KWF Grid Connection 2023

Volume D: Environmental Management Plan for KWF Grid Connection

ECOPOWER

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1. Introduction to the Environmental Management Plan (EMP)

This Environmental Management Plan (EMP) has been prepared for the KWF Grid Connection and describes the approach to environmental management during the construction stage of the development.

1.1 Objectives of the EMP

The objectives of the EMP are to:

(a) identify management responsibilities and reporting requirements for environmental management;
(b) identify the environmental protection mitigation measures and any additional environmental protection conditions of planning (Environmental Commitments);
(c) Outline how compliance with the Environmental Commitments will be achieved; and
(d) Promote best environmental practices for the duration of the development.

1.2 Purpose of the EMP

The purpose of this document is to communicate the environmental management requirements that apply to the development of KWF Grid Connection to those with responsibility for carrying out works on site so that adverse effects of the development on the receiving environment can be minimised.

An Environmental Clerk of Works will be appointed and it will be their responsibility to ensure that the EMP is implemented through liaising with the Construction Site Manager and the Project Manager and by carrying out weekly audits on EMP compliance. The EMP will be an important contract document for the main construction contractor (Contractor) who will be contractually obliged to comply with the EMP and the requirements of the Environmental Clerk of Works.

1.2.1 Scope of the EMP

This EMP covers the construction stage of the KWF Grid Connection development.

1.2.2 Review and Update of the EMP

Planning consent for KWF Grid Connection is currently being sought from the planning authority. Additional environmental management and environmental protection measures may be included in the conditions attached to the planning consent, should it be granted.

The EMP is considered a dynamic document and as such will be reviewed and updated as required at the commencement of the construction stage of the KWF Grid Connection development to ensure it contains the latest relevant information, environmental commitments and environmental control measures.

1.3 Structure of the EMP

This EMP has been developed according to the NRA *Guidelines for the Creation and Maintenance of an Environmental Operating Plan* (2007), and is presented in distinct sections, as outlined in Table 1 below.

Table 1: Structure of the EMP

Section No.	Section Heading	Information provided in this section
Section 1	Introduction to the EMP	The objectives, purpose and scope of the EMP.
Section 2	General Project Description	An overview of the main characteristics of KWF Grid Connection, including purpose and location, main construction activities and classification of works locations. An overview of the related projects, Knocknamona Windfarm, Woodhouse Windfarm and Woodhouse Substation is also included.
Section 3	Contractors & Personnel	An outline of the type of contractors and personnel who will be involved in the project, including duties and responsibilities of key personnel, the training which will be provided and communication procedures which will be put in place.
Section 4	Environmental Commitments	An outline of the Environmental Commitments for the project and the Reference Documents, from which the Environmental Commitments arise.
Section 5	Environmental Protection Mitigation Measures	The environmental protection Mitigation Measures by which the Environmental Commitments will be implemented
Section 6	Monitoring	Monitoring of construction works by the Environmental Clerk of Works, and specialist environmental and engineering consultants
Section 7	Emergency Response Measures	Environmental emergency response measures including contingency measures for fuel or oil spillages along construction works areas
Section 8	Records & Reporting	Record forms and registers for compliance auditing, environmental training, environmental incidents and complaints.
Section 9	Mapping & Figures	Mapping and layouts of the KWF Grid Connection development.

2. General Project Description

An overview of KWF Grid Connection is provided below, the full description of the project is provided in EIA Report for KWF Grid Connection: Volume C2: EIAR Main Report: Chapter 5: Description of Development.

KWF (Knocknamona Windfarm) Grid Connection is the grid connection element of Knocknamona Windfarm. Knocknamona Windfarm is authorised but not yet constructed. The KWF Grid Connection development consists of underground cabling, additional plant and apparatus in an existing substation, the construction a new link road and the widening of an existing forestry road.

2.1 Purpose of KWF Grid Connection

The primary purpose of KWF Grid Connection is to facilitate the export of electricity from the authorised Knocknamona Windfarm (when constructed) to the national grid at Woodhouse Substation, by way of connecting the authorised Knocknamona Windfarm substation to Woodhouse Substation by underground cabling.

The development also includes the use of the existing entrance and windfarm road network at Woodhouse Windfarm; the construction of a new Link Road joining the Woodhouse Windfarm road network to the Knocknamona Windfarm road network; and the widening of a forestry road at Knocknamona to provide access for the delivery of turbine components to Knocknamona Windfarm.

2.2 Location and overview description of KWF Grid Connection

2.2.1 Location

The proposed KWF Grid Connection will be located in Knocknamona and Keereen Upper townlands in the Drum Hills area, c.8 kilometres (km) west of the coastal town of Dungarvan, County Waterford. The location of the KWF Grid Connection overlaps both the authorised Knocknamona Windfarm site and the Woodhouse Windfarm and Woodhouse Substation sites. The immediate area around KWF Grid Connection is very sparsely populated, with the nearest village, Aglish, c.3.5km to the west.

The underground cabling element of KWF Grid Connection will be located within two townlands - Keereen Upper and Knocknamona. Works within the existing Woodhouse Substation compound will occur in Keereen Upper townland. The widening of the existing forestry road and the construction of the Link Road will take place in Knocknamona townland.

Relevant EMP Figures (at the end of this Volume):

Figure 1.1: Location of KWF Grid Connection

2.2.2 Size, Scale, Landcover

KWF Grid Connection comprises the following parts:

- Underground electrical cabling linking Knocknamona Windfarm Substation (to be constructed) and Woodhouse Substation (operational);
- Works within Woodhouse Substation compound comprising a new control building; main electrical transformer with associated plinth and bund; transformer bay and ancillary electrical equipment; 2 No.

lightening masts; gateway and palisade fencing and short new access track inside the compound and 2 No. gateways in the existing perimeter fence;

- Construction of a new 190 metre (m) Link Road;
- Widening of the existing forestry road; and
- Use of the existing Woodhouse Windfarm Entrance for electrical apparatus and turbine component traffic.

The proposed underground electrical cabling is 1940m in length and comprises cables, ducts and other apparatus installed in a trench 1.25m deep and 0.6m wide. The cabling will link Knocknamona Windfarm to Woodhouse Substation and will be routed through lands (from Knocknamona Windfarm Substation) comprising; felled forestry (footprint of the authorised Knocknamona Windfarm Substation - 30m), forestry road (1180m); scrub (187m); farm track crossing (3m); Woodhouse Windfarm roads (465m); Public Road L6074 crossing via directional drill (5m); grassland (60m) and will finish at the cable chair located in Woodhouse Substation compound (10m). The cables will be located under the centreline of the forestry and link road and to one side of the Woodhouse Windfarm roads. Each cable will comprise two lengths of cable which will be jointed under the forestry road approximately halfway along the cable route.

The proposed works within Woodhouse Substation compound comprise a new control building measuring 5.3m by 3.8m by 4.6m high; main electrical transformer c.6m in height, with associated plinth and bund; transformer bay; 2 no. lightening masts 17.5m in height and ancillary electrical equipment. Works will also include a new access track 17m long and 4.5m in width; additional palisade gateway 4.9m wide and 2.6m in height with palisade fencing within the compound and 2 no. gateways in the existing perimeter fence. The fencing and gateways will be the same height and width as the existing fence and gates.

The proposed Link Road is 190m in length and 4.5m in width. The Link Road will cover the cabling where it crosses under the scrubland between the forestry road network and the Woodhouse Windfarm road network. The main landowner (Coillte) requires that the cabling location is easily identified and protected from forestry management activities.

The widening of an existing forestry road relates to 960m of existing forestry road in Knocknamona townland. The forestry road is currently 3.5m wide and needs to be widened by 0.5m on either side, resulting in a final width of 4.5m.

Use of the existing Woodhouse Windfarm Entrance relates to the use of the existing Woodhouse Windfarm Entrance and Woodhouse Windfarm road network to provide access to the new Link Road and widened forestry road for the delivery of electrical apparatus to Woodhouse Substation for KWF Grid Connection and turbine components to Knocknamona Windfarm.

Relevant EMP Figures (at the end of this Volume):

Figure 5.2: Layout of KWF Grid Connection

Figure 5.3: KWF Grid Connection Construction Works Area Boundary

2.3 Main Construction Stage Activities

The KWF Grid Connection project comprises underground cabling, forestry road widening, construction of a short link road, installation of additional apparatus within the existing Woodhouse Substation compound, and the delivery of turbine components and electrical apparatus through the main Woodhouse Windfarm entrance.

2.3.1 Standard Construction Methodology for the KWF Grid Connection development

The development will be constructed using the following Construction Methodologies:

Underground Cabling

- Construction areas will be set-out using GPS and other surveying equipment. 'Goal posts' will be erected under any adjacent overhead electricity lines. Silt fencing will be installed at construction works areas, ahead of groundworks, to prevent and minimise the potential for sediment laden runoff.
- The cable trench will be excavated to a distance of c.50m ahead of the ducting works. Work will be completed on this 50m section of trench before excavations begin on the next section. The work will progress thus in a linear fashion.
- Once excavated, the trench floor will be graded, smoothed and trimmed when the required 1250mm depth and 600mm width have been obtained.
- Ducts for the electrical cables will be installed by hand in trefoil formation at the bottom of the trench. When installed, the ducts will be surrounded and covered with backfill from the excavated material which will be compacted in layers. The findings of the 8 No. Trial Pits indicate that the subsoil of the composition found can be used as backfill in the reinstated trench.
- Ducts for communication cables will be installed and covered with backfill from the excavated material which will be compacted in layers.
- Two layers of red warning tape will be placed on the compacted backfill layers directly over the electric and communication cable ducts.
- A layer of backfill will then be laid to within 300mm of the ground surface and compacted.
- Yellow warning tape will be placed over the compacted backfill.
- A final layer of stone will then be placed in the trench to ground level.
- Land within the construction works area will be reinstated and reseeded with grasses and flower species common to the surrounding vegetation. Local provenance native wildflower seed of flowering plants (e.g. Clovers, Vetches and Knapweed) will be sown.
- For public road crossing, the crossing will be carried out by directional drilling beneath the road structure. There will be no damage to the road surface or obstruction to traffic. Preconstruction confirmatory underground services surveys and consultation with service providers (i.e. 'Dial before you Dig' protocol), in line with standard construction practice will be carried out.
- Excavation works will be supervised by a qualified engineer and banksman, and 'goal posts' to identify the height of existing overhead lines will be erected.
- Construction works include the removal of a section of earthen bank field boundary, which will be reinstated along its original alignment and any exposed soil reseeded as for the lands above.
- Following the completion of ducting works the cabling will be pulled through the ducts using a cable pulling machine. A cable joint will be required at one location along the route (under the forestry road). The trench will be reopened at this location for 1 - 2 days. Cable pulling equipment will be set up at either end of the route and the cabling will be pulled through the ducts. The cables will then be jointed and the jointing location will be reinstated to surface level.
- The cables will then be joined to substation infrastructure at both ends and commissioned.
- Cable markers will be installed at intervals along the route of the Underground Cabling.

