

August 2023

**Preliminary Construction
Environmental Management Plan
Proposed 2No. 110kV Substation
and Grid Connection**

**On behalf of
Hazelboro Limited**

Toomes and Monvallet, Co. Louth



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**Preliminary Construction Environmental Management Plan
Proposed 2No. 110kV Substation and Grid Connection
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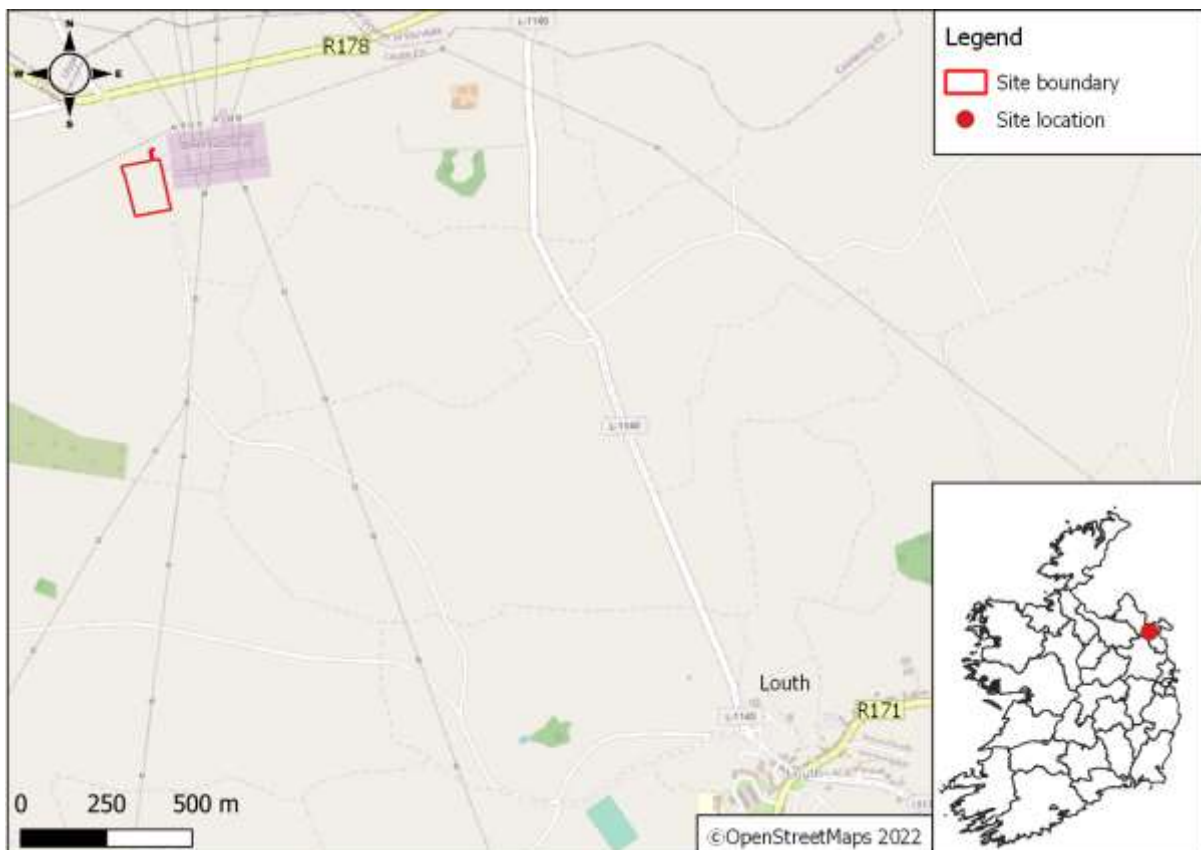
Appendix A: Proposed Site Layout

1 INTRODUCTION

Malone O'Regan Environmental (MOR) were commissioned by Hazelboro Limited ('the Applicant') to prepare a Preliminary Construction and Environmental Management Plan pCEMP in respect of both the construction and operation of a proposed 2No. 110kV substation's, grid connections and associated works (henceforth referred to as the 'Proposed Development').

The Proposed Development will be located on a site that is ca. 1.75 hectares (ha) in size and located in the townlands of Toomes, and Monvallet Co. Louth (OSI Grid Reference ITM 693889, 802864) and is shown in Figure 1-1 ('the Site').

Figure 1-1: Site Location



1.1 Background

The Proposed Development will be critical infrastructure that will be intrinsically linked to both permitted and planned renewable energy projects, comprising of both solar and battery energy storage developments. Details of these projects are described below. These renewable energy projects will not be able to function as standalone developments as they will be reliant on connections to the Proposed Development in order to connect to the national grid.

For the purpose of this report 'Permitted Developments' will refer to Phase 1 PR 21/631, its subsequent extension Phase 2 PR 21/1478 and its approved solar PV development extension Phase 3 PR 22/534. A current SID with ABP will also be outlined with respects to a singular 220kV substation. The phased developments are outlined in Figure 1-2 below.

Louth County Council Ref. No: 21/631 (Phase 1 - Granted)

This permitted development is for the construction of a solar PV and battery energy storage system development with associated substations and grid connections on a ca.42.23ha site.

The Proposed Development will be superseding the following elements of PR: 21/631 only:

- 2 no. 37kV sub-stations, one serving the solar PV development, the other serving the battery energy storage system development;
- A 110kV sub-station and associated grid to be connected to Phase 1 as soon as possible.

Louth County Council Ref. No: PA 21/1478 (Phase 2 - Granted)

PR 21/631 was subject to an amendment and extension planning application (PR 21/1478). This permitted development will be for alterations and extension to the solar PV and battery energy storage system development permitted under PR. 21/631. This extension will increase the area to be developed by ca.32.93ha for both solar PV and battery storage to the east and northeast of PR 21/631.

