



Technical Appendix 6 - Outline Construction Environmental Plan

Gortnalug 110kV Substation and Grid Connection

26/03/2026



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INTRODUCTION

Background

- 6.1 Neo Environmental Ltd has been appointed by Renewable Energy Systems on behalf of Ballydonagh Solar Limited (the “Applicant”) to undertake an Outline Construction Environmental Management Plan (OCEMP) for a new 110kV Air insulated substation (AIS) and grid connection with associated infrastructure (the “Development on lands at Ballydonagh, Kiltormer, Co. Galway, Ireland (the “Application Site”).
- 6.2 The method of connection to the national grid will be a new 110 kV AIS Loop-in station (Gortnalug) with a ‘Loop-in/Loop out’ connection into the existing Ennis-Agannygal-Shannonbridge 110kV circuit. Ballydonagh Solar Limited accepted the Eirgrid Connection Offer (P602-CA-OL) in December 2025.
- 6.3 The Proposed Development comprises a 110kV AIS and associated grid connection infrastructure to facilitate the connection of the permitted Ballydonagh Solar Farm under Ref 2361049, as amended under Ref 25/61903 and Ballydonagh Solar Farm Extension under Ref 2461749, as amended under 26/60009, to the national grid. The applicant is seeking a ten-year permission from the date of consent of the 110kV Substation.
- 6.4 Please see **Figure 300101338-DR-100 Overall Site Layout** for the layout of the Proposed Development.

Development Description

- 6.5 The Proposed Development comprises a 110kV Air Insulated loop in/ loop out electricity substation (11,300m²) consisting of EirGrid control building (25m x 18m), customer control building (23.1m x 10.8m), 110kV bay arrangement, busbar infrastructure foundations, transformer, lightning masts, telecoms pole, CCTV, lighting columns, capacitor bank, reactor bank, harmonic filter, rural supply kiosk, house transformer, neutral earth resistor, resistor, stand by generator, compound roads, drainage, parking and hardstanding, palisade fence and gates.
- 6.6 The grid connection will consist of the removal of c.248m of the existing overhead line and poles from Ennis-Agannygal-Shannonbridge 110kV circuit and the erection of two new towers (16m height) and c.975m of double 110kV underground circuit and tracks into the proposed substation.
- 6.7 Remaining associated infrastructure consists of entrance; perimeter fencing, access tracks (1907m) (upgraded and localised widening) with water crossings; deposition areas (4300m³); temporary construction compound; and all associated and ancillary site development,

excavation, construction, landscaping and reinstatement works and the provision of site drainage.

Site Description

- 6.8 The area of the proposed Development (the “Application Site”) lies at an elevation of approximately 76.51 – 96.56m AOD and covers a total area of c. 34.8 hectares. It is centred at approximate Irish National Grid Reference (NGR) E 183907 N 220547 and is located in lands north of the L4301.
- 6.9 Comprising of a 13 field parcels of agricultural land, the site is currently being used for pastoral farming. The Application Site is bound by a mixture of trees, hedgerows and post-and-wire fencing. Access will be gained from the south gate entrance from a private lane to an unnamed local road off the L4301 to the southeast of the site.
- 6.10 The surrounding context is predominately agriculture with pockets of forestry and peatland and punctuated by individual properties, farmsteads and ribbon development associated with the minor and regional road network. Fields are typically small to medium in scale and similar in character to the Application Site lands.

Scope of Report

- 6.11 This OCEMP has been produced in support of the planning application to Galway County Council and includes:
- Construction method statement which identifies works likely to impact upon water quality;
 - Pollution prevention and mitigation measures;
 - Drainage management plan; and
 - Waste management.
- 6.12 The OCEMP has been prepared with reference to the environmental assessments which have been undertaken in support of the planning application, these include: Flood Risk and Drainage Impact Assessment (**Technical Appendix 4**) and the Ecological Impact Assessment (**Technical Appendix 2**). Following approval of the Proposed Development, this OCEMP will be revised by the contractor and amended where necessary.
- 6.13 The Applicant will appoint a main contractor who will be responsible for the construction of the Proposed Development. The contractor will ensure that all measures and mitigation identified within this OCEMP are taken into account and implemented during the construction. In addition, the OCEMP will be monitored regularly throughout the duration of the construction phase to ensure best practice is implemented.

- 6.14 A Site Manager will be appointed and will be in charge of activities on site, including personnel. They will ensure that all personnel on site follow and adhere to the procedures outlined within the OCEMP.

Statement of Authority

- 6.15 This OCEMP has been produced by Neo Environmental, with input from Rhona Coghlan BSc (Hons) and Michael McGhee BSc TechIOA. Neo Environmental have produced detailed OCEMPs for a range of development types, including for over 1GW of solar farm developments across the UK and Ireland.

LEGISLATION

6.16 Current legislation has been taken into consideration during the production of this OCEMP. The legislation covers all relevant areas including; water pollution, wildlife species protection, waste and noise. In the case of the Proposed Development, the following legislation has been considered:

- The Local Government (Water Pollution) Act 1977¹
- The Local Government (Water Pollution) (Amendment) Act 1990²
- EC (Water Policy) (Amendment) Regulations, 2003³
- The Wildlife Act 1976 (amended 2000)⁴
- EC (Birds and Natural Habitats) Regulations 2011 (amended 2015)⁵
- Protection of the Environment (POE) Act 2003⁶
- Environmental Noise Regulations 2006⁷
- Environmental Protection Agency Act 1992⁸
- Waste Management Acts (WMA) 1996 to 2005⁹
- Waste Management (Hazardous Waste) Regulations 1998¹⁰
- Carriage of Dangerous Good by Road Act 1998¹¹

¹ Office of the Attorney General (1977). Local Government (Water Pollution) Act 1977. Available at www.irishstatutebook.ie

² Office of the Attorney General (1990). Local Government (Water Pollution) (Amendment) Act 1990. Available at www.irishstatutebook.ie

³ Office of the Attorney General (2003) S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003, as amended 2014. Available at www.irishstatutebook.ie