Additional Works and Electrical Plant in Woodhouse Substation

- 2 no. new pairs of palisade gates will be installed in the existing perimeter fence.
- A new access track will be laid within the existing compound.
- The control building foundations and the plinths and bunds will be constructed using profiles and ready-mix concrete.
- The new control building will be constructed.
- The main electrical transformer, transformer bay and electrical apparatus will be delivered, installed, tested and commissioned.
- Internal fencing and an internal gate will be installed within the existing compound.

Widening of the Existing Forestry Road

- Construction areas will be set-out using GPS and other surveying equipment.
- The stretch of forestry road that requires widening will be marked out by the site engineer.
- All organic material and soft subsoil will be removed to formation level within the area to be widened. Excess material will be graded along the verge of the road to match the existing road level.
- Geotextile matting will be used to tie in the widened road sections into the exiting road.
- Apart from a roadside drain at the junction where Knocknamona Windfarm substation is located, there is no other roadside drainage or under road drainage (i.e. culverts) present along this existing forestry track. Runoff . is “over the edge” and onto the adjacent vegetated ground. The existing drainage regime will be maintained.
- A stone sub-base will be laid if required. Then a surface layer will be laid over the widened section of road, which will consist of 150mm compacted granular fill, suitable to accommodate HGV traffic.
- The stone will be compacted using a compaction plate and the surface will be finished with a 1% gradient to allow water run-off.
- Following the completion of widening works, all reinstated areas or graded material along the verge will be reseeded with grasses and flower species common to the surrounding vegetation. Local provenance native wildflower seed of flowering plants like Clovers, Vetches and Knapweed will be sown.

Link Road

- Construction areas will be set-out using GPS and other surveying equipment and the route of the new Link Road will be marked out by the site engineer.
- The Link Road will be constructed over the location of the Underground Cabling.
- An excavator will excavate the width of the new Link Road which will include roadside drainage channels. All organic material and soft subsoil will be removed to formation level. The excavated subsoil and topsoil will be placed beyond the drainage channels.
- Geotextile matting will be laid along the excavated road area to provide extra bearing support to the new roadway if required.
- A minimum sub-base will be laid which will consist of 300mm of 50mm stone. This sub-base will be compacted in layers.
- A surface layer of hardwearing granular fill will then be laid and compacted.
- The surface of the new road will be finished with a 1% gradient to allow water run-off.
- The excess excavated topsoil will be graded and reseeded with grasses and flower species already present within the surrounding vegetation. Local provenance native wildflower seed of flowering plants like Clovers, Vetches and Knapweed will be sown.

Directional Drill

- Construction areas will be set out using GPS and other surveying equipment. 'Goal posts' will be erected under any adjacent overhead electricity lines. Silt fencing will be installed at construction works areas, ahead of groundworks, to prevent and minimise the potential for sediment laden runoff.
- The drilling rig and fluid handling units will be set up on either side of the road, the fluid handling units will be stored on double bunded PVC bunds which will contain any fluid spills or rain water run-off.
- A launch pit and a reception pit (5m wide x 2m long x 1.5m deep) will be excavated within the construction works areas, the excavated material will be removed and stored temporarily in an adjacent berm at a suitable location.
- The driller will push the drill string into the ground and will steer a bore path beneath the public road. When the pilot bore reaches the reception pit at the other side of the road, the drill head will be removed and a reamer will be fitted. The reamer will be drilled back enlarging the borehole to the desired size. The ducting is then attached through the borehole ready to receive the electrical cabling.
- The pits will be backfilled and reinstated with all previously excavated material.
- The excess excavated topsoil will be graded and reseeded with grasses and flower species common to the surrounding vegetation.

2.3.2 Construction Access

Substation entrance on the L6074 at Keereen Upper (Site Entrance No. 1). There will be an additional access point through the existing Woodhouse Windfarm main entrance (Site Entrance No. 2), on the L60741 Local Road at Woodhouse or Tinakilly. Advance warning signage will be erected on both approaches to each access point.

Use of Site Entrance No. 2 - the existing Woodhouse Windfarm main entrance on the L60741 is proposed for the delivery of electrical apparatus for Woodhouse Substation and the delivery of turbine components and electrical apparatus to Knocknamona Windfarm. Access for these deliveries will be via the existing Woodhouse Windfarm entrance, then along the existing Woodhouse Windfarm roads to a) Woodhouse Substation via a short stretch of the L6074 to the Woodhouse Substation main entrance with the additional electrical apparatus for the KWF Grid Connection or b) by continuing onto the proposed new Link Road and widened forestry road as far as the authorised Knocknamona turbine locations for the rubine components. No additional public road works are required to transport these loads because the public road route has already been prepared and utilised by Woodhouse Windfarm for delivery of the main components for Woodhouse Windfarm.

2.4 Other Projects and Activities in the Vicinity of KWF Grid Connection

2.4.1 Projects within the KWF Grid Connection site boundary

The location of the proposed KWF Grid Connection is within the footprint of two existing projects - Woodhouse Substation, Woodhouse Windfarm; and one planned (Authorised) project – Knocknamona Windfarm.

The location of these three Projects is illustrated on: Figure 1.2 - Location of KWF Grid Connection in relation to Authorised Knocknamona Windfarm, existing Woodhouse Windfarm and existing Woodhouse Substation

2.4.1.1. Authorised Knocknamona Windfarm

The Authorised Knocknamona Windfarm comprises Knocknamona Windfarm authorised in 2016; Amendments to Knocknamona Windfarm to provide for larger turbines, authorised in 2022.

The Authorised Knocknamona Windfarm comprises:

- 8 No. wind turbines, overall height of up to 126 metres, 1 No. meteorological mast up to 80 metres in height with wind measuring equipment attached, access roads, electrical substation compound, equipment and control building and ancillary site works. Authorised in December 2016. (An Bord Pleanála Reference PL93.244006: LA File Ref. 14/600109).
- Amendments to the height of these previously authorised wind turbines from 126m tip height to 155m tip height and the met mast from 80m to 99m. Authorised in September 2022 (An Bord Pleanála Ref. 309412-21; LA Ref. 20/845).

2.4.1.2. Woodhouse Substation

Woodhouse Substation at Keereen Upper is an operational electrical substation, forming part of the national electricity system. The Substation was commissioned in 2015. Woodhouse Substation is an electrical transformer station containing 2 No. Control Buildings; Transformer Bay; Equipment including busbar, voltage and current metering equipment, Line Disconnects, Surge Arrestors; 2 No. overhead line end masts; 2 No. lightening masts; 110kV transformer 6m in height; Perimeter and internal palisade fence and hardcore ground surface and drainage system. Woodhouse Substation was authorised by Waterford County Council under Planning Reference 11/355.

2.4.1.3. Woodhouse Windfarm

Woodhouse Windfarm is an operational windfarm, located adjacent and connected to Woodhouse Substation, in Woodhouse or Tinnakilly, Keereen Upper, Ballygambon Upper and Knocknamona townlands. It was authorised by Waterford County Council under Planning Reference 10/45. Woodhouse Windfarm comprises 8 No. wind turbines 125m in height – 5 No. turbines with a hub height of 75m and rotor diameter of 100m and 3 No. turbines with a hub height of 80m and rotor diameter of 90m, crane hardstanding areas, windfarm site roads and drainage system, meteorological mast 80m in height and ancillary site works. Woodhouse Windfarm was commissioned in 2015.

The windfarm also includes 3.3km of access roads, 4.5m in width, with associated drainage. The roads are surfaced in gravel and are not hard topped with tarmacadam or concrete. The road verges have fully revegetated since the civil works were completed in 2015.

2.5 Other Activities in the vicinity of KWF Grid Connection

Other activities at and in the immediate vicinity of the KWF Grid Connection are:

- Agriculture – mainly dairy and cattle rearing
- Forestry – felling activities, forestry management
- Walking – presence of walkers within the Knocknamona forestry and along the waymarked St Declan's Way Pilgrim route on a short section of the L6074 (delivery route for construction materials and turbine components and electrical apparatus). Diversion routes for walkers in the Knocknamona forestry will be implemented for construction of Knocknamona Windfarm and this includes the forestry road to be widened for KWF Grid Connection.

3. Contractors & Personnel

A typical organisational structure, a format for Contact Details Sheets for the construction stage of the KWF Grid Connection, along with the duties and responsibilities of various personnel and a description of environmental training and communication processes are outlined below.