The Proposed Development will not supersede any part of Phase 2, but instead will facilitate the connection of it to the national grid.

Louth County Council Ref. No: 22/534 (Phase 3 –Granted)

This permitted development is for a solar PV development to be developed as an extension of the solar PV development permitted under Ref. No. 21/631 on a site with a total area of ca.81.37ha.

The Proposed Development will not supersede any part of Phase 3, but instead will facilitate the connection of it to the national grid .

ABP SID Ref: ABP-315456-23)

The background to this current 2 x110kV substation development is as follows.

Initially, it was considered by the technical advisors to Strategic Power Projects Limited that the 2 no. 37kV substations permitted under PR: 21/631 (Phase 1) and PR: 21/1478 (Phase 2), would facilitate connection of both phases to the national grid.

However, after the grant of PR 22/534 (Phase 3) the 37kV substation design solution was determined to be no longer capable of connecting all phases of the solar and battery storage development to the national grid.

The technical advisers, therefore, designed a 220kV substation and grid connection to cater for all phases of the solar and battery storage development under one connection. As noted above, the 220kV substation design and associated SID Planning Application is currently under consideration by the Board (ABP SID ref: ABP-315456-23).

In support of the Pre-Consultation for this current SID application, the Board was advised that the final connection design is dictated by EirGrid. In September 2021 Strategic Power Projects Limited entered into the Enduring Connection Policy (ECP) process with EirGrid seeking a connection for Phase 1 of the development, as permitted under PR: 21/631.

Having progressed through this EPC process successfully, EirGrid made a connection offer to Strategic Power Projects Limited for Phase 1 which proposes a 110kV connection, this offer was only made in January 2023. Hazelboro Ltd. has now accepted the offer and this has now started EirGrid's design process. EirGrid considers that a 220kV connection is, at this juncture, oversized for Phase 1 in isolation. It is EirGrid's policy not to take into consideration future phases until such times as they have successfully passed through an ECP process. Phases 2 and 3 will take part in the ECP 2.4 process scheduled for Q4 this year, after which there will likely be two potential connections methods, i.e. either one single 220kV substation and connection or 2No. 110kV substations and associated 2No. underground connections.

To provide further context, in June 2022 Phase 1 of the project was also successful in the Renewable Electricity Support Scheme 2 (RESS2) auction and is now considered an urgent

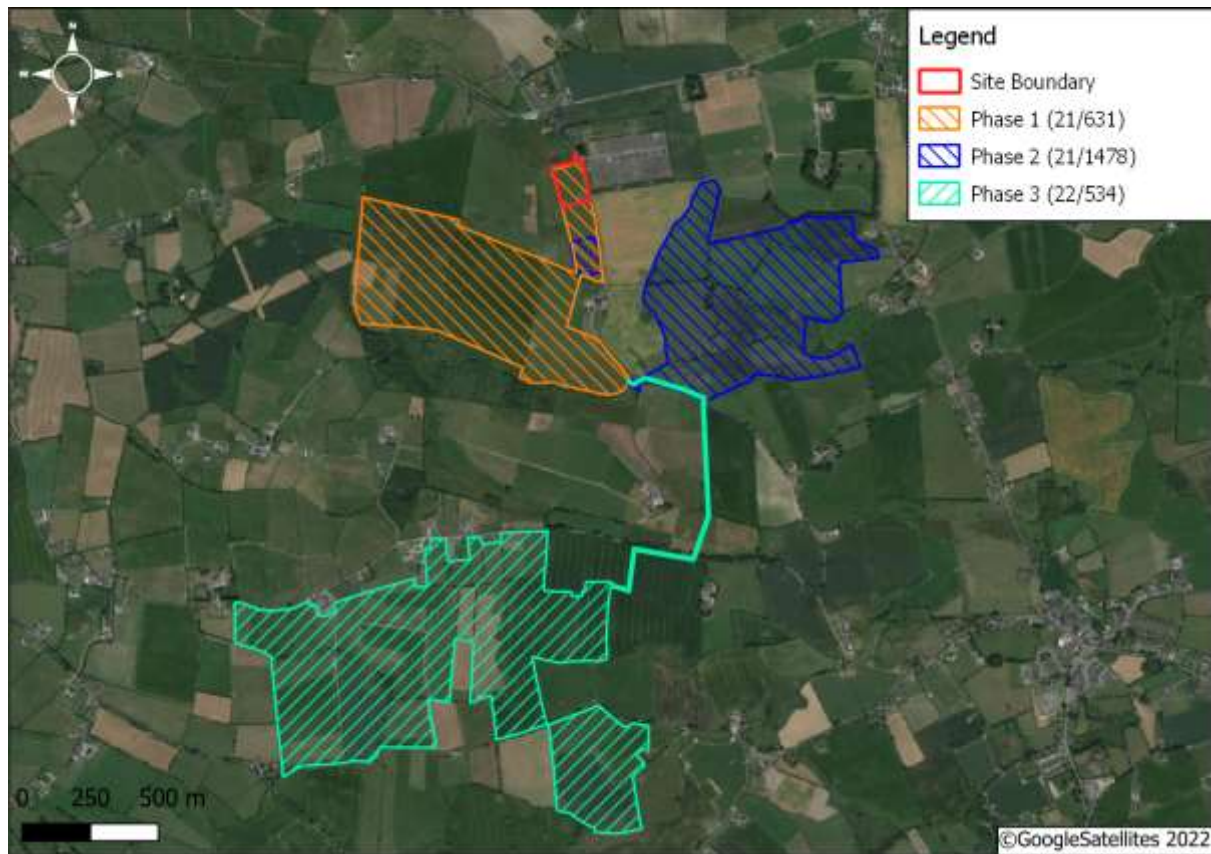
construction project. This is the reason why this current SID application is required by Hazelboro as it needs to have the option to implement this option as soon as possible, especially given it will not know the outcome of the ECP process for phases 2 and 3 until Q1 2024.