⁴ Office of the Attorney General (1976) Wildlife Act 1976 (amended 2000), available at www.irishstatutebook.ie

⁵ Office of the Attorney General (2011) European Communities (Birds and Natural Habitats Regulations 2011 (amended 2015), available at www.irishstatutebook.ie

⁶ Office of the Attorney General (2003) Protection of the Environment Act 2003. Available at www.irishstatutebook.ie

⁷ Office of the Attorney General (2006) Environmental Noise Regulations 2003. Available at www.irishstatutebook.ie

⁸ Office of the Attorney General (1992) Environmental Protection Agency Act 1992. Available at www.irishstatutebook.ie

⁹ Office of the Attorney General (1996) Waste Management Act 1996, as amended. Available at www.irishstatutebook.ie

¹⁰ Office of the Attorney General (1998) S.I. No. 163/1998- Waste Management (Hazardous Waste) Regulations 1998. Available at www.irishstatutebook.ie

- EC Environmental Objectives (Surface Waters) Regulations 2009¹²
- EC Environmental Objectives (Groundwater) Regulations 2010¹³
- Article 4 of Waste Framework Directive (Directive 2008/98/EC)¹⁴
- Water Framework Directive (2000/60/EC)¹⁵

Guidance

6.17 The Environmental Protection Agency (EPA) has produced Pollution Prevention Guidelines (PPGs). The most relevant guidelines to the Proposed Development include:

- IPC Guidance Note – Guidance Note on Storage and Transfer of Materials for Scheduled Activities (EPA 2004) (amended 2012, 2013)¹⁶. This guidance note covers tanks, bunds and pipelines which store or transmit potentially polluting substances.
- National Hazardous and Waste Management Plan 2014-2020 (EPA 2014)¹⁷. The plan details guidance on how to prevent, reduce and collect hazardous waste.

6.18 Key guidance from other bodies that are relevant to the Proposed Development construction phase include:

- Best Practice Guide BPGCS005 – Oil Storage Guidelines¹⁸.
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects¹⁹.

¹¹ Office of the Attorney General (1998) Carriage of Dangerous Goods by Road Act 1998. Available at www.irishstatutebook.ie

¹² Office of the Attorney General (2009) European Communities Environmental Objectives (Surface Waters) Regulations 2009. Available at www.irishstatutebook.ie

¹³ Office of the Attorney General (2010) European Communities Environmental Objectives (Groundwater) Regulations 2010. Available at www.irishstatutebook.ie

¹⁴ European Parliament and the Council (2008) Directive 2008/98/EC on waste and repealing certain directives. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>

¹⁵ European Parliament and the Council (2000) Directive 2000/60/EC, establishing a framework for community action in the field of water policy. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

¹⁶ Environmental Protection Agency, Ireland (EPA) (2004) IPC Guidance Note – Guidance Note on Storage and Transfer of Materials for Scheduled Activities. Available at www.epa.ie

¹⁷ Environmental Protection Agency, Ireland (EPA) (2014) National Hazardous Waste Management Plan 2014-2020. Available at www.epa.ie

¹⁸ Best Practice Guide BPGCS005 – Oil Storage Guidelines. Available at www.envirocentre.ie

- Construction and Demolition Waste Management – a handbook for Contractors and Site Managers²⁰.
- IEMA Environmental Impact Assessment Guide to: Delivering Quality Development²¹.

6.19 UK Pollution Prevention Guidelines have also been considered in the production of this plan. The suite of Pollution Prevention Guidelines published by the Scottish Environmental Protection Agency (SEPA), the Environment Agency and the Northern Ireland Environment Agency (NIEA), are considered as a source of information on good practice only. Currently, a review for the PPGs is underway, and will result in a replacement guidance series. However, only some have been completed and therefore a mixture of guidelines and guidance documents are available. These documents provide a sound basis for any OCEMP and can be accessed online.²² The PPGs/GPPs most relevant to the Proposed Development construction phase include:

- PPG1 'General Guide to the Prevention of Pollution'
- GPP2 'Above Ground Oil Storage'
- GPP5 'Works and Maintenance in or Near Water'
- PPG6 'Working at Construction and Demolition sites'
- PPG7 'Safe Storage – The Safe Operation of Refuelling Facilities'

6.20 These PPGs/GPPs provide guidance as to the various environmental considerations and potential mitigation and prevention measures.

Health and Safety Management

6.21 A site-specific Health and Safety plan should be implemented and followed during construction of the Proposed Development. All work should be carried out in accordance with the following health and safety regulations:

¹⁹ Department of the Environment, Heritage and Local Government (2006) Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. Available at www.envirocentre.ie

²⁰ FÁS and Construction Industry Federation (2002) Construction and Demolition Waste Management – A handbook for Contractors and Site Managers. Available at www.ncdwc.ie

²¹ IEMA (2016) EIA Guide to: Delivering Quality Development. Available at: <http://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf>

²² Environmental Guidance (Wales, Scotland, and NI). Available online: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>

- Safety, Health and Welfare at Work Act 2005²³
- Safety, Health and Welfare at Work (Construction) Regulations 2013²⁴
- Safety, Health and Welfare at Work (General Application) Regulations 2007²⁵

²³ Office of the Attorney General, 2005. Safety, Health and Welfare Act 2005. Available at www.hsa.ie

²⁴ Office of the Attorney General, 2013. Safety, Health and Welfare at Work (Construction) Regulations 2013. Available at www.hsa.ie

²⁵https://www.hsa.ie/eng/Legislation/Regulations_and_Orders/General_Application_Regulations_2007/General_Application_Regulations_2007_S_I_2007_.pdf

RESPONSIBILITIES

Key Contacts & Roles

6.22 The detailed OCEMP will need to confirm the details outlined in **Table 6-1** below.

Table 6 - 1: Indicative Key Contacts & Responsibilities (governance subject to change)

	Name	Role	Address	Name & Contact Details
Developer	Ballydonagh Solar Limited	To ensure all planning condition requirements are implemented	First Floor, The Hive, Carmanhall road, Sandyford Business Park, Dublin 18, Dublin, Ireland D18 Y2C9	TBC
Main Contractor	TBC	Responsible for the development of the CEMP in line with planning condition requirements	TBC	TBC
Site Manager	TBC	Responsible for the implementation of the CEMP with all site personnel	TBC	TBC
Environmental Compliance Officer	TBC	Responsible for the coordination and development	TBC	TBC
Consulting Engineers	TBC	Responsible for the development of method statements and design	TBC	TBC

ENVIRONMENTAL SENSITIVITIES

- 6.23 The environmental assessments which were undertaken in support of the planning application identified some sensitivities onsite.
- 6.24 The key potential environmental impacts associated with the site preparation and construction works are set out in **Table 6-2**. Relevant potential sensitive receptors to the works are identified. These potential sensitive receptors, the environmental considerations and potential impacts are to be considered as the basis for a future detailed CEMP.

