily blocked before the realignment works begin. During the realignment of these drains, a sealed silt fence will be placed on the downstream end of the ditch to prevent any excess siltation entering the receiving watercourse. The realignment of these drains will also be carried out following and during a period of dry weather to avoid the entrainment of silt or sediment in surface water runoff. Following construction, Disturbed Sediment Entrainment Mats - SEDIMATS (see http://www.hy-tex.co.uk/ht_bio_sed.html) will be installed on the base of the new realigned drains for a period post construction. These will be installed according to the manufacturer's instructions at suitable locations along the realigned drain. | Construction |
| **Biodiversity** | Biosecurity measures will follow as relevant the manual 'The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' by NRA (2010). While no non-native invasive species were recorded during the walkover surveys, the implementation of best practice measures will avoid the importation of invasive species to the site. | Construction |
| **Biodiversity** | Temporary fencing (paling with 25mm mesh) will be erected around the required site works to delineate the works area and to minimize the potential for disturbance impacts outside of the works area. As no mammal dwellings were identified within the impact area of the proposed development, there is no specific mitigation required for the protection of mammals in relation to relocation/construction of artificial dwellings. However, prior to the commencement of development, a pre-construction walkover survey will be undertaken to ensure no active mammal dwellings have been created. | Construction |
| **Biodiversity** | The retention of areas of habitats and linear features such as treelines and hedgerows will reduce effects on many common mammal species within the site, where deer occur within the study area. It is recommended that hedgerow removal, if required will be carried out slowly to ensure that any mammals present can escape, such as hares. It is again noted that while the construction of the proposed | Construction |

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| | development will required the removal of c. 215m of hedgerow, it is proposed to create c. 360m of new hedgerow around the boundary of the proposed substation. | |
| **Biodiversity** | Bats are most active, particularly in relation to foraging, at nighttime and therefore construction works will only be undertaken during daylight hours with no works being carried out between dusk and dawn. Furthermore, there will be no illumination of adjacent hedgerows/treelines/scrub habitats during dark hours as these are likely to be used by commuting/foraging bats as any such illumination may interrupt normal behavior. | Construction |
| **Biodiversity** | Any mature trees required to be felled will be checked in advance for usage by bats by a suitably qualified bat ecologist. Bats will also benefit from the replanting scheme through the increased generation of insects and increased foraging corridors. | Construction |
| **Biodiversity** | Site clearance works or felling of trees will be undertaken outside of the bird nesting season, which runs from the 1st of March to the 31st of August each year. | Construction |
| **Biodiversity** | As a precautionary measure, a pre-construction common frog breeding survey will be undertaken to assess frog spawning activity in the drains on the proposed development site. This will be undertaken by a suitably qualified ecologist. If no spawning activity is present, works may commence. If frog spawn is found, works may be delayed in the drainage ditches until June/July, when froglets typically leave their breeding areas. | Construction |
| **Biodiversity** | All storage containers will be labelled appropriately, including hazardous markings. | Operation |
| **Biodiversity** | All holding tanks will be constructed of material appropriate for fuel/chemical storage and will be bunded to at least 110% of the maximum tank volume or 25% of the total capacity of all the tanks within the bund, whichever is greatest. | Operation |
| **Biodiversity** | Bunds will be to standard specified in CIRIA Report 163 'Construction of bunds for oil storage tanks' and CIRIA Report C535 'Above-ground proprietary prefabricated oil storage tank systems'. | Operation |
| **Biodiversity** | Barrels and bunded containers will be stored upright and internally where appropriate and always on drip trays or sump pallets. | Operation |
| **Biodiversity** | Appropriate spill kits will be available at all storage locations. | Operation |
| **Biodiversity** | All fuel/chemical storage facilities will be subject to weekly inspection. | Operation |