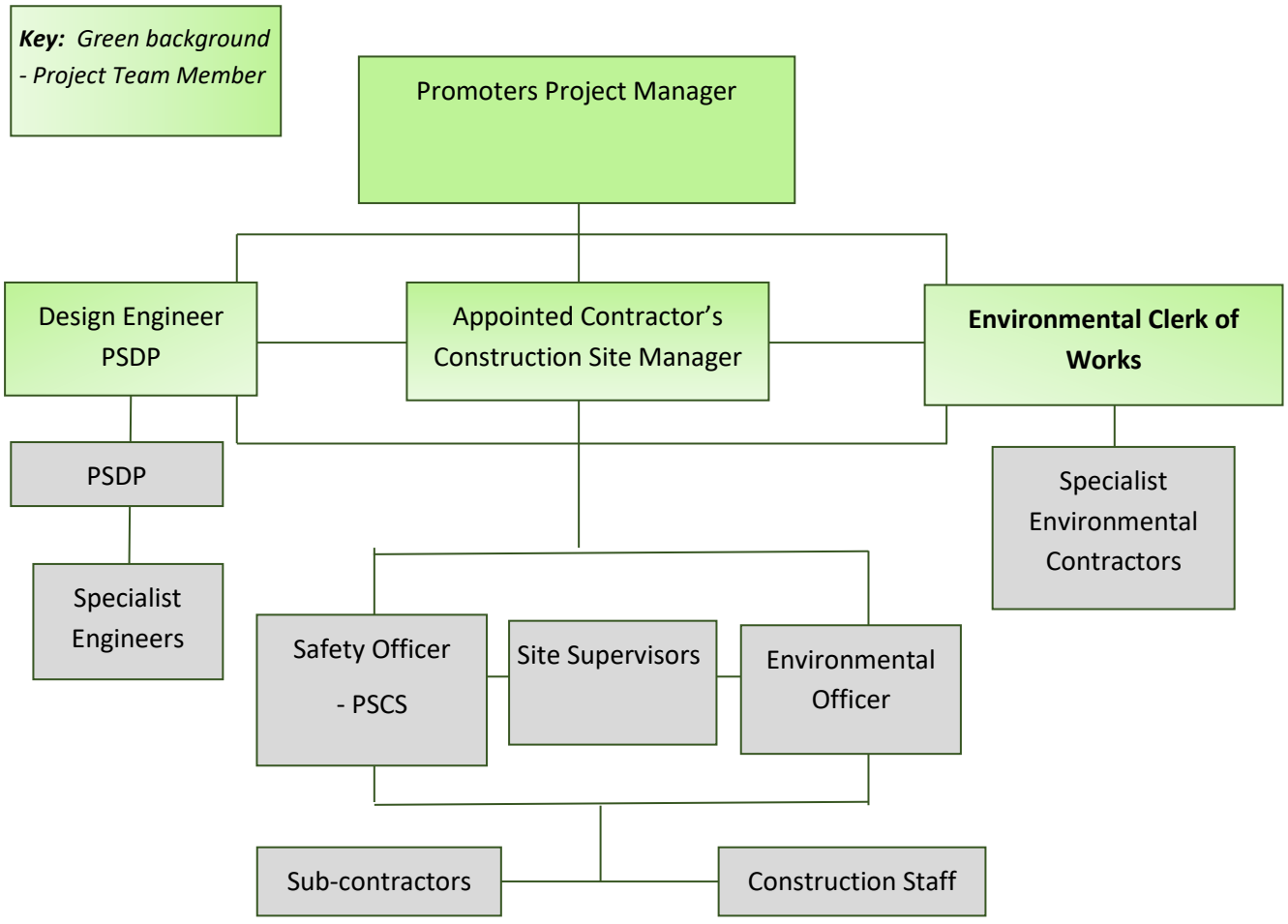
The construction Project Manager and main Contractor will be appointed by the Promoter prior to commencement of the works. On appointment, the Project Manager and the main Contractor will be required by the Project Promoter to update the outline organisational structure, the specific duties, roles and responsibilities of appointed personnel, contact details for these personnel, implement training programs and policies regarding communications.

It should be noted, that the contractors and personnel for the construction stage are also relevant to the pre-construction stage.

3.1 Organisational Structure and Hierarchy

The organogram below illustrates the typical reporting and hierarchal structures which will be implemented during the construction of the KWF Grid Connection development. These organograms will inform the duties and responsibilities of all personnel under the EMP.

3.1.1 Construction Stage



3.2 Contact Details

Contact details of relevant personnel are provided in Tables 2 to 4 below to ensure the efficient reporting of environmental incidents. These tables will be populated following the appointment of the Contractor and the Project Team members, the details will be frequently reviewed by the Environmental Clerk of Works to ensure that they are up-to-date.

3.2.1 Construction Stage Contact Details

Table 2: Project Promoters Contacts

Position Title	Name	Mobile Phone Number	Email Address
Project Manager			
Design Engineer			
Environmental Clerk of Works			

Table 3: Main Contractors Contacts

Position Title	Name	Mobile Phone Number	Email Address
Construction Site Manager			
Environmental Officer			
Safety Manager – PSCS			
Safety Officers (24-hour number)			
Site Emergency Number (24-hour)			

Table 4: Third Party Contacts

Organisation	Position Title	Name	Phone Number	Email Address
Emergency Services				
Health & Safety Authority				

Waterford City & County Council	Environment Section			
Inland Fisheries Ireland				
National Parks & Wildlife Service				
Environmental Protection Agency				
Waste Management	Oil Spill Response Team			

3.3 Duties & Responsibilities

3.3.1 Project Promoter

The Project Promoter (the 'Project Promoter' or 'Promoter') of KWF Grid Connection has overall responsibility for the implementation of the environmental commitments and of environmental management of the works during construction.

3.3.2 Project Team Members – Construction Stage

The project team will be appointed prior to the commencement of the construction stage. The roles and responsibilities outlined below are indicative at this stage in the project and will be updated pending planning consent, conditions of planning and the appointment of the main Contractor, details of the personnel involved along with their responsibilities will be added to the EMP. An outline of potential duties and responsibilities for various members of the project team is provided below. These details will require revision prior to the commencement of construction.

3.3.2.1. Project Promoters Project Manager

A Project Manager is appointed by the Project Promoter to manage and oversee the entire project.

The Project Manager's responsibilities include, but are not limited to, the following:

- management of the construction project, including the production of a construction schedule and the procurement of construction materials;
- liaison with the Project Promoter;
- liaison with the Main Contractor, Construction Site Manager and Project Team;
- liaison with the Environmental Clerk of Works
- implementing of the Environmental Management Plan (EMP);
- implementing the EMP sub-plans, including the Safety and Health Plan;
- assigning duties and responsibilities in relation to the EMP;
- maintaining a site project diary.

3.3.2.2. Construction Site Manager

The Construction Site Manager manages all the works to construct the windfarm, on behalf of the main Contractor. The Construction Site Manager reports to the Promoters Project Manager. In relation to the EMP, the Construction Site Manager is responsible for:

- Being aware of and familiar with all Environmental Commitments and environmental mitigation measures;
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated to the Promoters Project Manager and to the Environmental Clerk of Works, in a timely and efficient manner, in order to allow pre-emptive actions relating to the environment to be taken where required;
- Ensuring that the Environmental Commitments are implemented;
- Ensuring that adequate resources are provided to design and install any environmental interventions;
- Liaising with the Design Engineer and providing information on environmental management to the Design Engineer during the course of the construction phase;
- Liaising with the Project Team in assigning duties and responsibilities in relation to the EMP to individual members of the main contractor's project staff;
- Preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage, by incorporating relevant environmental control measures;
- Liaising with the Environmental Clerk of Works.

3.3.2.3. Design Engineer

The Design Engineer reports to the Promoters Project Manager and is responsible for:

- Design of the Works;
- Reviewing and approving relevant elements of the method statements – assisting the Construction Site Manager with the overall review;
- Consulting and liaising with Third Parties, where required;
- Updating/amending designs where required;
- Ensuring the KWF Grid Connection is constructed according to the planning drawings and consent.

3.3.2.4. Environmental Clerk of Works

The Environmental Clerk of Works is appointed by the Promoter and is independent of the Appointed Contractor. The Environmental Clerk of Works reports directly to the Promoters Project Manager. The duties and responsibilities of the Environmental Clerk of Works are outlined in the subsections below.

3.3.2.4.1. General

- Being familiar with the contents, environmental commitments and requirements contained within the Reference Documents outlined in Section 4 of this EMP;
- Provision of information on environmental management and Environmental Commitments to the Design Engineer during the course of the construction phase;
- Liaising with the Project Promoter in relation to environmental issues;
- Monitoring construction activities and auditing compliance of construction works with the Mitigation Measures and other Environmental Commitments;
- Monitoring the implementation of the Environmental Commitments; and
- Preparing weekly EMP Compliance Reports.

3.3.2.4.2. Implementing the Schedule of Monitoring as per the EIA Report

- Monitor the implementation of construction works;
- Oversee the implementation of the environmental protection Mitigation Measures;
- Monitor the level of environmental effects caused by the development of the project and audit the effects of the development to the evaluations made in the EIA Report;
- Identify any unforeseen adverse effects to the environment in order to be able to undertake appropriate remedial action; and
- Monitor the implementation of KWF Grid Connection in compliance with its planning conditions.

3.3.2.4.3. Compliance Auditing

- Carrying out documented inspections and audits of the site and construction works to check that work is being carried out in accordance with the Mitigation Measures and any other Environmental Commitments set out in Section 4 and Section 5 of this EMP;
- Carrying out inspections of the fuel/oil storage area and the site drainage system;
- Liaising with the Construction Site Manager to organise any repairs or maintenance required following the regular inspections of the site;
- Weekly reporting on the compliance of the construction works with the EMP;
- Reporting on the effectiveness of the environmental management of the project;
- Reporting on the adequacy of the Promoters and Contractors response to any Corrective Action Requests; and
- Appending copies of the inspection reports to the EMP.

3.3.2.4.4. Third Party Consultations

- Overseeing, ensuring coordination and playing a lead role in any third-party consultations required statutorily, contractually and in order to fulfil best practice requirements;
- Ensuring that the minutes of meetings, action lists, formal communications, etc., are well documented;
- Liaising with all prescribed bodies during any site visits, inspections and consultations;
- Where new Environmental Control Measures are agreed as a result of third-party consultation, ensuring that the EMP is amended accordingly and liaising with the Construction Site Manager to ensure that any relevant Method Statements are updated.

3.3.2.4.5. Licensing

- Confirming that all relevant works have (and are being carried out in accordance with) the required, planning consents, permits, licences etc.;
- Bringing to the attention of the Project Team any timing and legal constraints that may be imposed on the carrying out of certain tasks.