Table 6 - 2: Environmental Considerations and Impacts

Environmental Issue	Potential Receptor	Potential Impacts
Protected Species	Badger	Disturbance, destruction of sett, accidental trapping, and the restriction of movement through the site (foraging habitat)
Protected Species	Otter	Disturbance, contamination of aquatic environment, accidental trapping, and the restriction of movement through the site
Protected Species	Bats	Disturbance / damage to roosts.
Protected Species	Breeding birds	Disturbance / damage to nests.
Water	Waterways adjacent to the Proposed Development	Contamination of aquatic environment
Water	Groundwater	Contamination of groundwater by additional pathways caused by piling Risk to aquifer recharge Risk to existing groundwater flow route
Soil	Soil on site	Contamination, compaction & soil degradation Reduced filtration

Ecology

Habitats

- 6.25 A Fossitt Habitat and Species Scoping Survey was undertaken on the 21st of October 2025 by assistant ecologist Rhona Coghlan, which identified 14 habitat types.
- 6.26 A total of 10 habitat types were noted within the Development Boundary and 50m ESA which included:
- Improved Agricultural Grassland (GA1)
 - Hedgerows (WL1)
 - Treelines (WL2)
 - Drainage Ditches (FW4)
 - (Mixed) Broadleaved Woodland (WD1)
 - Scrub (WS1)
 - Buildings and Artificial Surfaces (BL3)
 - Amenity Grassland (GA2)
 - Mixed Broadleaved/Conifer Woodland (WD2)
 - Tilled Land (BC3)
- 6.27 Survey work was carried out in accordance with the 'Fossitt Guide to Habitats in Ireland' (2000) in order to produce a habitat map.
- 6.28 The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint and indirect loss of habitat due to disturbance and pollution. The loss of improved agricultural grassland is considered to be negligible to nature conservation within the local area.
- 6.29 Please refer to the supporting Technical Appendix 2: Ecological Impact Assessment for full details on the habitats present within the Proposed Substation Site.

Protected Species

- 6.30 As part of the Ecological Impact Assessment a desk-based data search was conducted through the National Biodiversity Data Centre (NBDC) to obtain information regarding protected/notable species within 2km of the Proposed Development Site boundary. In addition, the habitat survey included a species scoping survey to identify the potential of the Proposed Development Site to support protected and notable species. Please see the Ecological Impact Assessment (Technical Appendix 2; Ecological Impact Assessment) for details on the selection of study zones and ecology methodology.
- 6.31 No previous records of badger were found during the dedicated 2km desk-top data search. One potential badger sett was observed within the Application Site during the updated 2025 surveys, while two potential badger setts had been noted during previous Fossitt and Species Scoping surveys in in May of 2023.
- 6.32 Previous records of Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat, Natterer's Bat and Brown Long-eared Bat were found during the 2km desk-top data search. While improved agriculture is a sub-optimal habitat for bats, takes up majority of the Application Site, treelines, hedgerows, drainage ditches and areas of broadleaved woodland are present within the Application Site, which are considered important roosting, foraging and commuting habitats for bats. Multiple trees within the Application Site were determined to have bat roost potential (please see Appendix 2A – Figure 2.2 of the Ecological Impact Assessment).
- 6.33 In the event that the Proposed Development requires the trimming or felling of these trees, soft felling techniques will be used, following the precautionary principle, if roost potential exists, to ensure that no cavities are cut through and branches or trunk sections with cavities are lowered carefully to the ground and left with the access hole upward-facing overnight to allow any bats potentially present to leave safely. Such works will also be overseen by a suitably qualified and experienced ECoW.
- 6.34 No records of otter were identified by the 2km desk-study data search.
- 6.35 No sightings or field signs of otter were noted during the survey in 2023 or the updated survey in 2025. However, suitable habitat for commuting otter was noted in the survey area, primarily drainage ditches, one of which is connected to a 1st order river, the West Kiltormer river. The drainage ditches within the Application Site may provide suitable habitat for commuting otters. Most habitats within the Application Site, however, are considered to be sub-optimal for otter, as these are predominantly Improved Agricultural grassland, bounded by hedgerows and treelines. Therefore, the use of the Application Site by otter is likely to be restricted to commuting otter.
- 6.36 Records of hedgehog were found during the 2km desk-top data search. This species is primarily found in hedgerows and treelines, which are found along the boundaries of the Application Site. Some hedgerow removal is predicted, however, the degree of habitat loss is unlikely to negatively impact the hedgehog as no field signs were seen during the updated

Fossitt Habitat and Species Scoping survey which suggested that hedgehogs were utilising the Application Site.

- 6.37 Red-listed bird species, such as Snipe and Redwing, were recorded within the Application Site during the updated Fossitt Habitat and Species Scoping Survey, as well as dedicated wintering bird surveys. Redwing is a winter visitor that frequents open fields in agricultural landscapes. Snipe are a waterbird that is seen in agricultural landscapes, concentrated in areas of waterlogged fields and wet grasslands. Habitat loss and disturbance is predicted in these habitats associated with these species to accommodate the construction of the substation and access tracks. Due to the low level of vegetation clearance required, however, it is considered unlikely that these species will be significantly affected by the Proposed Development.
- 6.38 While it is considered unlikely that the above protected species will be negatively affected by the Proposed Development, precautionary mitigation and control measures have been proposed.