1.2 Need for the Proposed Development

The Proposed Development will connect a large renewable energy project with the national grid. This will provide much needed green electricity to the grid to assist in decarbonising the Irish electrical network. This will include 75ha of permitted solar development providing an estimated ~65MW and 285MW from BESS. It is also intended that the Proposed Development will connect to the final phase of this solar development, granted under PR 22/534, and will provide an additional ~72MW, bringing total supply from the solar development to 137MW of electricity. This amount of renewable energy requires a 220kV connection to the grid, which will be achieved by connecting 2No. 110kV underground grid cable connections to the substations. The entire Hazelboro Limited development in Monvallet, if all permitted, will utilise the full capacity a 220kV bay in the Louth 275kV substation. In order to deliver the permitted and proposed renewable energy projects there is a clear technical need for the Proposed Development.

The Proposed Development is presented in context with the Permitted Developments Phase 1, 2 and 3 (PR 21/631, PR 21/1478, PR22/534) in Figure 1-2.

Figure 1-2: Development Overview



1.3 Scope and Objectives of the pCEMP

The key objective of this pCEMP will be to ensure that all potential construction phase environmental impacts will be addressed in accordance with current legislative requirements and best practice guidelines. It will assist in the control of environmental risks that may arise

during construction to ensure that these works do not result in an environmental incident, environmental damage or undue nuisance to the local environment.

It is proposed that there will be a single pCEMP for the Proposed Development and all phases of the connected solar and BESS developments. Therefore, this pCEMP contains an assessment of the likely environmental risks associated with the construction of the overall development. It outlines procedures for monitoring the effectiveness of the environmental protection measures and for the dissemination of information to all relevant personnel during the construction programme. In assessing the risks to the environment on and adjacent to the Site, full cognisance has been taken of:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [1];
- C741 - Environmental Good Practice on Site (4th edition) [2];
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes [3];
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes [4];
- Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads;
- BS 5228-1+A1:2014: Code of Practice for noise and vibration control on construction and open sites- Part 1: Noise [5] and Part 2 Vibration [6].
- Inland Fisheries Ireland (IFI) 'Requirements for the Protection of Fisheries Habitat during Construction and Development' [7]; and,
- The recommendations included within the National Roads Authority (NRA) Guidelines for the Crossing of Watercourses [8].
- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management / Best Practice Guidelines;
- Provide a method of documenting compliance with the Environmental Commitments detailed in the Natura Impact Statement (NIS) and Environmental Report (ER) submitted as part of planning;
- Ensure compliance with current legislation;
- Effectively minimise any potential adverse environmental effects during construction, including how site-specific method statements will be developed to avoid and minimise construction effects on the environment; and,
- Communicate key environmental obligations that apply to all contractor organisations, their sub-contractors and employees while carrying out any form of construction activity.

The key objectives of this pCEMP are to:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management / Best Practice Guidelines;
- Provide a method of documenting compliance with the Environmental Commitments detailed in the Natura Impact Statement (NIS) and Environmental Report (ER) submitted in support of this SID application;
- Ensure compliance with current legislation;

- Effectively minimise any potential adverse environmental effects during construction, including how site-specific method statements will be developed to avoid and minimise construction effects on the environment; and,
- Communicate key environmental obligations that apply to all contractor organisations, their sub-contractors and employees while carrying out any form of construction activity.

This pCEMP will be used by the appointed contractor to prepare an updated and comprehensive CEMP prior to the commencement of any onsite works, it will be used as a working document. If required by the conditions of the grant of planning permission, the updated plan will be approved by the Planning Authority in advance of any works commencing onsite. The approved CEMP will be implemented for the duration of the construction works to protect the receiving environment from potential impacts arising during the construction works.

1.4 Report Structure

The adopted construction stage pCEMP should be considered by the appointed contractor as a 'living' document with reviews being undertaken at predetermined intervals and data added as appropriate. The measures identified in the pCEMP should be:

- Viewed as mandatory and common practice onsite; and
- Embedded within the construction company's policies and site procedures, e.g. within an existing environmental management system framework.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Description and Context

The Site is located within a predominately rural landscape, with Louth village centre ca. 2.5km to the south-east. The Site is ca.1.75ha in size, and currently comprises of an agricultural field and hedgerows.

The Louth ESB 275kV substation is located ca.45m east of the Site and will act as the connection point into the national grid. The lands to the south of the Site comprises mainly of agricultural lands, local roads with some residential dwellings as well as the permitted development (PR 21/631), subsequent permitted extension (PR 21/1478) and permitted solar PV development (PR 22/534). The immediate northern, southern and western boundaries of the Proposed Development are bound by agricultural fields, and the eastern boundary by a local road (L5141).

Due to the rural context of the area, the Site is currently well screened by natural boundaries such as hedgerows / treelines. Figure 2-1 Illustrates the red line boundary of the Proposed Development.

Figure 2-1: Site Context and Overview



2.2 Watercourses within the Vicinity of the Site

The Site is situated within the Newry, Fane, Glyde and Dee Catchment [Catchment_ID: 06] and the Fane_SC_020 subcatchment [Subcatchment_ID: 06_13] [9].

No watercourses or drainage ditches were identified within the Site. However, As per EPA Maps [9], there are three (3No.) hydrological features of note in the vicinity of the Site.

1. Ballykelly River-

The Ballykelly River is located ca. 270m north of the Site, situated across the R178. The Ballykelly River flows in an easterly direction and drains into the River Fane ca. 3.4km downstream of the Site. The River Fane forms part of the Dundalk Bay SAC and SPA, ca. 12km east of the Site.

Under the Water Framework Directive (WFD) 2000/60/EC, the EPA classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland [9]. According to the river waterbody WFD 2013-2018, the most up to date data at the time of this report, the water quality within the Ballykelly River is considered to be 'good,' and the status of this river is considered to be 'under review' [9].