3.3.2.4.6. Specialist environmental contractors

- Identifying requirements for specialist environmental contractors (for example ecologists, spill clean-up specialists etc.) before commencement of the project;
- Procuring the services of specialist environmental contractors when required and liaising with them with respect to site access and report production;
- Ensuring that the specialist environmental contractors are competent; and
- Co-ordinating the activities of all specialist environmental contractors.

3.3.2.4.7. Environmental Induction Training and Environmental Tool Box Talks

- Confirming that Environmental Induction Training is carried out for all site personnel. No personnel will be allowed to work on the site without proof of attendance at an Environmental Induction.
- Providing toolbox talks on Environmental Control Measures associated with Site-specific Method Statements to those who will undertake the work.

3.3.2.4.8. Environmental Incidents/Spillages

- Have the authority to temporarily stop works over part of the site to avoid an environmental offence being committed;
- Prepare and be in readiness to implement at all times environmental emergency response measures, see Section 7 of this EMP.
- Notifying the relevant statutory authority of environmental incidents, and
- Carrying out an investigation and producing a report regarding environmental incidents. The report of the incident and details of remedial actions taken will be made available to the relevant authority, the Promoter and the Project Team.

3.3.2.5. Other Roles

3.3.2.5.1. Project Supervisor Construction Stage - PSCS

The PSCS for the construction project is appointed by the Main Contractor in line with the Construction Regulations:

- carrying out duty of Project Supervisor Construction Stage
- responsible for safety induction of all staff and personnel on site
- implementing the Health and Safety Plan
- auditing and updating the Health & Safety Plan
- all other relevant legal Safety duties
- implement and record the Waste Management Plan
- Holding copies of all permits and licences provided by waste contractors
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc., have appropriate authorisation and
- Gathering and holding documentation with the respect to waste disposal.

3.3.2.5.2. Community Liaison Officer

The Community Liaison Officer is responsible for communicating with the local community and wider public during the construction stage, including;

- Responding to any concerns or complaints raised by the public in relation to the construction of KWF Grid Connection;
- Liaising with the Environmental Clerk of Works on local community concerns relating to the environment;
- Keeping the local community informed of project progress and any construction activities which may cause inconvenience to them.

3.3.2.5.3. All site personnel

All site personnel are responsible for:

- Adhering to the relevant Environmental Control Measures and relevant site-specific Method Statements
- Reporting immediately, to the Construction Site Manager and the Environmental Clerk of Works, any incidents where there has been a breach of agreed procedures including any spillage of a potentially environmentally harmful substance; damage to habitats, etc.

3.4 Environmental Awareness Training

Environmental Awareness Training will be provided to ensure that all of the appointed Contractors site personnel have the appropriate knowledge to successfully implement the EMP. The main objective of the training is to make sure that site personnel are aware of the Mitigation Measures and any other Environmental Commitments and Environmental Control Measures and that site personnel are aware of the steps to take in an environmental emergency situation.

3.4.1 EMP and Contractual Requirements Briefing

The Environmental Clerk of Works will regularly brief the relevant project team members on the compliance with the EMP and on the Environmental Commitments which must be met and the Environmental Control measures which must be implemented during construction.

3.4.2 Environmental Induction Training

The Environmental Clerk of Works will provide Environmental Induction Training for all project team members. All other site personnel, including sub-contractor personnel, will receive relevant environmental induction training in conjunction with safety induction training.

Every member of the Main Contractors and sub-contractor's teams must have access to and have read the EMP prior to beginning works – this will be a strict requirement for all people working on this project. No workers will be allowed to work on this project without having attended a formal Environmental Induction. The induction training will ensure that both the Contractor's employees and subcontractors are fully informed of their responsibilities regarding specific environmental obligations. The induction will outline the objectives for the environmental management of the site, identify the relevant environmental sensitivities and outline the environmental control measures to be put in place to minimise the environmental impact of the development and to prevent significant adverse impacts to the environment.

Signed training records will be kept by the Environmental Clerk of Works for all environmental training provided.

3.4.3 Task Specific Training – Tool Box Talks

Where a site-specific Method Statement (one which incorporates Environmental Control Measures) has been devised for a works activity, all site personnel involved in that activity will receive a toolbox talk outlining the Environmental Control Measures. The Site Supervisor will be responsible for providing the toolbox talk and will provide signed training records to the Environmental Clerk of Works.

3.5 Communication

Procedures for both internal and external communication of information regarding the construction of KWF Grid Connection will be implemented during the construction of the development.

3.5.1 Internal Communication

During construction, the Environmental Clerk of Works will be responsible for communicating the Mitigation Measures and any other Environmental Commitments, Environmental Control Measures and Emergency Contingency Measures to the Main Contractor, who will communicate them to the Site Supervisors, who in turn will bring the Measures to the attention of all site personnel as relevant.

Important environmental information on specific elements of the KWF Grid Connection will be communicated to contractors and site personnel through site inductions, site management meetings, safety meetings and tool-box talks. The Environmental Clerk of Works will attend and report on environmental issues at the site management meetings.

3.5.2 External Communication with the Public

Communications with the public will be managed by a Community Liaison Officer (CLO), appointed by the Promoter. A two-way mechanism will be put in place whereby members of the public will be able to communicate with the CLO and also the CLO will be able to communicate important information on various aspects of the development to the general public.

A complaints register will form part of the public communications strategy. Any complaints will be handled by the Community Liaison Officer with the complainant receiving a response within one week after lodging the complaint.

All environmental complaints will be directed to the Environmental Clerk of Works.

4. Environmental Commitments

The Environmental Commitments are the obligations and requirements which will be implemented during the development of the KWF Grid Connection to avoid, prevent or minimise significant adverse impacts to the environment.

The current List of Environmental Commitments, listed in Table 5 below, arises from the KWF Grid Connection EIA Report. This List will be updated with any additional environmental commitments arising from the Reference Documents in Section 4.1 below.

Table 5: List of Environmental Commitments – *to be updated*

Environmental Commitment	Source	Implemented By: Construction Manager/ Env. Clerk of Works / Project Manager / Other	Method by which the Environmental Commitment will be met
The Project Promoter is committed to implementing the environmental measures, listed in Section 5 below.	EIAR, Ch.5 & Ch.16	Project Team	Incorporation of Environmental Measures listed in Section 5 below into Method Statements
The Project Promoter is committed to implementing the monitoring measures, listed in Section 6 below.	EIAR, Ch.5 & Ch.16	Project Team	EMP Compliance Record Sheets

4.1 Reference Documents

The List of Environmental Commitments will be updated with any relevant changes to the Reference Documents, listed in Table 6.

Table 6: List of Reference Documents

Reference Document Title	Location
Grant of Permission including Planning Conditions	Tab 1
Feedback from consultations with Statutory Bodies and Other Parties	Tab 2
KWF Grid Connection Environmental Impact Assessment Report (EIA Report)	See Volume C of the planning application
Standard Construction Methodologies	Section 2.3.1 above
Construction Contract Documents	Tab 4

5. Environmental Protection Mitigation Measures

5.1 Mitigation Measures

The following is a list of the mitigation measures which will be implemented in order to protect the environment during construction of the KWF Grid Connection development.

5.1.1 Mitigation Measures to prevent the spread of Invasive Species

The spread of invasive plant species will be prevented through the steam cleaning of all site machinery before entering the site. All biosecurity measures will be in line with Irish Legislation (Regulation 49 of S.I. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011). This measure will be implemented by the Construction Contractor ahead of mobilizing to the construction site. This measure will prevent the spread of invasive species, by removing the source (i.e. invasive species) from site machinery, thus preventing introducing invasive species to the grid connection site.

5.1.2 Mitigation Measures for Water Quality Protection during Construction

5.1.2.1. Scheduling of Works

As part of the Standard Construction Methodology (see Section 2.3.1 above) the cable trench will be excavated to a distance of c.50m ahead of the ducting works. Work will be completed on this 50m section of trench before excavations begin on the next section. The work will progress thus in a linear fashion. This will limit the volume of excavated material exposed at any one time.

5.1.2.2. Control of Suspended Solids

Single silt fences will be installed at construction works areas down-gradient of the proposed works. Temporary silt fencing / silt trap arrangements will also be placed along potential runoff drainage routes (i.e. between forestry mounds/ribbons). The roadside drain at the Knocknamona Windfarm Substation will be temporarily blocked during trenching works upslope of this drain. Silt fences are effective at removing larger particle sized solids, and the erection of silt fences, silt traps and blocking of drains at the KWF Grid Connection site will prevent entry to watercourses of sand and gravel sized sediment released from excavations and entrained in surface water runoff from works areas. This measure is a standard form of best practice sediment control commonly used on windfarm construction sites. Silt-fencing will be installed, by the Construction Contractor, ahead of groundworks. Silt fencing and silt trap arrangements will be regularly inspected and maintained during the construction phase to ensure their continued functioning to stated purpose. They will remain in place throughout the entire construction phase. If required, the silt fencing will be left in place until the ground has re-vegetated.

Temporary spoil heaps will be covered with polyethylene sheets during heavy rainfall events, and the excavation of cable trench, substation works and link road works will not be undertaken during periods of intense or prolonged rainfall. These measures will reduce the volumes of excavated material exposed to heavy rainfall, thereby reducing the risk of entrainment of suspended sediment in surface water runoff.

5.1.1.1 Control of Fuels and Oils storage and use

All fuels required for construction activities will be stored in a designated location, away from main traffic activity, at the Woodhouse Substation Compound. All fuel will be stored in bunded, locked storage containers. Where refuelling is required along the proposed route, fuel will be brought to site by a 4x4 in a double skinned bowser with drip trays. The bowser will be bunded appropriately for the fuel usage volume for the time period of the

construction. These measures will be implemented by the Construction Contractor and will prevent the escape of fuels from storage containers, in line within best practice.

The plant and machinery used on-site will be regularly inspected for leaks and fitness for purpose, in order to minimise the risk of oil leakages from vehicles. Spill kits and absorbent material will be readily available on site, with a kit available in the bowser/4x4 and in all plant and machinery used on site. Both machinery operators and delivery personnel will be fully trained to deal with any accidental spills. This measure will ensure that any leaks are contained quickly and effectively and that the risk to downslope water bodies is minimised.