Environmental Designations

- 6.39 A desk-based assessment was carried out, which identified four Special Areas of Conservation (“SACs”); River Shannon Callows SAC, Redwood Bog SAC, Ardgraique Bog SAC, Glenloughaun Esker SAC, and three Special Protection Areas (“SPAs”); River Suck Callows SPA, Middle Shannon Callows SPA, and River Little Brosna Callows SPA, within 15km of the Application Site. Two Natural Heritage Areas (“NHAs”); Moorfield Bog NHA, Cloonoolish Bog NHA, were also identified within 5km of the Application Site. Areas of ecological significance were also assessed, which included wetland areas. Three wetland areas; Kiltormer Gortnamona Bog, Moaty Killcloonineen Bog, Belview Craughwell Bog, were identified within 2km of the Application Site.
- 6.40 The assessment concluded that potential ecological connectivity existed between the Application Site and the River Shannon Callows SAC and potential ornithological connectivity existed between the River Suck Callows SPA, Middle Shannon Callows SPA and the River Little Brosna SPA. It is considered unlikely that significant effects will occur to impact the integrity of the above Designated Sites; however, precautionary mitigation and control measures have been proposed to prevent any adverse impacts.
- 6.41 All designated sites with a connection to the Proposed Development Site have been outlined and fully assessed within the supporting Natura Impact Assessment (“NIS”). The findings of the NIS conclude that the Proposed Development will not lead to any significant adverse effects upon any of the European Designated Sites within the study area.

Design and Best Practice Measures

- 6.42 Given the low levels of excavation and concrete required to facilitate the substation and access tracks, it has been concluded that the Proposed Development would not have any significant direct or indirect impact on the conservation objectives of the European and Nationally Designated Sites within the zone of influence. The findings of the NIS (see Volume 1) concluded that, with the implementation of the appropriate measures and mitigation, along with ongoing monitoring to ensure compliance, it is considered that the Proposed Development will not have a significant effect upon any qualifying features, and therefore the integrity, of the European Designated Sites connected with the Proposed Development Site.
- 6.43 Measures recommended for the protection of ecological receptors and protected species and habitats within Technical Appendix 2: Ecological Impact Assessment include:
- Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment;
 - Pre-commencement otter survey;
 - Pre-commencement badger survey;
 - Pre-construction breeding bird survey on any trees, hedgerow or vegetation to be removed (if works are to commence between March and August inclusive);
 - All excavations to be equipped with a suitable means of escape provided (ramp at 45°) at the end of each working day to prevent accidental trapping of otter and badger;

Hydrology

- 6.44 According to the Environmental Protection Agency (EPA) Map²⁶ the Application Site and the surrounding area lies within Hydrometric Area No.25, Lower Shannon (Water Framework Directive) Catchment Area. The Application Site lies within the Kilcrow sub catchment 'SC_010'.
- 6.45 The Application Site is contained within the Kilcrow_020 river sub basin.

Local River Network

- 6.46 The East Loughturk Watercourse is approximately 0.2km west of the Application Site and flows in a southern and then western direction before joining the West Kiltormer Watercourse, approximately 0.4km to the west of the Application Site. This watercourse then connects with the Mountain Stream approximately 2.6km west of the Application Site, flowing in a southern direction before it eventually converges with the Kilcrow River approximately 2.9km southwest of the Application Site.
- 6.47 **Figure 4.1: Appendix A of Technical Appendix 4** shows these watercourses in relation the Proposed Development Site.

Internal Watercourses

- 6.48 The fields are bound by field drains which will convey all the surface water through the local drainage network to the watercourses outlined above. These drains vary in depth and width with **Appendix 4B of Technical Appendix 4** showing a variety which were noted during the site visit.

Groundwater Vulnerability

- 6.49 Groundwater Vulnerability refers to the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated by human activities. The more vulnerable the groundwater is, the more easily it can be contaminated by surface water. The GSI Groundwater Vulnerability maps are based upon the type and thickness of subsoils, and the presence of karst features.
- 6.50 According to the GSI map, the groundwater vulnerability across the Application Site is predominantly considered to be 'High'.

²⁶Environmental Protection Agency. EPA Map Viewer. Available at: <https://gis.epa.ie/EPAMaps/>

6.51 The subsoil permeability across the entire Application Site is predominantly classed as 'Medium'. This indicates that subsoil thickness for the Application site is between 3.0 – 10.0m.

CONSTRUCTION METHOD STATEMENT

Introduction

6.52 This Construction Method Statement (CMS) outlines the management plan for the construction and decommissioning (unlikely to be required) phases of the Proposed Development. Employed contractors will be instructed on compliance with the contents of this document prior to accessing the site for construction.

Construction Operations

6.53 The Proposed Development will be constructed in accordance with the drawings submitted in support of the planning application.

Construction Activities

6.54 The following activities will be undertaken during the construction phase:

- Erecting construction traffic signage;
- Creation of internal site tracks
- Creation of ditch/water crossings;
- Erecting security fence;
- Erecting temporary construction compound;
- Site preparation, including mowing and marking out if required;
- Bulk excavation works for the substation hardstanding to achieve an earthworks design using cut and fill methodologies to achieve a level area;
- Local excavation works may also be required within the substation compound in addition to the bulk excavation works stated above for the building and equipment foundations, fencing, CCTV, drainage and associated buried earthing / cables trenches;
- Constructing the permeable pad for the grid compound;
- Erecting of steel cable masts;
- Sustainable Drainage Systems (SuDS) installation;

- Cable route trenching and cable laying;
- Concrete base formation for the buildings and associated above ground infrastructure;
- Building of above ground infrastructure;
- Removal of construction compound; and
- Installation of ecological and landscape measures as outlined within the supporting Ecology and Landscape and Ecology Management Plan (LEMP), please see **Figure 1.14, Appendix 1A of Technical Appendix 1: Landscape and Visual Assessment.**