2. Carnalughoge Stream

The Carnalughoge stream is located ca. 415m east of the Site. This stream drains into the Carnalughoge River, traveling ca. 600m before discharging into the Ballykelly River, and eventually the River Fane and Dundalk Bay SAC and SPA.

Under the Water Framework Directive (WFD) 2000/60/EC, the EPA classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland [9]. According to the river waterbody WFD 2013-2018, the most up to date data at the time of this report, the

water quality within the Carnalughoge Stream is considered to be 'good,' and the status of this stream is considered to be 'under review' [9].

3. Tullycahan stream

The Tullycahan stream is located ca. 1km southeast of the Site. The stream drains into the Carnalughoge River, travelling ca. 600m, before discharging into the Ballykelly River, and eventually the River Fane and Dundalk Bay SAC and SPA.

Under the Water Framework Directive (WFD) 2000/60/EC, the EPA classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland [9]. According to the river waterbody WFD 2013-2018, the most up to date data at the time of this report, the water quality within the Tullycahan Stream is considered to be 'good,' and the status of this stream is considered to be 'under review' [9].

Figure 2-2: Watercourses in the Vicinity of the Site



2.3 Description of the Proposed Development

2.3.1 2No. 110kV Substation

The proposed 2No. 110kV electrical substation's with customer and EirGrid compounds and 110kV grid connections will consist of:

- Internal section of access road to the sub-station buildings, compounds, parking, electrical apparatus, plant and equipment; overhead and underground electrical and communications cabling;
- 2No. IPP buildings (modular steel construction) measuring ca. 18.5m x ca. 5.5m x ca. 4.9 m (height), 2No. Power Transformers, 4No. House Transformers (House TX), parking, compound and associated works;
- 1No. EirGrid control building (masonry construction) measuring ca. 25.0m x ca.18.0m x ca. 8.8 m (height), parking, compound and associated works;

- Electrical apparatus, plant and equipment; overhead and underground electrical and communications cabling and associated works;
- 2No. interface kiosks;
- Fencing, gates, 9No. lightning masts and 12No. lamp standards; and
- all associated works.

The proposed underground cabling (110kV) and ducting will extend from the proposed substation site to the existing Louth (Monvallet) 257kV ESB substation site boundary on the opposite side of the L5441 road.

The proposed Site Layout is presented in Appendix A.

2.3.2 Drainage

There are no drainage ditches located within the proposed Site boundary.

Surface Water Drainage

A SuDS approach is proposed for the surface water drainage. Rainfall runoff from the Control building roof in the substation will be collected and piped to a rainwater harvesting tank for reuse in the onsite toilets. As water use for flushing toilets will be very low due to the infrequent use of the building, the majority of rainwater from the roof will drain into a proposed soak away. As there is no requirement for grey water in the IPP buildings the run off from the roof will be collected and piped directly to the soak away pit.

The Proposed Development access road shall be surfaced with a layer of permeable stone hardcore. This free draining material will allow rainfall to permeate into the ground. A small proportion of the access roads on site will be surfaced in concrete. The surface water run-off from this area will drain freely into the surrounding free draining areas which will be constructed in hardcore stone. The remainder of the hardcore stone material and the rainfall in these areas will permeate through the stone into the ground as per the green field conditions.

Foul Water Drainage

It is expected the I.P.P. and Control Buildings will be unoccupied for the majority of their service life. However, for design purposes, it was assumed that a maximum projected attendance at Site and in these buildings will be 2 to 3 people for one day every fortnight.

The predicted irregular foul loading due to the sporadic occupancy of the buildings creates unsuitable conditions for a waste water treatment system. It is proposed therefore to pipe the foul water to a 2,800 litre tank for temporary holding storage. A maintenance agreement will be entered with a suitably licensed waste contractor for periodic (3 months) emptying of this tank. The maximum predicted flow into the tank every 3 months is:

- 3 people x 100 l/person/day (Factory with Canteen) = 300 l/day.
- 300 (1 day every 2 weeks) x 13 weeks = 1,900 litres.

Therefore, a 2,800 litre tank that will be emptied every 3 months will provide ample capacity to store the foul water. The foul waste holding tank is fitted with a high level alarm and vented to the atmosphere.

2.3.3 Earthworks

Localised levelling works will be required for the development of the Site. The substations will comprise of a concrete foundation for the transformers and electrical equipment, with the rest of the area filled with crushed rock. It is estimated that the majority of the excavated materials will be within the Site or alternatively within the adjoining solar farm for the purpose of constructing screening berms given the overall development will be constructed as a single construction project.

2.3.4 Grid Connection

The grid connection that will link the Proposed Development with the Louth ESB 275kV Substation directly east will consist entirely of underground cables that will be installed within the Site before traversing beneath the L5141 into the Louth ESB substation.

The operators of the Louth ESB substation will ultimately be responsible for ensuring that the most appropriate connection option will be selected.

2.3.5 Water Supply

Water for onsite welfare facilities will be provided by a 1,500-litre rainwater harvesting tank which will be filled from roof runoff. Working with projected usage of the sanitary facilities of 1,950 litres every 13 weeks, the rainwater storage tank will provide for up to 10 weeks without receiving any rainfall.

2.3.6 Site Access and Egress

There will be one access point as part of the Proposed Development (See Figure 2-3). This access was granted as part of the PR 21/631 application. The permanent site entrance will be provided to the south of the proposed substation site and will be completed at the earliest stage of the proposed Construction Phase.

It is proposed that the access to the Proposed Development will remain as per the Phase 1 permitted development (PR 21/631) via the L5141.