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| **Biodiversity** | Leaking or empty drums will be removed from the site immediately and disposed of via a registered waste disposal contractor. | Operation |
| **Biodiversity** | Stormwater, arising from car parking areas and the transformer within the completed development, will be discharged to ground via an oil interceptor. Stormwater discharge will be limited to greenfield runoff rates, following attenuation through comprehensive sediment control infrastructure ensuring that no deleterious material is discharged, and no adverse water quality effects are experienced. The mimicking of greenfield runoff rates is a key part of the surface water management system and will ensure that the hydrological regime is not altered by the proposed development. The operational phase of the proposed development will have a negligible effect on local watercourses. | Operation |
| **Biodiversity** | Waste will be generated during the operational phase including cooling oils, lubricating oils and packing from spare parts or equipment. All waste will be removed from site and reused, recycled or disposed of in accordance with best-practice and all regulations in a licensed facility. | Operation |
| **Biodiversity** | The lamp posts/lights within the proposed substation will be cowled to ensure that adjacent vegetation is not illuminated. The substation lighting will only be used when maintenance personnel are present. | Operation |
| **Land & Soils** | Bog 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. | Construction |
| **Land & Soils** | Excavated soil will be side cast and stored temporarily adjacent to excavation areas for reuse during reinstatement and landscaping. | Construction |
| **Land & Soils** | Silt fences, and all necessary surface water management infrastructure, 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. | Construction |
| **Land & Soils** | Upslope interceptor drains will be installed to direct rainfall or surface water interacting with exposed surfaces to avoid the effects of erosion. | Construction |
| **Land & Soils** | In order to minimise runoff during the construction phase, works will not take place during periods of intense or prolonged rainfall (to prevent increased silt laden runoff). Drainage control systems, as outlined in **Chapter 7**, will be implemented to limit | Construction |

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| | runoff effects during the construction phase. | |
| **Land & Soils** | Permanently mounded soils and subsoils (e.g. berms which may be created as part of the reinstatement/landscaping process and at the spoil deposition area) will be seeded and grassed over at the earliest opportunity to prevent erosion. | Construction |
| **Land & Soils** | The 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 aggregates/tarmacadam (at private laneway crossings) at the earliest opportunity to prevent erosion. | Construction |
| **Land & Soils** | Following the installation of the proposed end masts, excavated material material will be reinstated, graded to match the surrounding ground profile and reseeded or allowed to vegetate naturally. | Construction |
| **Land & Soils** | At the designated spoil deposition area, 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 area will be monitored, on a weekly basis during the construction phase and monthly for a 6 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. | Construction |
| **Land & Soils** | 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 at the Drumlins Park Wind Farm. 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. | Construction |
| **Land & Soils** | All bunded areas will have 110% capacity of the volume to be stored. | Construction |
| **Land & Soils** | On site re-fuelling 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. 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 | Construction |

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| | 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. | |
| **Land & Soils** | All plant and machinery used during construction will be regularly inspected for leaks and fitness for purpose. | Construction |
| **Land & Soils** | Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area. | Construction |
| **Land & Soils** | An emergency plan for the construction phase to deal with accidental spillages is contained within the Outline Construction and Environmental Management Plan (**Annex 3.5**). This emergency plan will be further developed by the contractor prior to the commencement of construction. | Construction |
| **Land & Soils** | Oil used in transformers (and other electrical apparatus as may be necessary) and storage of hydrocarbons could result in leakages during the operational phase and result in effects on soil and subsoils. The transformer and any hydrocarbon storage areas will be located in a roofed concrete bund capable of holding 110% of the stored oil volume. As part of the project design, the transformer and car parking areas within the substation compound will be fitted with a storm drainage system and an appropriate oil interceptor to ensure that no hydrocarbons are discharged to ground. | Operation |
| **Water** | Prior to the commencement of construction activities, silt fencing will be placed along the southern boundary of the proposed substation site which is up-gradient of the main drain to the south of the proposed substation and spoil deposition area. Silt fencing will also be installed around the proposed end mast works area. | Construction |
| **Water** | The outfall channel of the existing drains and proposed realigned drains will be temporarily blocked before the realignment works begin. | Construction |
| **Water** | Interceptor and collector drains will be installed up-gradient and down-gradient respectively of the earthworks areas. | Construction |
| **Water** | It is important to note that no construction activities will commence until all necessary preliminary water quality protection measures have been implemented to the satisfaction of the Environmental Manager (EM). | Construction |
| **Water** | All necessary preventative measures, set out in this chapter and the Surface Water | Construction |