5.1.1.2 Control of Cements

No batching of wet cement will take place on-site. Concrete requirements for the KWF Grid Connection are limited to c.4 loads of ready-mix concrete to construct the control building foundation, and the plinths and bunds in the Woodhouse Substation Compound. Therefore large volumes of cement will not be present on-site at any time.

Where concrete is delivered on site (at Woodhouse Substation compound only), only the chute will be cleaned, using the smallest volume of water practicable. No discharge of concrete washout waters to any artificial drain or watercourse will be allowed. Concrete washout bags will be placed under the chute to catch any washout wastewater. These measures will be implemented by the Construction Contractor during concrete pours, to prevent the concrete washout from entering drainage networks/watercourses, thus effectively removing the pathway for impacts to downstream waterbodies.

Weather forecasting will be used to plan pouring concrete for dry days; and, the pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event. This measure will minimize the exposure of wet concrete to rainwater runoff.

6. Monitoring

Adverse effects on the environment due to the development of KWF Grid Connection mainly relate to the construction stage. Monitoring of the construction works will check that the project in practice conforms to the evaluations made in the EIA Report during the planning process. This audit of the conformity with the EIA Report will be carried out through the EMP by the Environmental Clerk of Works.

6.1 Environmental Clerk of Works

The Project Promoter of KWF Grid Connection (the 'Promoter') will employ a suitably qualified Environmental Clerk of Works (minimum NEBOSH Certificate in environmental management) who will be independent of the main Contractor. The Environmental Clerk of Works will be employed for the duration of the pre-construction, construction and early operational stages, and will have a full time presence during the construction stage. The Environmental Clerk of Works will be adequately resourced to ensure strict compliance with the EMP and all relevant planning conditions.

The Environmental Clerk of Works will monitor the compliance of the construction works with the EMP, and will engage specialist environmental consultants, such as ecologists, hydrologists and archaeologists, as required.

6.1.1 Schedule of Monitoring

During the construction of KWF Grid Connection, the Environmental Clerk of Works will carry out the prescribed monitoring though the implementation of this Environmental Management Plan (EMP), inclluding:

- Monitor the implementation of environmental protection mitigation measures during construction works and assess their effectiveness;
- Oversee the implementation of the environmental protection mitigation measures which form part of standard construction methodologies;
- Monitor the level of environmental effects caused by the construction of the project and audit the effects of the development to the evaluations made in the EIA Report;
- Identify any unforeseen adverse effects to the environment in order to be able to undertake appropriate remedial action;
- Monitor the construction of the development in compliance with relevant planning conditions, including additional environmental monitoring conditions attached to planning conditions, conditions of licences or following third party feedback.

6.1.2 Responsibilities & Management

It will be the overall responsibility of the Project Promoter to ensure that the KWF Grid Connection is developed as consented. The Project Promoter will also contractually oblige construction contractors to carry out the works according to the Environmental Management Plan for KWF Grid Connection.

6.1.3 Resourcing of Monitoring Arrangements

The Project Promoter will be responsible for the costs of monitoring and will provide sufficient resources to the Environmental Clerk of Works to monitor, audit and report on the compliance of construction works in accordance with the EMP. The Environmental Clerk of Works will also be sufficiently resourced to employ environmental specialists where needed.

6.1.4 Role of the Environmental Clerk of Works

6.1.4.1. Monitoring of Construction Works

On-going audits, will be carried out by the Environmental Clerk of Works, during the construction of KWF Grid Connection. The audits will record the:

- compliance with this EMP;
- environmental effects of the project against the evaluations made in the EIAR;
- effectiveness of the environmental management of the project; and
- adequacy of the Promoters and Contractors response to any Corrective Action Requests.

The Environmental Clerk of Works will have a 'stop-works' authority to temporarily stop works at the site to avoid or react to an unforeseen adverse environmental event. Works will not be allowed to re-commence until the issue is resolved.

6.1.4.2. Reporting

An EMP Compliance Report will be prepared weekly during the construction stage. It will be issued to the Project Promoter and the Project Manager who will distribute and present at all project Environment Health and Safety (EHS) meetings to ensure that 'live' issues are dealt with in a time efficient manner. The EMP Compliance Report will also detail the findings and recommendations of the preceding monitoring and auditing activities and will include a detailed response from the Contractor to any of the recommendations contained in the previous report.

Template reporting and record sheets are included in Section 8.

- Non-Compliance Report
- Register of Non-Compliance Reports Issued
- Environmental Training Record
- Register of Environmental Training
- Environmental Incident Record
- Register of Environmental Incidents
- Environmental Complaint Record Sheet
- Register of Environmental Complaints
- Control of Spread of Invasive Species Record Sheet

6.1.4.3. Corrective Actions

Where non-compliance is detected, a system of follow up and corrective action will be implemented. Corrective Action Requests (CARs) will be issued to the Contractor to ensure that prompt action is agreed and committed to, with a view to the effective resolution of any deviations from the EMP requirements. All Corrective Action Requests will be numbered and logged. CARs may be raised as a result of:

- A compliance audit; or
- A suggestion for improvement by a Statutory Body; or
- An incident or potential incident; or
- An internal or external communication.

7. Environmental emergency response measures

Environmental Emergency Procedure for Oil/Fuel Spillage	
Work Sections/Locations	
• All parts of the construction works area boundary	
Responsibility of	Role/Duty
Construction Manager	• Ensuring that all personnel are trained in emergency procedure for oil/fuel spillage • Ensuring that all construction site plant, machinery and vehicles are equipped with spill kits • Alerting the Environmental Clerk of Works of the oil/fuel spillage.
Incidents involving oil spillage	

This procedure covers the accidental loss of oils that may arise from plant failures, fuelling, etc.,

- Ensure appropriately trained staff and necessary containment equipment is on site to allow immediate control of any spills.
- Contractors will be required to check all fuel and hydraulic lines, service, and document all machinery prior to the commencement of construction
- Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment
- Spill response apparatus and infrastructure should be inspected on a regular basis to ensure that the kits are fully stocked and materials are of adequate condition, and where this is not the case kits should be replenished or replaced.
- Spill kits shall be fitted with break seals and site operatives shall be required to notify the construction manager if these seals are broken.
- Spill kits should be maintained at all fuelling and oil storage locations. All mobile fuelling and oil bowsers/tankers shall have full spill kits, appropriate to their capacity.
- All machines that utilise hydraulic systems, such as excavators, dumpers, and cranes, shall have appropriately sized spill kits on board at all times.
- It is the construction manager's responsibility to ensure spill kits/material is available as specified.

All hydrocarbons will be managed appropriately to prevent their potential release to surface or ground water.

- All hydrocarbon containers will be stored in bunds. For above ground tanks, double skinned tanks will be used and all will be externally bunded. All transfer of hydrocarbons will be undertaken in a bunded area.
- On arrival at spill site, assess the situation. If a volatile, flammable material is spilled, immediately warn everyone in the vicinity, control sources of ignition and ventilate the area.
- If possible without risk of personal injury, stop and contain the spillage using the appropriate spill kit (as per material type).

- Have all shores and surface water drains in area of spillage covered or protected as quickly as possible to prevent pollution.
- Report all spills immediately (as soon as practical) to the Environmental Clerk of Works and Construction Manager who will mobilize specially trained site personnel to clean up and dispose of residues and clean-up materials in an appropriate manner.
- Spill kit waste materials will be collected from the compound by a specialised hydrocarbon and hazardous waste service provider with a valid waste collection permit for reprocessing at a EPA waste licensed facility.

8. Records & Reporting

8.1 Non-Compliance Record Sheet

Non-Compliance Record Sheet		
Date	Time	Logged By
Contractor or Subcontractor Details: Contractor Name: Contact Name: Telephone:		
Nature of Non-Compliance (specify environmental protection Mitigation Measures/Environmental Commitment breached)		
Time specified for becoming compliant:		
Contractor or Subcontractor's confirmation of receipt of Non-Compliance Record (NCR) Yes □ No □ Contractors or Subcontractors signature: _____ Date of Signing: _____		

8.2 Register of Non-Compliance issued

Register of NCR Issued											
Date Issued	Time	NCR Report No.	Contractor Name	Contact Name	Contact Telephone	Nature of Non-Compliance (Specify Procedure(s) contravened)	Time specified for becoming compliant	Contractor's Conformation of receipt of NCR (Y/N)	Date of Contractor's Conformation of receipt of	Compliant within time given (Y/N)	If yes ---------- Nature of corrective / preventative action

8.3 Environmental Training Record Sheet

Environmental Training Record Sheet			
Training Title:			
Description			
External Trainers ☐		Name of Company:	
Internal Instruction ☐		Name and Signature of Trainer:	
Date:			
Duration of Training:			
Name		Job Title	Signature

8.4 Register of Environmental Training

Register of Environmental Training								
Date	**Training Title**	**Training Description**	**External Trainers**	**Name of Training Company**	**Name of Trainer**	**Duration**	**Name of Trainee**	**Job Title of Trainee**

8.5 Environmental Incident Record Sheet

Environmental Incident Record Sheet		
Date	Time	Logged By
How was Incident detected?		
Nature of Incident (e.g. Water pollution/Dust/Noise/Fuel Spill)		
Investigation Findings		
Corrective/Preventative Action Taken/Contingency Measures Employed		

Follow up reporting:

EPA	Letter ☐	Phone ☐	Date:_____
Waterford County Council	Letter ☐	Phone ☐	Date:_____
Office of Public Works	Letter ☐	Phone ☐	Date:_____
Inland Fisheries Ireland	Letter ☐	Phone ☐	Date:_____

Signed: _____

8.6 Register of Environmental Incidents

Register of Environmental Incidents								
Date	Time	How was Incident detected	Nature of Incident	Nature of Complaint	Investigation findings	Corrective / preventative action	Follow up Reporting	Incident logged by