The L5141 runs north to south and is, on average, 5m wide. The speed limit on this local road is 80km/h. The L5141 provides adequate stopping site distance and satisfies current standards. This site access is also in accordance with all sightline visibility requirements, as set out by Louth County Council, of 75m for a rural road with an 80km/h speed limit, measured from a 3m set-back from the road edge. The sightlines to the proposed access will be in excess of the stipulated 75m and therefore no improvements will be required. Refer to drawing P704_P within the drawing pack submitted with this application.

Figure 2-3: Site Access



2.4 Sensitive Design

Specialist ecological input was a key element of the proposed design, to ensure that the design of the proposed infrastructure works was extremely sensitive to valued ecological features that occur or may occur within the Site and the surrounding landscape. The key measures relevant for this project have been detailed below:

- The construction and maintenance of the Proposed Development will use the approved access as per PR 21/631 which utilises the existing farm access point. Options to access the Site have been carefully considered to ensure safe access to the Site;
- Buffers will be implemented and maintained throughout the lifecycle of the Proposed Development including:
- A 6m buffer between all works, substations infrastructure and existing hedge / trees lines; and,
- A 5m setback from the perimeter fence and all the substations infrastructures.

2.5 Monitoring

The construction works will be subject to periodic monitoring by an appointed Ecological Clerk of Works (ECoW), to ensure that the works will be completed in line with the measures and recommendations made within this ER and the pCEMP.

In addition, the ECoW will either deliver or provide the resident engineer with sufficient environmental information to deliver a Site induction to all personnel working on the Site.

2.6 Operational Procedures

Once operational, significant maintenance works will not be required. The Proposed Development will be an unmanned facility, which will be remotely monitored by way of CCTV.

Any fault flagged on the control system will be inspected by maintenance personnel or dealt with remotely if possible. All systems onsite will be automated, with remote access provided to the control building.

The Proposed Development will require approximately 1 maintenance visit per year, though the system operator could have a technician onsite more frequently to undertake routine, non-intrusive maintenance tasks such as Site inspection, cable and power plant checks and servicing, hedgerow maintenance etc. Only small vans / jeeps will be used to access the Site.

The Power Transformer unit will have a bund area. Under normal operation, this oil will be maintained within the system and no emissions will occur. To prevent unforeseen impact on the environment the transformer units will be monitored and maintained.

2.7 Waste Management

- All excavated materials will be reused onsite;
- Waste materials will be collected and stored in suitable receptacles before they are taken offsite;
- Waste materials will not be allowed to accumulate because of the fire/vermin risk; and,
- All wastes will be appropriately segregated with the objective to maximise the level of recycling.

There will be no operational waste associated with the Proposed Development with the exception of the foul wastewater that will need to be removed periodically from the storage tank by a licensed contractor. The decommissioning plan prepared as part of the overall planning application addresses all aspects of waste management post the operational phase.

3 CONSTRUCTION SCHEDULE

3.1 Programme of Works

The construction programme, indicative phasing and construction details have been prepared on the basis of a single construction project.

A typical construction timeline for a 240,657no panel solar farm, 102no. battery storage containers and 2No. onsite substations is outlined in Table 3-1 below. This is an indicative Construction Programme with corresponding construction related traffic. The entire construction, including mobilisation of the solar farm and battery storage facility is anticipated to last for approximately 14 months. The construction period for the substations are expected to last 50 weeks (from week 5 to week 55).

The heavy construction traffic will be broadly spread evenly over the majority of the construction programme, namely between weeks 10 – 45. Outside of this period, traffic will mostly be limited to light traffic from workers commuting to and from Site. The construction programme is further broken down into 4 phases, which are described in Table 3-2 along with anticipated vehicle movements.

The bulk of the heavy construction traffic is based around the delivery of materials to the Site, which is concentrated in a period of 35 weeks at the beginning of construction (weeks 10-45). Outside of this period, traffic is mostly limited to light traffic from workers commuting to and from the Site.

Table 3-1: Indicative Construction Programme

Task Name	Weeks											
	1-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
Mobilisation Period												
Notice to proceed												
Detailed Design												
Health & Safety Document												
Equipment Lead time												
Construction Phase												
Phase 1												
Phase 2												
Phase 3												
Phase 4												
Testing & Commissioning												

The construction programme is further broken down into four phases, which are described in Table 3-2 along with anticipated vehicle movements.

Table 3-2: Indicative Construction Phases Details

Phase	Phase Description	Timeline (Wks)	Processes	Vehicle Movements
1	Site Setup and Laying Foundations	0 - 15	<p>This Phase involves:</p> <ul style="list-style-type: none"> Set up site and access roads, excavation of the ground, laying for concrete foundations, perimeter fencing and security. Site Welfare and construction worker parking set-up. 	ca. 5-10 lorry movements per day.
2	Construction of sub-station and ancillary infrastructure	15 - 40	<p>This Phase involves:</p> <ul style="list-style-type: none"> Construction of the sub-station and ancillary buildings. Electrical and mechanical contractors. 	For short duration ca. 10 lorry movements per day during deliveries of infrastructure – typically will be 5 lorry movements per day.
3	Installation of Solar Panel Frames and Battery Storage Units	15 - 40	<p>This Phase involves:</p> <ul style="list-style-type: none"> Installing piles, setting-out of the frame and inverter positions; Constructing of the solar panel frames; Installation of solar panels onto frames; Installation and securing of container units; Installing battery arrays into the container units; Installation of transformers and cabling; and, Opening and reinstatement of service trenches. 	Maximum of 10 - 19 deliveries per day with the majority of these movements made up of the delivery of the solar panel frames and battery storage containers.
4	Installation of Cabling and Ducting	35-50	<p>This Phase involves:</p> <ul style="list-style-type: none"> Installation of AC cables, DC mains, earthing system and ducts; and, Installation of MV and LV AC cables, the DC submains and mains, comms and security ducts, earthing systems, inverters and MV subs. 	Maximum of 5-12 deliveries per day.
5	Connections and	50-60	<p>This Phase involves:</p>	Maximum of 5 deliveries per day.