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| | Management Plan (see **Annex 3.5**) will be implemented to ensure no entrained sediment, or deleterious matter, will enter the main drain to the south of the proposed substation site. | |
| **Water** | Disturbed Sediment Entrainment Mats - SEDIMATS (see http://www.hy-tex.co.uk/ht_bio_sed.html) will be installed on the base of the new realigned drains for a period post construction. These will be installed according to the manufacturer's instructions at suitable locations along the realigned drains. | Construction |
| **Water** | The silt fences will be embedded into the local soils to ensure all site water is captured and directed to the surface water drainage system. | Construction |
| **Water** | As construction works progress through the site towards the substation footprint, water protection measures will be implemented. | Construction |
| **Water** | Discharge onto ground will be via a buffered outfall arrangement e.g. silt bag which will filter any remaining sediment. | Construction |
| **Water** | No pumped construction water will be discharged directly into local watercourses and all surface water runoff will be fully treated prior to discharge. | Construction |
| **Water** | Daily monitoring of the excavation/earthworks, the water treatment and temporary sump pumping systems and the discharge area will be completed by the EM throughout the construction phase. | Construction |
| **Water** | If high levels of silt or other contamination is noted in the water treatment systems, all construction works will be immediately stopped. No works will recommence until the issue is resolved, to the satisfaction of the EM, and the cause of the elevated source is fully remedied. | Construction |
| **Water** | Earthworks will be scheduled to take place during periods of low rainfall to reduce run-off and possible siltation of watercourses. | Construction |
| **Water** | The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001). The guidance contained within this document will be strictly implemented and enforced on-site which will ensure that surface water arising during the course of construction activities will contain minimum sediment. | Construction |
| **Water** | Works will be suspended if forecasting suggests either of the following is likely to | Construction |

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| | occur:-<br>• >10 mm/hr (i.e. high intensity local rainfall events);<br>• >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,<br>• >half monthly average rainfall in any 7 days.<br>Prior to works being suspended, the following control measures will be completed:-<br>• Secure all open excavations;<br>• Provide temporary or emergency drainage to prevent back-up of surface runoff; and<br>• Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. | |
| **Water** | Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations, will be put in place. | Construction |
| **Water** | The interceptor drainage will be discharged to the site constructed drainage system and not directly to surface waters to ensure that Greenfield runoff rates are mimicked. | Construction |
| **Water** | If required, pumping of excavation inflows will prevent build up of water in excavations. | Construction |
| **Water** | All pumped water will be directed to the surface water drainage system for treatment prior to discharge. | Construction |
| **Water** | There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur. | Construction |
| **Water** | Daily monitoring of site excavations by the EM 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. | Construction |
| **Water** | A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed. | Construction |
| **Water** | The volume of fuels or oils stored on site will be minimised. All fuel and oil will be | Construction |

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| | stored in an appropriately bunded area within the temporary construction compound at the Drumlins Park Wind Farm site and will be transported to the proposed development site as required. 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. | |
| **Water** | All bunded areas will have 110% capacity of the volume to be stored. | Construction |
| **Water** | On site re-fuelling 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. 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. | Construction |
| **Water** | All plant and machinery used during construction will be regularly inspected for leaks and fitness for purpose. | Construction |
| **Water** | Spill kits will be readily available to deal with and accidental spillage. | Construction |
| **Water** | All waste tar material arising from road cuttings and road upgrade works will be removed off-site and taken to a licensed waste facility. Due to the possibility of contamination of soils and subsoils, it is not proposed to utilise this material for any reinstatement works. | Construction |
| **Water** | An outline emergency plan for the construction phase to deal with accidental spillages is contained within the preliminary CEMP (**Annex 3.5**). 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. | Construction |
| **Water** | Self contained port-a-loos (chemical toilets) with an integrated waste holding tank will also be installed at the Drumlins Park Wind Farm temporary construction compound, maintained by the providing contractor, and removed from site on completion of the construction works. | Construction |
| **Water** | Water supply for the site office and other sanitation will be brought to site and | Construction |