8.7 Environmental Complaint Record Sheet

Environmental Complaint Record Sheet		
Date	Time	Logged By
Complainants Details *(if known)* Name: _____ Address: _____ Telephone Number: _____ Mode of Complaint: _____ (e.g. telephone/letter/verbal/via statutory body)		
Nature of Complaint (e.g. Water pollution/Dust/Noise/Fuel Spill)		
Response to Complaint (including investigation findings, corrective actions/preventative action taken if required)		
Corrective/Preventative Action Taken/Contingency Measures Employed		
Follow up correspondence: To complainant/_____: Letter ☐ Phone ☐ Date:_____ Further correspondence from complainant: Letter ☐ Phone ☐ Date:_____		
Signed: _____		

8.8 Register of Environmental Complaints

Register of Environmental Complaints								
Date	Time	Complainant's Details	Mode of complaint	Nature of Complaint	Responder to Complaint	Follow up correspondence	Complaint logged by	Date

8.9 Control of Spread of Invasive Species Record Sheet

Contractor/Employee Name:		
Contractor Equipment List: (list all main equipment cleaned)		
Construction Location:	• • • (Specify exact location)	
Cleaning Location (specify location where cleaning took place, e.g. name of garage)		
Method of Cleaning (Specify nature of cleaning e.g. High-pressure steam, manual removal of vegetation, high pressure power hose, disinfection etc.)		
Date of Cleaning:		
Contractor Declaration: I hereby declare that all equipment used at the construction location indicated above has been thoroughly cleaned in accordance with the cleaning methodology set out above before entering the construction site. The machine I am using has not left site and re-entered since it was cleaned. Signed: _____ Date:		

9. Mapping & Figures

The following mapping and figures are included over:

Figure No.	Figure Title
Figure 1.1	Location of KWF Grid Connection
Figure 1.2	Location of KWF Grid Connection in relation to Authorised Knocknamona Windfarm, existing Woodhouse Windfarm and existing Woodhouse Substation
Figure 5.2	Layout of KWF Grid Connection
Figure 5.3	KWF Grid Connection Construction Works Area Boundary
Figure 5.4	Plan of the additional plant and apparatus in the existing Woodhouse Substation
Figure 5.5	Elevation of the additional plant and apparatus in the existing Woodhouse Substation
Figure 5.8	Cross Section of Typical Cable Trench
Figure 5.9	Cross Section of New Link Road & Widening of Existing Forestry Road

Figure 1.1 - Location of KWF Grid Connection

Legend:

KWF Grid Connection:

- KWF Grid Connection Constructions Works Area
- Access Road through Woodhouse Windfarm Entrance

Cappoquin

Dungarvan

Villierstown

Aglish

Existing Woodhouse Substation

Existing Woodhouse Windfarm Site Entrance

KWF Grid Connection

N

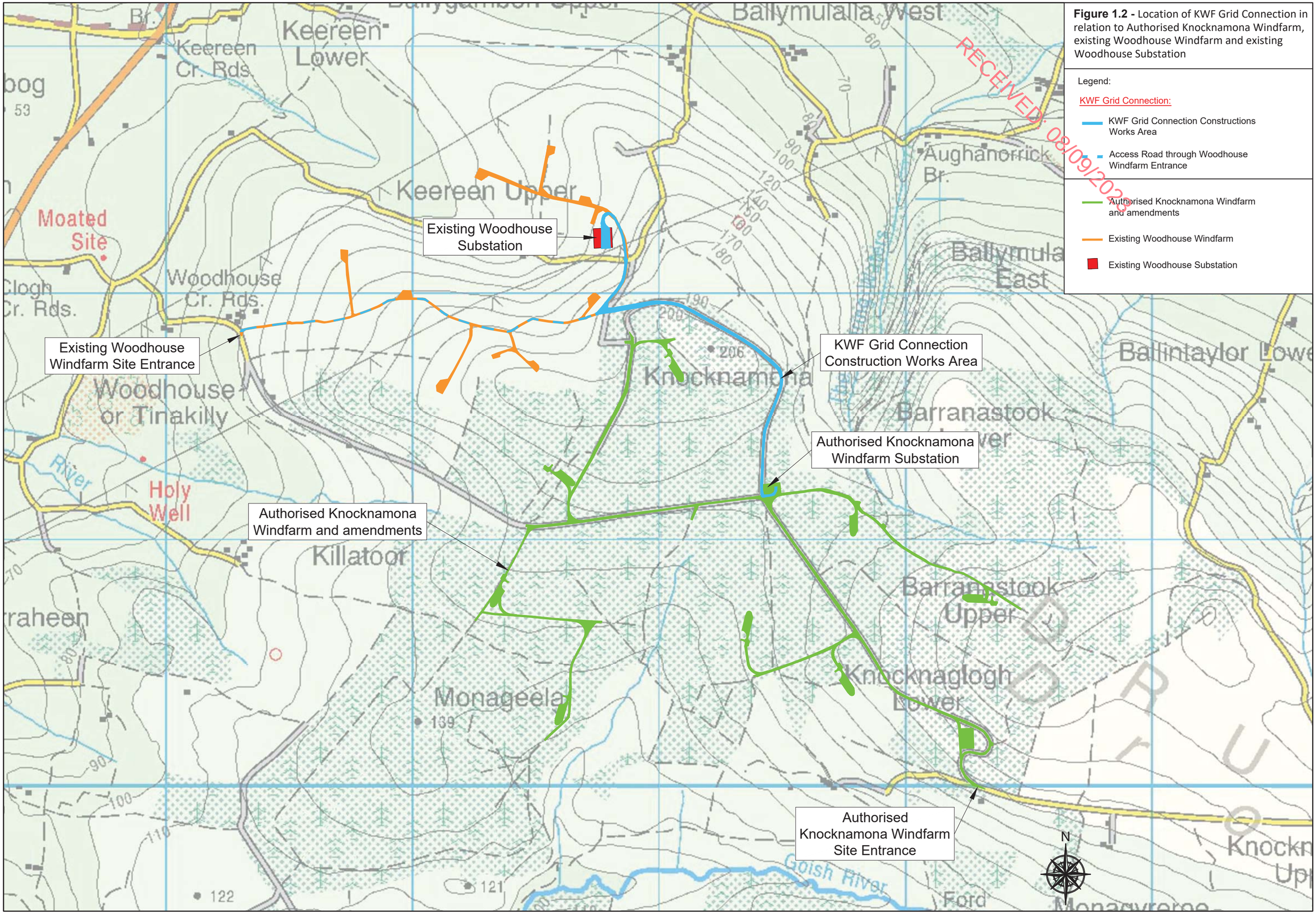


Figure 1.2 - Location of KWF Grid Connection in relation to Authorised Knocknamona Windfarm, existing Woodhouse Windfarm and existing Woodhouse Substation

Legend:

KWF Grid Connection:

- KWF Grid Connection Constructions Works Area
- Access Road through Woodhouse Windfarm Entrance

- Authorised Knocknamona Windfarm and amendments
- Existing Woodhouse Windfarm
- Existing Woodhouse Substation

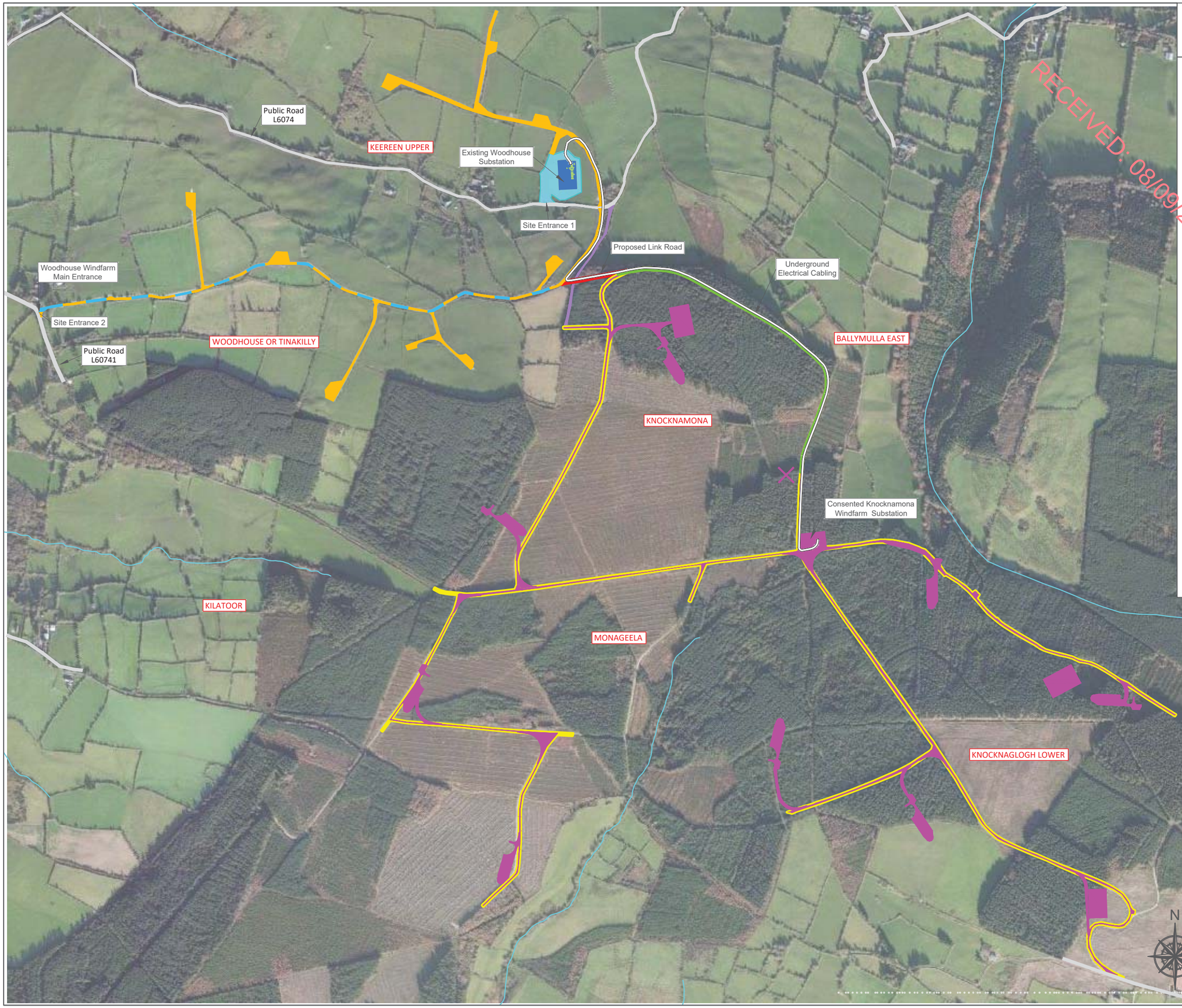


Figure 5.2 - Layout of the KWF Grid Connection

Legend:

PROPOSED

- Underground Electrical Cabling
- Access Road through Woodhouse Windfarm Entrance
- Proposed Link Road
- Proposed Woodhouse Substation Additional Plant
- Existing Forestry road to be widened

EXISTING / AUTHORISED

- Authorised Knocknamona Windfarm and amendments
- Existing Woodhouse Windfarm
- Existing Woodhouse Substation
- Existing hardcore area
- Existing Farm Track
- Public Road
- Existing Forestry Road
- Watercourse
- KILATOOR Townlands


KEEREEN UPPER
KNOCKNAMONA
Ballymulalla
River Erriff
RECEIVED: 08/09/2023
Figure 5.3 - KWF Grid Connection Construction Works Area Boundary
Legend:
Construction Works Area Boundary
KILATOOR
Townlands
N

Figure 5.4 - Plan of the additional plant and apparatus in the existing Woodhouse Substation

Legend:

Spot Level to Local Datum 0.032m

Additional Plant to be Installed in Woodhouse Substation

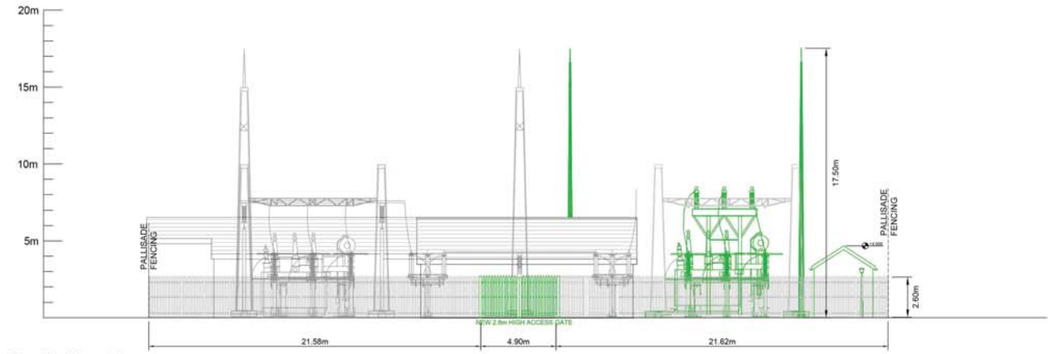
Existing Woodhouse Substation Equipment

IPP CONTROL BUILDING
CABLE CHAIR
CURRENT TRANSFORMERS
LAMP STANDARD
CIRCUIT BREAKERS
NEUTRAL EARTH RESISTOR
LIGHTNING MAST HEIGHT: 17.5
TRANSFORMER TRANSFORMER PLINTH AND BUND
LAMP STANDARD SURGE ARRESTORS
BUSBAR SUPPORTS
LAMP STANDARD
OVERHEAD CONDUCTORS
B-B 806
LAMP STANDARD
BUSBAR SUPPORTS
SURGE ARRESTORS
TRANSFORMER DISCONNECT
LIGHTNING MAST HEIGHT: 17.5m
CURRENT / VOLTAGE TRANSFORMERS
CIRCUIT BREAKER
BUSBAR DISCONNECT
BUSBAR

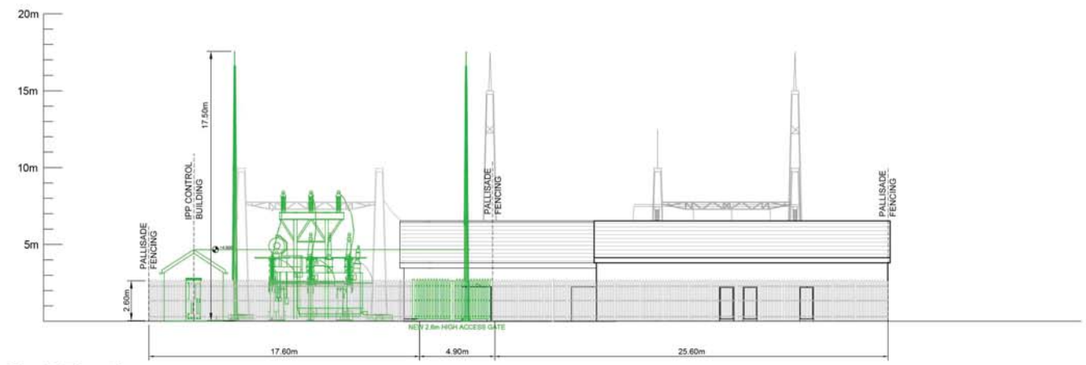
51.30m
-0.032m
EXISTING 2.6m HIGH PALISADE FENCING
IPP Control Building
+0.150m
4.50m
5.33m
3.83m
3.36m
6.78m
5.86m
NER
5.33m
7.75m
4.50m
5.50m
4.50m
6.93m
2.27m
R
S
T
H3
H1
T
S
R
C.L.
21.62m
TO DUNGARVAN END MAST
A-A 806
22.50m
17.60m
4.90m
3.40m
1.20m
2.00m
6.94m
INTERFACE KIOSK
+0.000m
NEW 2.6m HIGH ACCESS GATE
NEW 2.6m HIGH PALISADE FENCING
STORE ROOM
WC
BATTERY ROOM
+0.150m
EIRGRID CONTROL BUILDING
CONTROL ROOM
+0.013m
NEW ACCESS TRACK
17.5M LIGHTNING MAST
4.50m
17.05m
11.03m
4.90m
9.60m
HOUSE TRAFO
SWITCH ROOM
CONTROL ROOM
IPP CONTROL BUILDING
W.C.
OFFICE AREA
KITCHEN AREA
STORE ROOM
+0.150m
STORE ROOM
NER
4.59m
T
S
R
H4
H2
R
S
T
17.5M LIGHTNING MAST
T
S
R
C.L.
21.58m
TO KNOCKRAHA END MAST
EXISTING 2.6m HIGH PALISADE FENCING
-0.033m
B-B 806

Substation Layout Plan

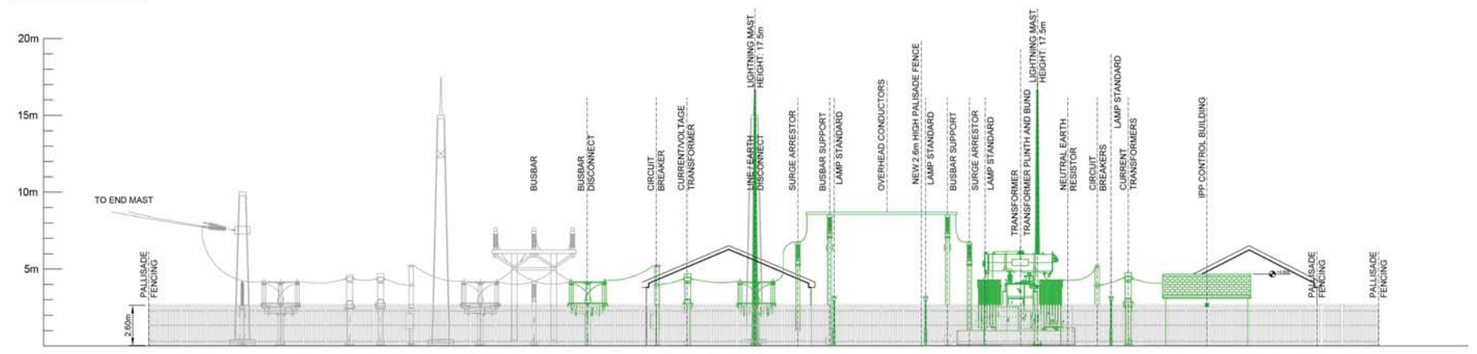
tli GROUP
Head Office
Beenreigh, Abbeydorney,
Tralee, Co. Kerry, Ireland
Tel: 00353 66 7135710



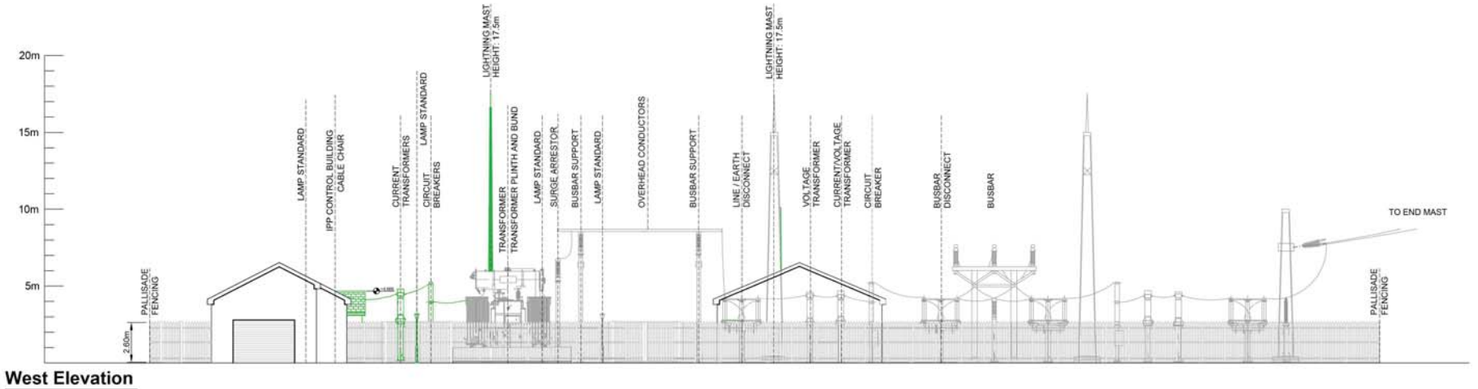
South Elevation



North Elevation



East Elevation



West Elevation

tii GROUP

Head Office
Beenreigh,
Abbeydorney,
Tralee, Co. Kerry
Ireland
Tel: 00353 66 7135710