Trenching Methodology

- A detailed Construction Method Statement will be prepared by the Contractor and Site Manager prior to commencement of works, setting out the trenching methodology and incorporating all mitigation measures outlined in the planning application and accompanying environmental reports;
- All existing underground and overground services shall be identified and clearly marked on site prior to the commencement of excavation works, with appropriate stand off distances maintained in accordance with relevant utility provider requirements;
- The grid connection will be installed predominantly within private agricultural lands using open cut trenching techniques;
- The excavated trench will typically be approximately 825 mm in width and approximately 1315 mm in depth, subject to local ground conditions and detailed design;
- Where the cable route intersects culverts, bridges or drainage channels, these will be retained in situ where feasible, with ducting installed above or below the structure and minimum separation distances maintained in accordance with ESB Networks, EirGrid, Irish Water and Waterways Ireland specifications;
- Where temporary removal of culverts is required, a controlled method of localised damming and over pumping will be implemented, subject to agreement with relevant

stakeholders, and all structures will be reinstated to match existing levels and dimensions;

- The proposed development does not involve the permanent draining or modification of any watercourses;
- Excavated material will be temporarily stockpiled alongside the trench for reuse in reinstatement, with stockpiles limited to less than 2 m in height and located a minimum of 20 m from surface water features unless otherwise agreed with the Environmental Clerk of Works;
- Where required, the excavated trench will be dewatered using sump pumping, with all water treated through appropriate filtration measures prior to discharge to ground or an approved drainage feature;
- No installation works will take place during extreme weather events or flood conditions;
- Reinstatement of disturbed areas will be undertaken using suitable excavated material, with topsoil replacement and reseeding or turf reinstatement carried out to match existing conditions.

Ducting Methodology

- The base of the excavated trench will be prepared with a layer of Cement Bound Granular Mixture B to provide a stable formation;
- The underground cable duct arrangement will comprise 3 No. 160 mm diameter HDPE power ducts, 2 No. 125 mm diameter HDPE communications ducts and 1 No. 125 mm diameter earth continuity duct;
- The lower ducts will be installed in trefoil formation in accordance with the design drawings, using spacers to ensure correct alignment and spacing, with duct ends sealed to prevent ingress of water or debris;
- The ducts will be surrounded and covered with CBGM B material in accordance with specification and carefully compacted to avoid damage;

- Cable protection strips will be installed above the lower duct layer prior to installation of the upper ducts;
- The upper ducts will then be installed and similarly surrounded with CBGM B material and compacted in accordance with the design drawings;
- Red cable protection strips will be placed above the completed duct arrangement as specified;
- Backfilling will be carried out using CBGM B, Clause 804 material or suitable excavated material as appropriate, with warning tape installed at the specified depth above the ducts;
- In unsurfaced or agricultural areas, reinstatement will include placement of topsoil to a minimum depth of 150 mm and reseeding or replacement of turf to match existing ground conditions;
- All ducts will be cleaned and tested using brush and mandrel techniques, with a polypropylene draw rope installed in each duct and all ducts sealed in preparation for cable installation;
- All works will be carried out in accordance with the relevant specifications and will be subject to inspection by the ESB Networks Clerk of Works where required.

Schedule & Hours of Operation

- 6.55 The construction phase of the Proposed Development is anticipated to cover a period of up to 14 months. During this period, there will be a combination of HGVs (including for any abnormal loads) for the component deliveries and cars/vans for construction staff. HGV movements are expected to be most intense throughout the early stages of construction, tailing off towards the final weeks. Car/van movements are expected to be constant throughout.
- 6.56 All traffic movements will be carried out between the hours of 07.00 to 19.00 on Monday to Friday and 08.00 to 16.00 on Saturdays. Outside of these times works are limited to:
- Abnormal loads will likely be delivered outside of these times and will be subject to prior approval with the council;
 - works which do not require significant noise eg, distribution of materials, assembly of structures and modules, commissioning and testing and

- Works required in an emergency where there is the potential of harm or damage to personnel, plant, equipment, or the environment, provided the developer retrospectively notifies the County Council of such works within 24 hours of their occurrence.

Staff

- 6.57 It is forecast that there will be a maximum of 20 staff on site at any one time during the construction periods, although this will vary subject to the overall programme of works.

Equipment

- 6.58 As outlined in **Table 6-3 below**, plant equipment required for the construction phase may include but not be limited to the following:

Table 6 - 3: Plant Equipment

Equipment	Function
JCB Diggers / cable trenching machines	Trenching for cables
Dump trucks	Earth distribution as required
Sheet Piling Rig	Pile sheets into ground
Vibrating roller	Compacting access tracks and pads
Telehandler(s)	Distributing materials
Crane	Capable of lifting transformer and other infrastructure into place
Fuel bowser	Refuel plant as required
Concrete mixer	Foundations
HGV	Delivery of materials
Tracked Excavator	Excavating trenches
Generator	Provide Power
Borehole Drill Equipment	Drill boreholes to check soils

WASTE MANAGEMENT

Introduction

- 6.59 Surplus or waste materials may arise from materials imported to the site, or those generated on site during the construction and decommissioning phases.
- 6.60 The Waste Management Plan follows the waste hierarchy, as outlined within Article 4 of the Waste Framework Directive 2008/98/EC. The waste hierarchy, as defined within the legislation, is detailed below:
- Prevention;
 - Re-use;
 - Recycling;
 - Other recovery; and
 - Disposal.

Identification of Waste

- 6.61 There will be limited waste generated during the construction and decommission (if required) phases of the Proposed Development.
- 6.62 The contractor on site during each phase will ensure that all waste will be disposed of responsibly from the site. Potential waste generated during the construction phase is likely to include:
- Wooden crates or cardboard boxes in which the materials will be packaged. These will be removed from the site and recycled appropriately at regular intervals.
 - Packaging materials from various components including cabling, etc. These will also be removed regularly and recycled.
 - Aggregate and substrate arising from groundworks: soils and excavated materials generated from the construction of the substation, access tracks, underground cable trenches and associated infrastructure will be reused on site where feasible. Surplus material will be placed within deposition areas of approximately 4300m².