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| | removed after use to be discharged at a suitable off-site treatment location. | |
| **Water** | No water will be sourced on the site, nor will any wastewater be discharged to the site. | Construction |
| **Water** | 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. | Construction |
| **Water** | 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 within the Drumlins Park Wind Farm temporary construction compound with waters being tankered off site and disposed of at an approved licensed facility. There will be no discharge of cement contaminated waters to the construction drainage system or to any drain or watercourse. | Construction |
| **Water** | Weather forecasting will be used to ensure that prolonged or intense rainfall is not predicted during concrete pouring activities. | Construction |
| **Water** | The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. | Construction |
| **Water** | The outfall channel of the existing drains and proposed realignment drains will be temporarily blocked before the realignment works begin. | Construction |
| **Water** | Sediment Entrainment Mats (SEDIMATS) will be installed on the base of the new realigned drains for a period post construction. | Construction |
| **Water** | The silt fences will also be embedded into the base of the new drains to ensure all construction silt is captured. | Construction |
| **Water** | The substation compound will be surfaced with free-draining crushed stone such that rainwater can percolate to ground. | Operation |
| **Water** | During the operational phase, stormwater from the proposed development site will be discharged to local drains following attenuation. | Operation |
| **Water** | Stormwater discharge from the proposed development site will be limited to greenfield runoff rates, therefore there will be no increase in storm water runoff rates entering the local environment. | Operation |
| **Water** | Runoff from the control building, transformer and car parking areas will be also be | Operation |

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| | passed through an oil interceptor to prevent any discharge of hydrocarbons. | |
| **Water** | All storage containers will be labelled appropriately, including hazardous markings. | Operation |
| **Water** | All holding tanks will be constructed of material appropriate for fuel/chemical storage and will be bunded to at least 110% of the maximum tank volume or 25% of the total capacity of all the tanks within the bund, whichever is greatest. | Operation |
| **Water** | All bulk tanks will be located within an impervious bund. | Operation |
| **Water** | Bunds will be to standard specified in CIRIA Report 163 'Construction of bunds for oil storage tanks' and CIRIA Report C535 'Above-ground proprietary prefabricated oil storage tank systems. | Operation |
| **Water** | Barrels and bunded containers will be stored upright and internally where appropriate and always on drip trays or sump pallets. | Operation |
| **Water** | Appropriate spill kits will be available at all storage locations. | Operation |
| **Water** | All fuel/chemical storage facilities will be subject to weekly inspection. | Operation |
| **Water** | Leaking or empty drums will be removed from the site immediately and disposed of via a registered waste disposal contractor. | Operation |
| **Water** | As stated above, an oil/hydrocarbon interceptor will be installed for the duration of the operational phase to ensure that no hydrocarbons are discharged to surface water features. | Operation |
| **Air Quality & Climate** | A detailed Dust Minimisation Plan will be formulated prior to the construction phase of the project. Measures to be included within the detailed Dust Minimisation Plan include:-<br>• Access tracks and public roads in the vicinity of the site shall be regularly cleaned to remove mud, aggregates and debris and maintained as appropriate. All road sweepers shall be water assisted;<br>• Any access track that may give rise to fugitive dust shall be regularly watered, as appropriate, during dry and/or windy conditions;<br>• Vehicles delivering materials, which could give rise to dust, shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;<br>• In the event of dust nuisance occurring outside the site boundary, movement of materials will be immediately terminated and satisfactory procedures | Construction |

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| | implemented to rectify the problem before the resumption of operations;<br>• Public roads in the vicinity of the site shall be regularly inspected for cleanliness and cleaned as necessary;<br>• If issues persist and the above measures are not satisfactorily control dust emissions, a wheel washing system with rumble grids to dislodge accumulated dust and mud prior to leaving the site should be installed; and<br>• The dust minimisation plan shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. | |
| **Air Quality & Climate** | Construction related plant, machinery and vehicles will give rise to $CO_2$ and $N_2O$ emissions. However, due to the short-term and temporary nature of these works, the effect on climate will not be significant. Best practice construction methods including just in time delivery methods to prevent material waste, reuse of on-site materials (where possible) and the minimisation of fuel use will reduce construction related climate emissions. | Construction |
| **Landscape** | Aside from standard practice construction stage measures to minimise land and vegetation disturbance (such as clearly delineating the works area) and dust emissions (through damping down of access tracks if necessary), there are no specific landscape & visual mitigation measures to be implemented. The appropriate management and reinstatement of shallow excavations, in a timely manner, will ensure that any adverse effects caused, for example at the proposed site entrance, are minimised insofar as possible. | Construction |
| **Landscape** | Similarly, the progressive reinstatement and landscaping of the site will remediate any short term adverse effects on the local landscape. As part of the reinstatement and landscaping process, replanting of hedgerows will also be completed at the site entrance. This planting will be located sufficiently behind the visibility splay to allow for future growth and will ensure that extensive views of the proposed development are not afforded from the local road. | Construction |
| **Landscape** | Any vegetation which is not required to be removed to facilitate the full footprint of the proposed development will be retained and avoided insofar as possible during construction. | Operation |
| **Landscape** | New hedgerows (Hedgerow Type 2) are proposed to be planted around the | Operation |