Phase	Phase Description	Timeline (Wks)	Processes	Vehicle Movements
	Commissioning		<ul style="list-style-type: none"> Connecting Electrical connections (LV DC & AC), installing modules and overall Site commissioning; and, Testing & Commissioning. 	

4 ENVIRONMENTAL MANAGEMENT FRAMEWORK

4.1 Environmental Policy

The project will be carried out in accordance with the policies / objectives listed below:

- Louth County Council's Environmental Policy and Procedures; and,
- During construction works, management of the project will also need to comply with the Appointed Project Manager's (who will also be the Appointed Contractor described in Table 4-1) Environmental Policy and Procedures.

4.2 Objectives and Targets

Environmental objectives for the construction phase will be developed and should refer to legal compliance and environmental good practice, these may include:

- Zero pollution incidents;
- Minimise disruption to residents (and their complaints);
- Reduce / avoid impacts on biodiversity; and,
- Minimise waste sent to landfill.

4.3 Structure and Responsibilities

A management structure that includes an organisational chart encompassing all staff responsible for environmental work will be included within the pCEMP. This will set out the respective roles and responsibilities with regard to the environment and identify the nominated Construction Environmental Manager. Illustrative key roles and responsibilities are set out in Table 4-1 below.

Table 4-1: Roles and Responsibilities

Role	Responsibility
Project Manager (Appointed Contractor)	<p>Responsible for management of the construction phase of the project. Has overall responsibility for the environmental performance of the project.</p> <p>Responsible for implementing the pCEMP and Site Waste Management Plan during the construction phase to ensure that waste is disposed of legally, economically and safely.</p> <p>Ensure compliance with environmental legislation, consents, objectives, targets and other environmental commitments, including those arising from the Environmental Report.</p> <p>Responsible for reporting incident responses and where required, communicating the incident details to relevant regulatory authorities.</p> <p>Monitoring of the construction processes against the project objectives.</p>

	Liaison with all staff and local stakeholders dealing with any complaints or queries from the public.
Health and Safety Officer (Assigned by Appointed Contractor)	The Contractor's appointed Health and Safety Officer will report to the Project Manager. They will be responsible for the following: <ul style="list-style-type: none"> • Carrying out duty of health and safety coordinator during the construction works; • Safety Induction of all staff and personnel onsite; • Implementing the contractor's Health and Safety Plan; and, Auditing the Site Health and Safety Plan and updating as necessary.
Site Staff (Assigned by Appointed Contractor)	To receive general environmental awareness training and undertake work in accordance with Method Statement Briefings and toolbox talks. Trained personnel to manage particular tasks such as refuelling plant and equipment, managing the stores, water quality monitoring and supervising the segregation and collection of waste.
Environmental Consultant (Assigned by Appointed Contractor) (MOR)	To provide information relevant to construction that may assist the Contractor to manage environmental aspects of the scheme and to ensure that the Contractor complies with all the relevant legal requirements, commitments and targets agreed for the scheme.

4.4 Communication

The pCEMP will be distributed to the project team, including sub-contractors, to ensure that the environmental requirements are communicated effectively. Key activities and environmentally sensitive operations will also be briefed to staff and Contractors. Project, client and company environmental policies, where available, should be displayed onsite.

The Contractor will define procedures for internal and external communication. The client may require that any communication with external parties such as environmental regulators or the public will be undertaken through a nominated client representative.

During the construction phase, internal communication will include regular progress meetings, which should cover:

- Training undertaken;
- Progress reports;
- Inspections, audits and non-conformance;
- Complaints received;
- Visits by external bodies and the outcome or feedback from such visits; and,
- Objective / target achievement, including reporting on environmental performance; and.

External communication, including letter drops or meetings, and liaison with statutory authorities will be overseen by the Project Manager.

5 ENVIRONMENTAL RISK ASSESSMENT

5.1 Risk Classification

The classification of the environmental risks, arising from the construction phase will follow the definitions of significance as outlined by the Environmental Protection Agency (EPA) for Environmental Impact Statements [10] as shown below in Table 5-1.

Table 5-1: Rating Magnitude of Impact

Magnitude of Impact	Importance / Sensitivity of Resource			
	High	Moderate	Low	Negligible
Large	Very Substantial	Substantial	Moderate	Slight
Medium	Substantial	Substantial	Moderate	Slight
Small	Moderate	Moderate	Slight	Slight
Negligible	Slight	Slight	Slight	Negligible

In addition to the assessment of risk arising from known sources, an assessment of risk for an unplanned event/incident onsite was also assessed. These were rated as per the EPA 'Guidance on assessing and costing environmental liabilities,' [11]. The methodology for the rating of likelihood and consequence are shown in Tables 5-2 and 5-3.

Table 5-2: Rating of Likelihood of Risk Occurring

Rating	Likelihood	
	Category	Description
1	Trivial	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring.
3	Medium	Medium chance of hazard occurring.
4	High	High chance of hazard occurring
5	Very High	Very high chance of hazard occurring.

Table 5-3: Rating of Consequence of Risk Occurring

Rating	Consequence	
	Category	Description
1	Trivial	No impact or negligible change to the environment.
2	Minor	Minor impact / localised or nuisance.
3	Moderate	Moderate impact to environment.
4	Major	Severe impact to the environment
5	Massive	Massive impact to a large area, irreversible in medium term.

5.2 Risk Identification / Assessment

In developing this pCEMP, the following aspects were considered relevant to the construction phase:

- The location of the Site in context of the surrounding area;
- The local road network;
- Local residences and businesses;
- The location of the Site in context of the onsite surface water and closest water bodies;
- An increase in air and noise emissions during the construction stage; and,

- The ecological value of the Site and its surrounding habitats.