- Site office waste will be collected separately in order to maximise the potential for recycling.
- Any kitchen waste will be taken off site in refuse containers and disposed of off-site.
- Oils/fuels, paints, solvents or other chemicals will be stored at the temporary site compound and disposed of appropriately.
- Burning of waste on site will be prohibited.

Waste Segregation and Storage

- 6.63 A specific segregation area within the temporary site construction compound will be identified where the separation of materials will take place during the construction phase. This area will allow for the separation of materials into those which can be reused, recycled or disposed.
- 6.64 All waste containers should be appropriate to the nature of the substances stored and should be secure to ensure no waste can escape. In addition, all waste containers should be appropriately labelled to ensure that it is clear to all construction staff what types of waste can be stored in each container. These containers should be located appropriately to reduce any potential hazards and to ensure no waste is released into the external environment.
- 6.65 Relevant waste and resource management procedures will be communicated to all construction operatives during the initial site induction, which is mandatory for all staff working on site. This will include instruction on the segregation, handling, re-use and return methods to be used by all parties at all appropriate stages of development. Where possible, waste will be eliminated, re-used or recycled as per the requirements of the waste hierarchy.

Storage of Fuels and Chemicals

- 6.66 As per Best Practice Guidance (BPGCS005),²⁷ all fuels, oils and chemicals on site will have a secondary containment system of 110% capacity and be located more than 20m from any watercourse (i.e. outside of the water course buffer).
- 6.67 A bunded diesel bowser will be located inside a fenced off area within the temporary construction compound. Any other chemicals will be stored within a storage container with an accompanying Control of Substances Hazardous to Health (“COSHH”) Datasheet in accordance with health and safety regulations. If generators are used on site, these shall be

²⁷ Best Practice Guide BPGCS005 - Oil Storage Guidelines. Available at:
<http://www.envirocentre.ie/includes/documents/OilStorageBPG.pdf>;

bunded (the bund shall be capable of containing 110% of the fuel tank's capacity). The bund shall be kept empty of water.

- 6.68 Where chemicals are required on site, they must be placed in an appropriate bund to prevent ground contamination. All chemicals must be stored in a correctly marked container clearly identifying the contents. Where labels are worn off, they must have a new label placed on them or the contents transferred to a correctly marked container. All safety data sheets for all chemicals should be filed on site as part of the CEMP.
- 6.69 Spill kits will be on site and, for ease of access, located in the site office. Contingency plans will be in place for dealing with a spillage should a spillage occur.

Refuelling

- 6.70 During construction, fuel and oil deliveries shall take place within the designated refuelling area within the temporary construction compound, the location of this area falls outside the watercourse buffers (discussed subsequently). The Contractor shall supervise site deliveries to ensure that the correct amount of material is delivered to the correct tank and the level is checked prior to refilling to avoid spillage.
- 6.71 Where refuelling of vehicles on site is necessary, the following guidelines will be strictly adhered to:
- Mobile plant will be filled in a designated area, on an impermeable surface well away from any drains or watercourses;
 - A spill kit will be stored (and clearly marked) near refuelling areas;
 - A bunded tank / bowser will be used with capacity of the bund to be 110% of the fuel storage capacity;
 - Vehicles will never be left unattended during refuelling and drip trays should be located under all static plant vehicles;
 - Hoses and valves will be checked regularly for signs of wear, and will be turned off and securely locked when not in use;
 - Vehicles will not be left running unnecessarily and low emission fuels will be used where possible; and
 - Diesel pumps and similar equipment will be checked regularly and any accumulated oil removed for appropriate disposal.

Excavation and Earthworks



- 6.72 All excavation and earthworks will be carried out in accordance with BS6031:2009 Code of Practice for Earthworks.²⁸ Soil handling, extraction and management will be undertaken with regard to best practice guidelines such as Guidance on the Waste Management (Management of Waste from the Extractive Industries) Regulations 2012.²⁹
- 6.73 The following practices will be followed in relation to the excavation of cable trenches, topsoil stripping and any other earthworks:
- Any excavated material will be stored and re-used to infill excavations. Where the soil is to be re-used, this will be side casted. All side casted soil to be kept a minimum of 20m from any watercourse/surface water source.
 - Although unlikely, if any contaminated earth is uncovered, this will be stored separately and disposed of accordingly once the contaminant has been identified.
 - Efforts will be made to ensure that water does not accumulate in excavated areas.
 - All topsoil and subsoil will be stored separately, and care will be given to ensure the structure and quality of the soil is not damaged.
 - The amount of exposed ground and soil stockpiles will be kept to a minimum and any stockpiles in place for an extended period of time will be allowed to re-vegetate naturally, such as the deposition areas that are located close to the grid compound.
 - Earthworks shall not occur during unsuitable weather conditions, including when soils are waterlogged or very dry.
 - The substation is expected to be built in line with an uplift of the existing ground level across the footprint of the Proposed Development.
 - Any excavated soil which is not re-used or dispersed across the site and shall be stored in the allocated deposition areas or on the impermeable surface at the construction compound and covered to prevent silt runoff and dust creation.

Concrete

²⁸ British Standards Institute (BSI), 2009. BS 6031:2009 Code of Practice for Earthworks

²⁹ Environmental Protection Agency (EPA) 2012. Guidance on the Waste Management (Management of Waste from the Extractive Industries) Regulations 2012. Available at www.epa.ie

- 6.74 Concrete will not be allowed to enter watercourses under any circumstances, and drainage from excavations in which concrete is being poured will not be discharged directly into existing watercourses without appropriate treatment and consent from the relevant authority. Delivery trucks, tools and equipment will be cleaned at the wheel wash facility located at the temporary site compound.
- 6.75 Buffers from the site drainage ditches of 2m, as well as 10m to OPW managed watercourses, have been incorporated into the design of the Proposed Development and therefore there will be no concrete being used within the immediate vicinity of a watercourse.

Monitoring

- 6.76 Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Development. This is to ensure compliance with planning conditions and environmental regulations.
- 6.77 The Site Manager is responsible for ensuring that all monitoring is carried out according to the Environmental Monitoring Programme, summarised in **Table 6-4** below.