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| | perimeter of the substation compound as per **Annex 9.3**. Any hedgerows that are to be removed to facilitate sightlines will also be replaced as per Hedgerow Type 2. Any areas of existing hedgerow that are retained around the sites perimeter will also be bolstered as per hedgerow type 1 with additional whip planting and advanced nursery stock (where necessary). Species mix is to be finalised in conjunction with the project ecologist and will be of local provenance. A total of c. 50 linear meters of hedgerow type 1 is proposed, whilst a total of c. 530 linear meters of new hedgerow type 2 is proposed. | |
| **Landscape** | A low-canopy woodland planting mix (c. 0.16ha) is proposed along the northern boundary of the proposed substation compound. This woodland mix will be provided in the form of high canopy (dominants) species, low canopy (sub-dominant) species, understory and fringe (higher shrubs) species and understory and edge (lower shrub) species, and will comprise of a mix of advanced nursery stock and whip planting. The proposed planting will be allowed to grow out to reach maturity and will provide a consistent dense band of screening along the northern boundary of the site | Operation |
| **Landscape** | It is intended to manage and maintain proposed hedgerows at c. 3m in height and the proposed woodland planting at c. 10m in height | Operation |
| **Cultural Heritage** | Archaeological monitoring of all excavations associated with the construction of the proposed development shall be carried out. Monitoring will be carried out under licence to the Department of Culture, Heritage and the Gaeltacht and the National Museum of Ireland. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. | Construction |
| **Noise & Vibration** | The contractors completing the construction works will be required to undertake noise abatement measures where necessary and comply with the recommendations of *BS5228-1:2009+A1:2014* | Construction |
| **Noise & Vibration** | It is proposed that various practices will be adopted during construction as required, including the following:-<br>• Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;<br>• Establishing channels of communication between the contractor/developer, local authority and residents;<br>• Appointing a site representative responsible for matters relating to noise and | Construction |

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| | vibration;<br>• Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; and<br>• Keeping site access tracks even to mitigate the likelihood of vibration from HGVs. | |
| **Noise & Vibration** | Furthermore, a variety of practical noise control measures will be employed. These include:-<br>• Selection of plant with low inherent likelihood of generation of noise and/or vibration;<br>• Placing of noisy/vibratory plant as far away from sensitive properties as permitted by site constraints, and;<br>• Regular maintenance and servicing of plant items. | Construction |
| **Noise & Vibration** | The following list of measures will be implemented, as relevant, to ensure compliance with the relevant construction noise criteria:-<br>• No plant or machinery will be permitted to cause a public nuisance due to noise;<br>• The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.<br>• All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;<br>• Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;<br>• Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;<br>• Any plant, such as generators or pumps, which may be required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen;<br>• During the course of the construction programme, supervision of the works will include ensuring compliance with the limits using methods outlined in *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise*; and | Construction |

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| | • The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 07:00 and 19:00 Monday to Friday and between 07:00hrs and 13:00hrs on Saturdays (unless in the event of an emergency), with no operations on Sundays or public holidays. | |
| **Noise & Vibration** | Based on assessment of the geological composition of the site, it is concluded that rock-breaking will not be required. In the unlikely event that rock breaking is necessary, the following measures will be implemented to mitigate noise emissions:-<br>• Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency;<br>• Ensure all air lines are sealed;<br>• Use a dampened breaking bit to eliminate a 'ringing' sound; and<br>• Erect an acoustic screen around breaking activities. Where possible, line of sight between top of machine and reception point should be obscured. | Construction |
| **Shadow Flicker** | Given that the proposed and permitted developments will not give rise to any likely significant effects additional compared to those assessed at **Chapter 12** (**Volume III**); no mitigation or monitoring measures additional to those set out at **Chapter 12** (**Volume III**) are required. | Operation |
| **Material Assets (Transport & Access)** | 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 in the event of an emergency. Where construction activities are necessary outside of the normal working hours, local residents and the Planning Authority will receive prior notification. | Construction |
| **Material Assets (Transport & Access)** | Traffic movements associated with the proposed development will be carefully scheduled to minimise, insofar as possible, cumulative vehicular movements during times of peak traffic movements at the Drumlins Park Wind Farm (i.e. during turbine foundation concrete pours). | Construction |
| **Material Assets (Transport & Access)** | Wheel washing equipment (e.g. dry ramp system) will be used, 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 construction site. Where conditions exist for dust to become friable, techniques such as damping down of the affected areas will be employed | Pre Construction |