Regional Office
Basepoint Business Centre
Strouddy Road, Basingstoke,
Hampshire,
RG24 8UP, UK
Tel: 00 44 1256 406 464

Figure 5.5 - Elevation of the additional plant and apparatus in the existing Woodhouse Substation

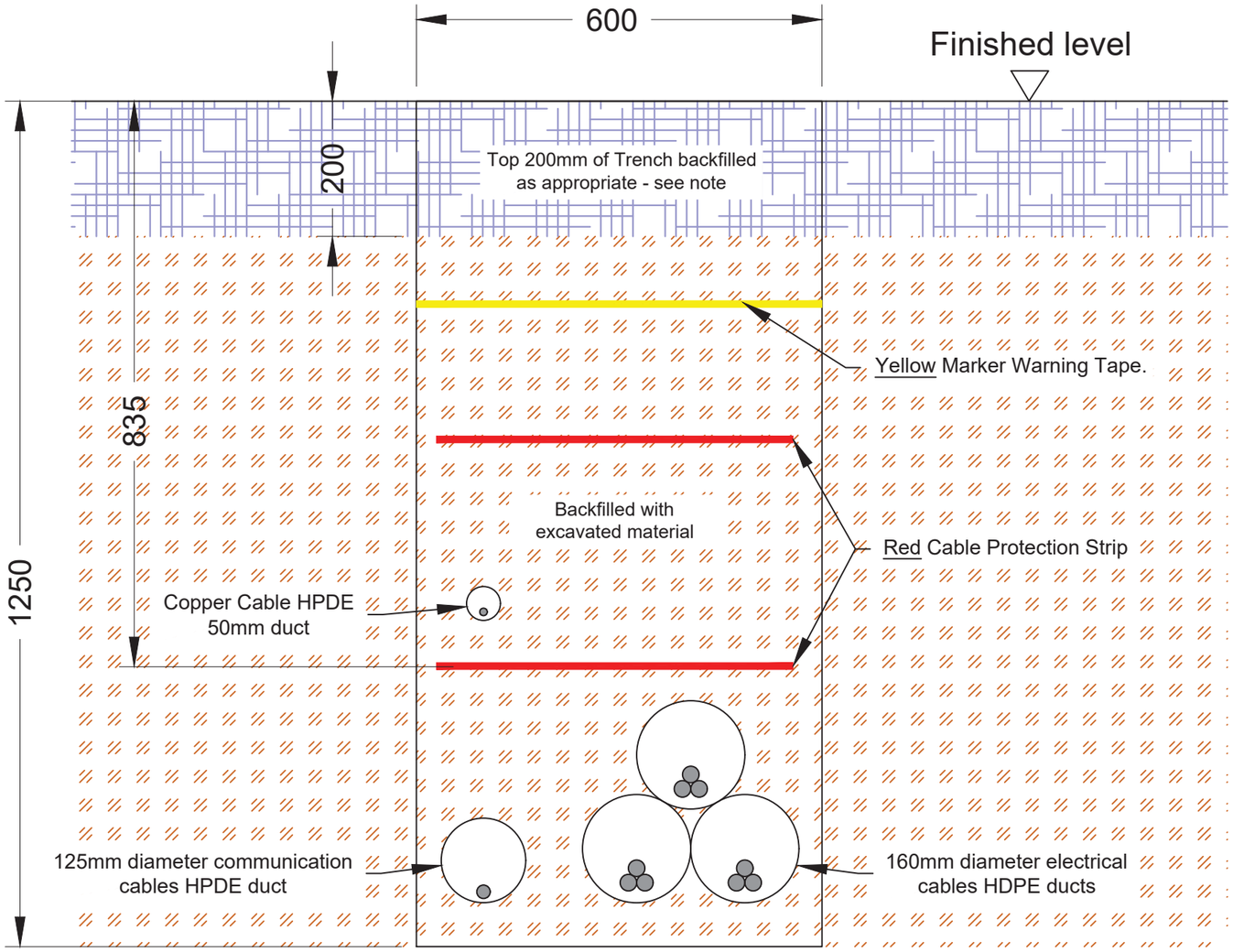
Legend:

Additional Plant to be Installed in Woodhouse Substation

Existing Woodhouse Substation Equipment

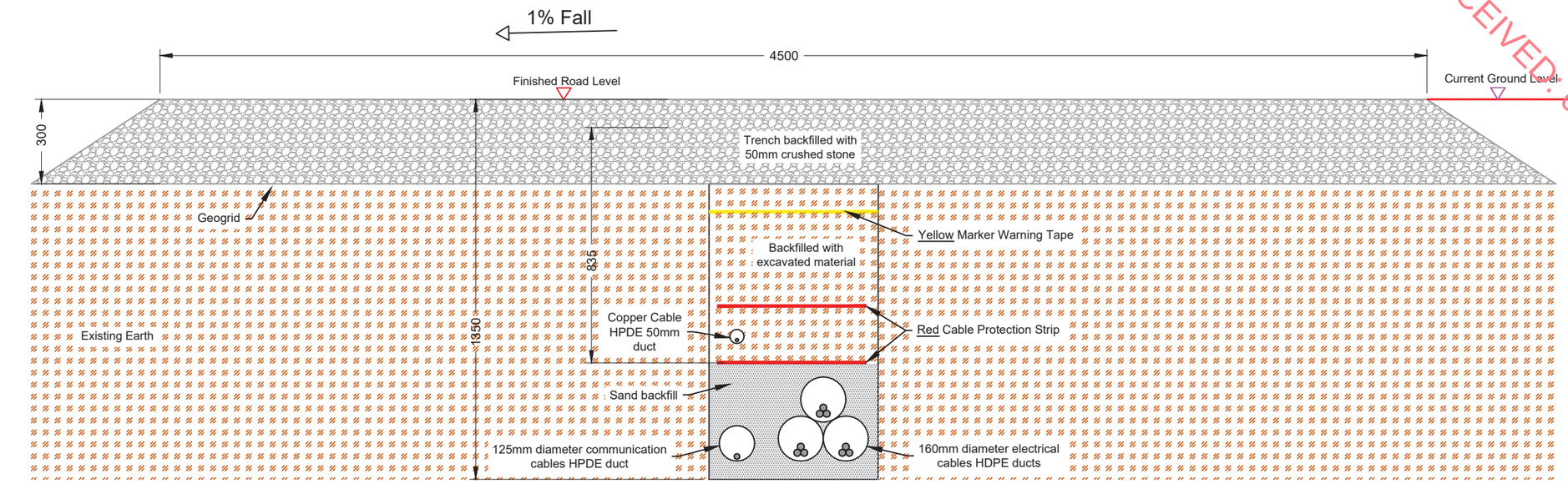
Note on top of trench backfill:

1. Cables trench in forestry lands, forestry roads and farm roads backfilled with granular fill.
2. Cables trench in grassland backfilled with topsoil layer.

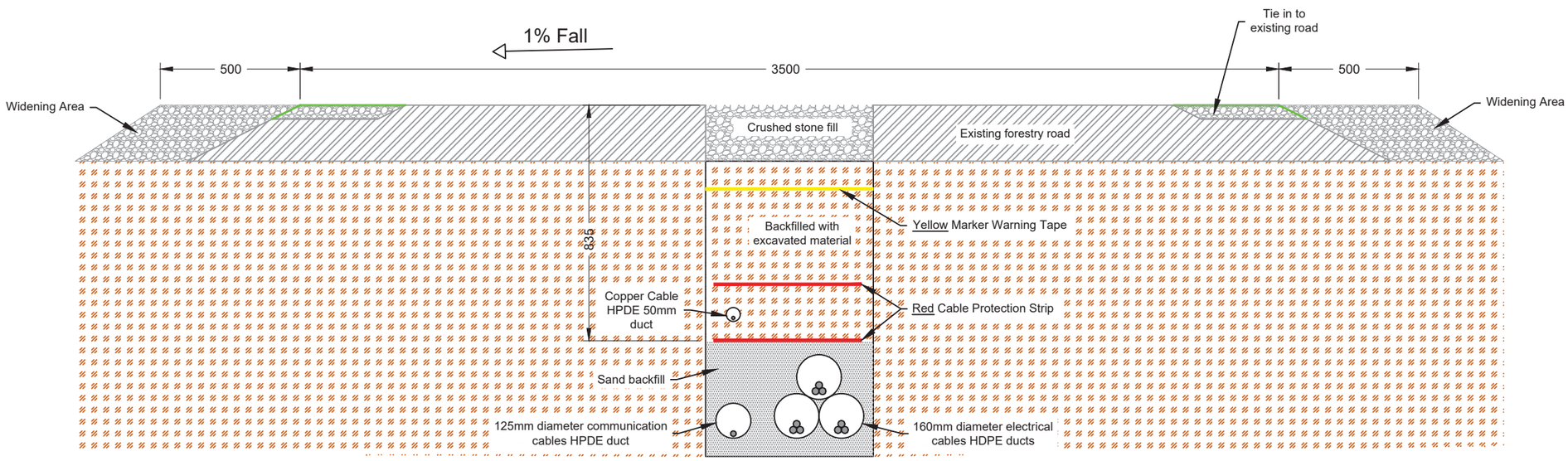


TYPICAL CABLE TRENCH

Figure 5.9 - Cross Section of New Link Road & Widening of Existing Forestry Road



NEW LINK ROAD - SCA



WIDENING OF EXISTING FORESTRY ROAD - SCA

EMP Attachments - Tab 1

Grant of Permission including Planning Conditions

(*to be included prior to construction*)

EMP Attachments - Tab 2

Feedback from consultations with Statutory Bodies and Other Parties

(*to be included prior to construction*)

EMP Attachments - Tab 3

Method Statements and Construction Methodologies

(*to be included prior to construction*)

EMP Attachments - Tab 4

Construction Contract Documents

(*to be included prior to construction*)