The specific risks to the environment, methodologies to control these risks and pertinent site relevant factors to the construction area limiting these risks are outlined in Table 5-4. The likelihood of each of the risks occurring is related to the scope of the risk and the site-specific conditions.

Additionally, the following detailed Site-specific plans will be completed by the appointed Principal Contractor, adhered to and incorporated into site works:

- Construction Stage Method Statement; and,
- Final Construction Environmental Management Plan (CEMP).

Table 5-4: Site Specific Environmental Risk Assessment

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
1. Site Operations and Design	a. Potential nuisance towards public (out of hour's activities).	Slight	Low	<ul style="list-style-type: none"> Normal construction hours will be restricted to 07:00 to 19:00 Monday to Friday and 07:00 and 13:00 on Saturdays. No surface water runoff will be discharged onto public roads, foul sewers or adjacent property
	b. Traffic Incident onsite resulting in a fuel spill.	Moderate	Low	<ul style="list-style-type: none"> Best practice measures and the Construction Traffic Management Plan will be implemented. Each vehicle will carry a Spill kit to be used in the unlikely event of a spill. Adequate signage shall be provided on the public network identifying the Site, access, speed limits etc.
2. Water Quality – Pollutants	a. Pollutants from construction activities entering the nearby watercourses such as wash down waters, lubricants, hydraulic fluids, bitumen, sealants and waste from welfare facilities.	Moderate	Low	<ul style="list-style-type: none"> Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows. All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction. Any chemical / oils to be stored on an area of hardstanding to ensure there is no seepage of pollutants into groundwater or surface water. Weather conditions will be considered when planning construction activities to minimise risk of runoff from the Site. All drainage from bund areas must be directed to secure containment prior to suitable disposal.
2. Water Quality - Oil	a. Oil Spill to ground / surface water. Oil pollution is known to cause significant damage to intertidal and sub-tidal communities and loss of bulk stored oil or oil from construction vehicles will likely have an adverse impact on the aquatic environment.	Moderate	Low	<ul style="list-style-type: none"> Adequate spill kits including absorbent booms and other absorbent material will be maintained onsite. All contractor workers will be appropriately trained in the use of spill kits. Fuels, lubricants and hydraulic fluids for equipment used in the construction site will be carefully handled to avoid spillage, properly

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<p>secured against unauthorised access or vandalism, and provided with spill containment according to current best practice.</p> <ul style="list-style-type: none"> Any sediments adversely effected by contamination will be excavated and stored in appropriate sealed containers for disposal offsite in accordance with all relevant waste management legislation. Prior to any works commencing, all construction equipment will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease.
	b. Oil spill during refuelling operations.	Moderate (low volume)	Low	<ul style="list-style-type: none"> Fuel will be delivered onsite by a dedicated tanker or in a delivery bowser dedicated to that purpose. The Appointed Contactor will put in place a specific, step-by-step refuelling procedure which will be communicated to all relevant employees onsite. Vehicle or equipment maintenance work will be carried out in a designated area on the Site. In the event that refuelling is required outside this area a spill tray will be employed during the refuelling operation.
2. Water Quality – Cement	a. Cement and Concrete entering waters resulting in water pollution and contamination to the environment	Low / Moderate	Low	<ul style="list-style-type: none"> Any pouring of concrete will only be carried out in dry weather. Washout of concrete trucks will not be permitted on the Site. Any spillage of cementitious materials will be cleaned-up immediately.
3. Waste Management	a. Incorrect management of general Municipal Wastes / welfare facilities resulting in litter onsite and / or attraction of rodents	Slight	Medium	<ul style="list-style-type: none"> The earthworks arising from the proposed development will be small and will be reused onsite. Waste materials will be collected and stored in suitable receptacles before they are taken offsite. Waste materials will not be allowed to accumulate because of the fire/vermin risk.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<ul style="list-style-type: none"> The waste will be separated into recycling types and general waste in designated general waste and refuse and recycling stores.
	b. Welfare –waste.	Slight	Trivial	<ul style="list-style-type: none"> Welfare facilities are available at the Construction Compound, it is proposed that these facilities will be used for the duration of the construction works and will be disposed offsite by a suitably licensed waste contractor. It is proposed to pipe the foul water to a 2,800-litre tank for temporary holding storage. A maintenance agreement will be entered with a suitably licensed waste contractor for periodic (3 months) emptying of the tank.
4. Nuisance – Dust / Dirt	a. Generation of dust / dirt causing loss of amenity at residential area or community areas.	Slight	Low	<ul style="list-style-type: none"> In the unlikely event of dust problems arising, the contractor will use hoses to saturate all bulk materials with water, both during the process and whilst loading / unloading. Burning of materials onsite will not be permitted, in order to prevent smoke emissions.
4. Nuisance - Noise	a. Generation of noise resulting in loss of amenity to the local area and cause disruption to the local species;	Slight	Medium	<ul style="list-style-type: none"> Activities and deliveries to the Site to occur only during permitted hours; All plant where possible shall be low noise rated; Where necessary enclosures and noise screens shall be used to control noise from plant; Positioning of the Site Compound a distance away from the closest NSR; Onsite policy for all plant and equipment, including Site delivery vehicles, to power off rather than to be left with idling engines; All plant and vehicles on the Site will be in a fit condition for use, to prevent the addition of noise from maintenance issues. Working Method Statements will be developed for the Site Construction Personnel to ensure optimal working procedures are employed, thereby minimising time spent in proximity to NSRs;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<ul style="list-style-type: none"> A Site Representative will be appointed to receive and respond to noise complaints and enquiries during construction by local residents, the Local Authority and any other regulatory body. Relevant details will be provided to the Local Authority prior to construction, and will be made available to third parties, including local residences.
5. Green House Gases (GHG)	a. Carbon emission to the environment.	Slight	Medium	<ul style="list-style-type: none"> All construction equipment will comply with Directive 88/77/EEC as amended by Directive 96/1/EC concerning measures to be taken against gaseous and particulate emissions from diesel engines; and, Where site materials can be reused / recycled within the development, this will take precedence over importation of materials.
6. Archaeological Heritage	a. Loss of national / local heritage	Trivial	Trivial	<ul style="list-style-type: none"> Inadvertent impact on hitherto unknown buried archaeological material can be mitigated by archaeological monitoring of any significant areas of ground disturbance, in particular the soil removal for the access track, all the proposed buildings, and the cable trench.
7. Biodiversity Protection	a. Impacts on Badgers	Medium	Low	<ul style="list-style-type: none"> A pre-construction survey will be carried out to confirm absence of terrestrial mammals within or close to the works areas; Where deep excavations will be required onsite, appropriate measures to protect mammals from ingress will be installed; Should construction works be required outside of daylight hours during the Site clearance works, the appointed project ECoW will be consulted as required; and, If unidentified burrows are identified within the works area during construction, the project ECoW will be contacted for advice.
	b. Impacts on Amphibians	Low	Low	<ul style="list-style-type: none"> Should amphibians be encountered during the construction works, a suitable qualified ecologist should be consulted for advice.