Table 6 - 4: Environmental Monitoring

Environmental Aspect	Monitoring Location	Monitoring Frequency	Monitoring Arrangements
Site housekeeping	Entire site	Daily	Visual inspection
Surface watercourses	All watercourses	After periods of rain Weekly, if no rain	Visual inspection
Fuels and chemicals – appropriate storage	Entire site	Daily	Visual inspection

- 6.78 These records and results will be maintained by the Site Manager and will be stored on site during the construction phase.

Site Office Waste

- 6.79 The proposed site layout includes for a temporary construction compound and all site waste will be stored in this area.
- A Project Supervisor will be employed to ensure that welfare facilities in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013, Statutory Instrument No. 291 are located at the proposed site for the duration of the

construction. Welfare facilities will be provided within the construction compound to cater for the required staff members at any one time. The welfare facilities will include:

- The provision of toilet, washing and changing facilities;
 - Clothing Storage;
 - Facilities for eating;
 - Rest room; and
 - Car Parking.
- Water will be held within a holding tank within the temporary welfare facility. There will also be a separate tank for waste. The Project Supervisor will be responsible for organising the tanks to be emptied/filled by an approved local contractor as and when required.

POLLUTION PREVENTION

Introduction

6.80 It is considered that the Proposed Development would not have any significant direct or indirect impact on the conservation objectives of the European and Nationally Designated Sites within the zone of influence. The findings of the Natura Impact Statement (“NIS”) (see Volume 1) concluded that, with the implementation of the appropriate measures and mitigation, along with ongoing monitoring to ensure compliance, it is considered that the Proposed Development will not have a significant effect upon any qualifying features, and therefore the integrity, of the European Designated Sites connected with the Proposed Development Site.

6.81 Notwithstanding this, this OCEMP sets out general pollution prevention measures.

Best Practice Measures

6.82 Suitable protection for watercourses potentially affected by the works will be installed prior to relevant works proceeding. These measures will be in-line with Environmental Protection Agency (EPA) Pollution Prevention Guidelines. Protection measures will include:

- Plant and equipment will be stored on dedicated hardstandings within the construction compound. This will minimise the risk of pollution caused by leakages occurring out of hours. Drip trays will be used where appropriate.
- Plant and equipment will be regularly checked to ensure their correct operation and verify no leakages.
- All plant and equipment will utilise biodegradable hydraulic oil.
- Spill kits will be readily available to all personnel. The spill kits will be of an appropriate size and type for the materials held on site.
- Diesel fuel will be stored in a bunded diesel bowser which will be located within a fenced off area in the construction compound.
- Refuelling and maintenance of vehicles and plant will take place in designated areas of hardstanding.
- All other chemicals will be stored in a secure area with an accompanying COSHH Datasheet.
- Wastewater from the temporary staff toilets and washing facilities will be discharged to sealed containment systems and disposed via licensed contractors.

6.83 All staff on site will be made aware of the pollution prevention measures being implemented throughout the construction appropriate toolbox talks and the site induction.

Noise and Vibration

6.84 Operating plant noise will be kept within the standards and time periods dictated for the site. Any noncomplying plant will be stopped and stood down until it can be rectified or removed from the site.

6.85 The British Standard which gives guidance on noise from construction and mineral working sites is BS 5228. This document does not specify absolute noise limits relating to construction activities; however, it does provide detailed guidance on the steps that can be taken to minimise potential noise & vibration effects. Reasonable mitigating measures are as follows:

- Vehicles and machinery will be switched off when not in use.
- Operation of plant, including fitting and proper maintenance of silencers and/or enclosures, avoiding excessive and unnecessary revving of engines and parking of equipment in locations which avoid possible effects on residential properties.

- Deliveries limited to:
 - 07.00 to 19.00 Monday to Friday.
 - 08.00 to 16.00 Saturdays.
 - Abnormal loads will likely be delivered outside of these times and will be subject to prior approval with the council.
 - Public holidays will be observed unless otherwise agreed with the local planning authority.
 - When loading and unloading material, attempts shall be made not to drop material from a height.
- 6.86 Any noise complaints shall immediately be directed to the site manager. Depending on the nature of the complaint remedial action may need to be undertaken.

Dust

- 6.87 In order to control, prevent and minimise dirt on the access route and emissions of dust and other airborne contaminants during the construction works, the following measures will be implemented:
- Wheel washing equipment will be available and used on-site (where judged necessary), as required to prevent the transfer of dirt and stones onto the public highway. All drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site. Wheel washing will likely be a water bowser and power spray. It will not have any cleaning additives and will drain into the temporary drainage feature at the site compound.
 - During windy conditions, any dust generating activities will be avoided or minimised, where practical.
 - Any soil stockpiles will be covered when left for extended periods of time.
 - Driving practices which minimise dust generation will be adopted.
 - Loads into and out of the site will be covered where required.

DRAINAGE MANAGEMENT PLAN

Introduction

6.88 The measures described in this section will be adopted during the construction phase in order to manage on-site drainage in accordance with current best practice and legislation.

Monitoring Records and Emergency Spill Response

Monitoring

6.89 To ensure compliance with the detailed Drainage Management Plan (“DMP”), drainage management works will be supervised by the site engineer.

Emergency Spill or Pollution Response

6.90 In the event of a liquid spill occurring on a construction site, the Contractor shall cease work immediately in the vicinity. Contractor's trained personnel shall have appropriate PPE and do as follows:

- Locate the source of the pollution and stop/contain any further flow if possible;
- If spillage is flammable, extinguish all ignition sources;
- Immediately deploy the spill kit in accordance with the manufacturer's instructions;
- Clean up the spill; and
- All used spill kit materials should be disposed of in the proper manner as outlined in spill summary procedures.

6.91 The Site Manager shall contact:

- The Client;
- Environmental Protection Agency (“EPA”) 24-hour emergency incident line 1890 33 55 99; and
- Inland Fisheries 24-hour pollution line 1890 34 74 24. The pollution hotline number shall be referenced in the construction site rules and displayed in the Site Office and in the Emergency preparedness & response plan.