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| | and vehicles/loads will be covered to reduce dust emissions. | |
| **Material Assets (Transport & Access)** | A Traffic Management Plan shall be agreed as part of the Construction Environmental Management Plan (CEMP) with the Planning Authority prior to the commencement of development. | Construction |
| **Material Assets (Transport & Access)** | Adequate signage shall be provided providing access, safety and warning information. | Construction |
| **Material Assets (Transport & Access)** | Warning signage and access control barriers will be erected to ensure that the general public cannot gain access to the works area. During upgrade works to the LT62013, pedestrians will be escorted through the works areas, if necessary, by construction personnel and only when it is safe to do so. | Construction |
| **Material Assets (Transport & Access)** | During the proposed upgrade works to the LT62013, a local diversion will be put in place to ensure that traffic flows are maintained. Given the low volumes of traffic which typically utilise the LT62013, it is possible that, with the agreement of the Planning Authority and/or Municipal District Office, the LT62013 will be closed to through-traffic for the duration of the construction phase due to the increased volume of construction traffic present and the relatively narrow carriageway. Local diversions are available and may be implemented with the agreement of the Planning Authority and/or Municipal District Office. Local access, for landowners along the LT62013, will be maintained throughout. Traffic restrictions shall be kept to minimum duration and extent. | Construction |
| **Material Assets (Transport & Access)** | All reasonable steps shall be taken to ensure that national and regional routes are used to transport all materials to/from the site, in so far as is possible. | Construction |
| **Material Assets (Transport & Access)** | The LT62013, between the proposed development site and the Drumlins Park Wind Farm, will be regularly inspected to ensure that the structural integrity of the road is not adversely affected due to HGV movements. Should a deterioration in the road condition be identified, remedial measures, in agreement with the local authority, will be implemented. | Construction |
| **Material Assets (Transport & Access)** | The proposed site entrances will be reinstated in a manner which ensures that the requisite visibility splays and road safety are maintained. | Construction |
| **Material Assets (Transport & Access)** | A designated contact point and coordinator will be put in place to manage all access arrangement and to interface with the public and the Local Authority. | Construction |

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| **Material Assets (Transport & Access)** | The site shall be closed to the public during the construction phase. | Construction |
| **Material Assets (Transport & Access)** | The LT62013 will be regularly monitored during construction to identify any damage which may have been caused by construction traffic. Where any damage has been caused by traffic associated with the proposed development, it shall be repaired by the appointed contractor as soon as practicable. | Construction |
| **Material Assets (Aviation)** | Due to the absence of tall structures and likely aviation effects, there are no specific mitigation measures during the operational phase.<br>As is best practice, and as required by Condition 13 of the Final Grant of Permission of Monaghan County Council Planning Register Reference 19/486 (Drumlins Park Wind Farm), a scheme of aeronautical obstacle warning lights for the permitted wind turbines will be agreed with the IAA prior to the commencement of development. The 'as constructed' turbine coordinates, ground and tip height elevations will be provided to the IAA following installation of the wind turbines. | Construction/Operation |
| **Material Assets (Telecommunications)** | Extensive consultation with telecommunications providers has confirmed that significant adverse effects on existing telecommunication signals are unlikely to occur as a result of the operation of the proposed development.<br>While the overall project (proposed development plus permitted Drumlins Park Wind Farm) is assessed as unlikely to interfere with any microwave links, all operators will be kept informed of any changes to the precise positioning of infrastructure to ensure that compliance with telecommunication constraints is maintained.<br>In accordance with Condition No. 9 of Monaghan County Council Planning Register Reference 19/486; if, despite precautions, telecommunication interference in any form is identified and is 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 to ensure uninterrupted telecommunication, broadcasting and mobile phone service provision. | Operation |
| **Material Assets (Telecommunications)** | There are no specific mitigation measures during the construction or operational. | Construction/Operation |