6.92 Each Contractor working with controlled substances shall supply appropriate spill kits which shall be kept on site. The spill kits shall be made accessible at all times to all site personnel.

- 6.93 In the event of a fire, all personnel must evacuate the site and assemble at the site entrance. The Site Manager is responsible for calling the Fire Service, who will handle the emergency.

Proposed Drainage Arrangements

- 6.94 As outlined within the supporting **Technical Appendix 4: Flood Risk & Drainage Impact Assessment**, SuDS will be installed as part of the site preliminary works prior to the main equipment deliveries. The layout of the drainage design is indicated within **Figure 4.4, Appendix 4A of Technical Appendix 4**.

Construction Phase

- 6.95 The construction phase will utilise the construction compound that is within the consented Ballydonagh Solar Farm (**Planning Ref: 23/61049**).

Operational Phase

- 6.96 It is proposed to construct a network of rainwater harvesting tanks and two soakaway pits/infiltration drains within the Application Site. The idea is to capture any overland flow in the SuDS device before infiltrating into the surrounding soils.
- 6.97 The proposed soakaway pits/infiltration drains will have an overall length of approximately 93m, with a base width of 2.0m, a 2.0m design depth and a 0.15m freeboard. It will be filled with crushed rock with a void ratio of 20% and will provide a total storage volume of approximately 74.4m³.
- 6.98 The underground piped system connect the Eirgrid Control building and Customer Control Building to rainwater harvesting tanks, which discharges into a soakaway pit. As the transformer will hold a volume of oil, the system will include a class 1 full retention separator. The soakaway pit and rainwater harvesting tanks will be designed to hold a total volume of 177m³ with the detailed design of the structure being submitted to the council for review prior to the construction period.
- 6.99 A permanent toilet is proposed within the Eirgrid Control building/Customer Control Building and will be utilised by maintenance staff of the substation. Each toilet will be off grid toilet with a foul holding tank which will be emptied when required by an approved contractor.

Drainage Mitigation

Clean Water Diversion

- 6.100 Where feasible, clean water (e.g. water that has yet to come into contact with any disturbed construction or working areas), will be kept separate from the watershed or intercepted by the construction drainage.
- 6.101 Up-gradient cut-off ditches and water diversion measures will be installed, where required, in order to intercept and divert clean water around construction compound area. These measures will be installed ahead of the main construction works. This will reduce or prevent the amount of potential silt-laden or polluted water that might require treatment.
- 6.102 Clean runoff that has been diverted around an area of working should be discharged into an area of vegetation for dispersion or infiltration, in accordance with SuDS techniques.
- 6.103 Sediment control measures, such as silt traps, gravel, sand bags, anchored straw bales or silt fencing might be required at the discharge point to prevent erosion at the outlet and aid dispersion of the diverted water.

Silt Control

- 6.104 Silt-laden runoff should be expected from any areas of recently exposed soil or rock. There is also potential for pollution to occur from machinery used in the construction of the Proposed Development.
- 6.105 Any introduced or artificial materials required (e.g. silt fencing, straw bales, sand bags etc.) that might need to be deployed onsite, will be removed on completion of the works.
- 6.106 Discharge from the silt control measures will be discharged into an area of vegetation for dispersion or infiltration, in accordance with SuDS techniques or discharged into the existing drainage network within the Proposed Substation Site.
- 6.107 Additional Mitigation Measures
- The contractor shall ensure that silt fences are regularly inspected and maintained during the construction phase.
 - If very wet ground must be accessed during the construction process bog mats/aluminium panel tracks will be used to enable access to these areas by machinery. However, works will be scheduled to minimise access requirements during very wet periods and predominantly aiming to carry out works during the summer season.

- The contractor will carry out visual examinations of local watercourses from the proposed works during the construction phase to ensure that sediment is not above baseline conditions. In the unlikely event of water quality concerns, the Environmental Manager and ECoW will be consulted.
- Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows.
- Entry by plant equipment, machinery, vehicles, and construction personnel into watercourses or wet drainage ditches shall not be permitted. All routes used for construction traffic shall be protected against migration of soil or wastewater into watercourses.
- Cabins, containers, workshops, plant, materials storage, and storage tanks shall not be located near any surface water channels.

SUMMARY & CONCLUSIONS

6.108 The best practice and design measures identified throughout this OCEMP have been summarised in **Table 6-5** below.

Table 6 - 5: OCEMP Best Practice and Design Measures

Potential Receptor	Potential Impact	Recommended Measures
Ecology		
Badger	Disturbance, destruction of sett, accidental trapping, and the restriction of movement through the site (foraging habitat)	All excavations to have a suitable means of escape provided at the end of each working day
Otter	Disturbance and the restriction of movement through the site	All excavations to have a suitable means of escape provided at the end of each working day
Water		
Streams and Rivers outside	Pollution	Implementation of

the Proposed Development Site boundary where surface water runoff will be discharged to on exit from the site via field drains.		pollution prevention measures detailed within this OCEMP. 2m field drain buffer zone. 10m buffer to OPW watercourse.
	Increased surface water runoff	Implementation of Drainage Management Plan outlined within this OCEMP
Groundwater contamination	Pollution	Implementation of pollution prevention measures detailed within this OCEMP
Soil		
Soil	Pollution	Implementation of pollution prevention measures detailed within this OCEMP

Table 6 - 6: Recommended Mitigation Measures

Potential Receptor	Potential Impact	Recommended Mitigation
Ecology		
Badger	Disturbance, destruction of sett, accidental trapping, and the restriction of movement through the site (foraging habitat)	Pre-construction badger survey (Measures dependant on survey findings).
Otter	Disturbance and the restriction of movement through the site	Pre-commencement survey (Measures dependant on survey findings).
Breeding birds	Disturbance / damage to nest	Pre-construction breeding bird survey (if works are to commence between March and August inclusive)

Bats	Disturbance, destruction of roosts	Pre-commencement survey (Only where works directly affecting trees are required)
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6.109 The overall objective of this OCEMP is to reduce the potential impact on the environment during the construction phase of the Proposed Development. As outlined previously, the appointed contractor will need to follow the measures identified within this document.



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