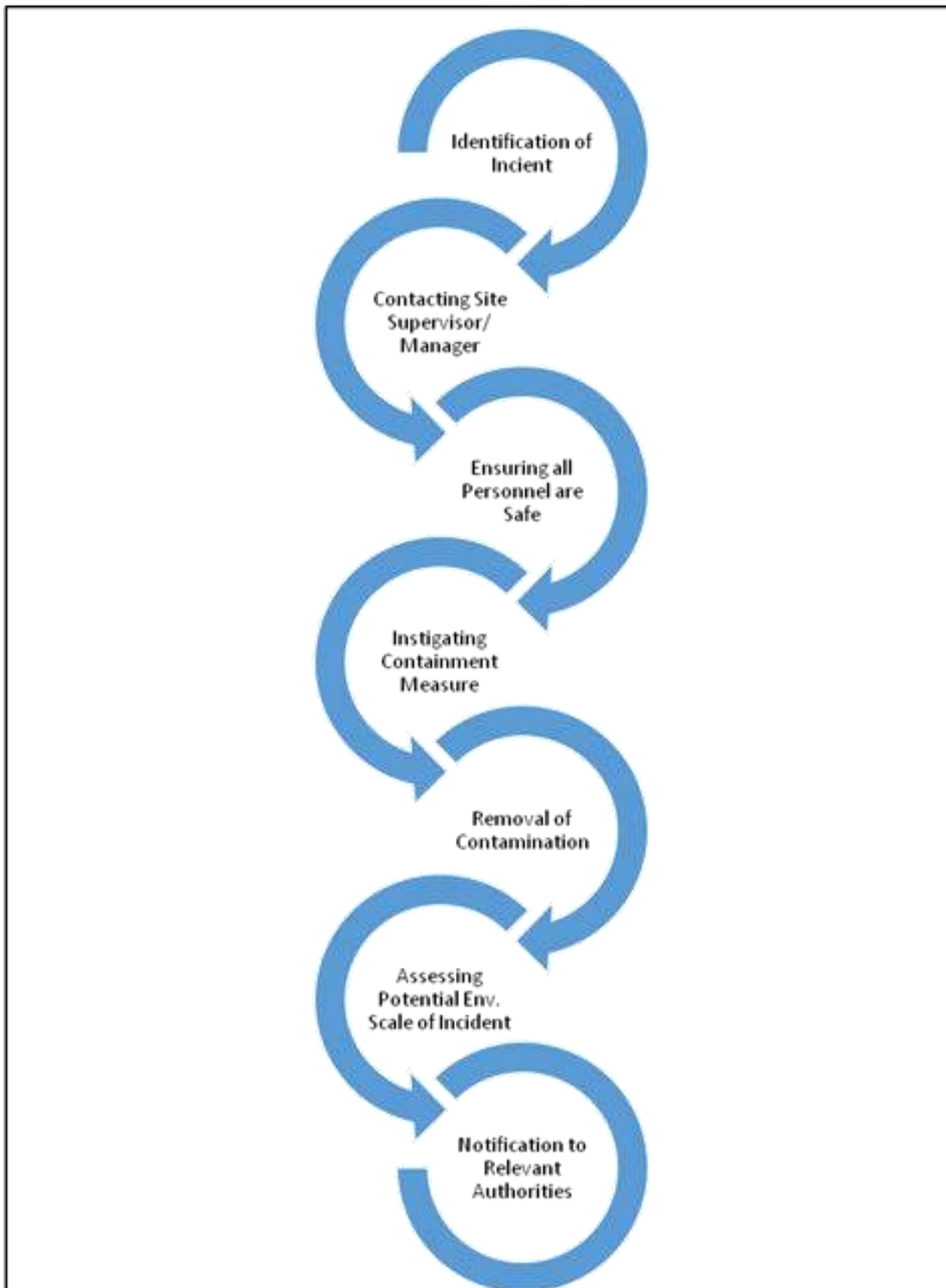
Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
	c. Impacts on Bats	Low	Low	<ul style="list-style-type: none"> The establishment of additional / supplementary hedgerow / treelines as a part of the Permitted Developments will provide additional foraging and commuting opportunities for species of bat that may occur within the area. Artificial bat boxes will be erected within the retained trees of the Permitted Developments
	d. Impacts on Birds	Low	Low	<ul style="list-style-type: none"> Any vegetation clearance required will take place outside of the nesting bird season (1st March to 31st August), as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000. In the event that works need to be undertaken within the main breeding season, this would be undertaken in consultation with NPWS. Prior to the vegetation removal the ECoW will inspect the Site and the project ECoW will inspect the Site during the vegetation removal works. Should birds nest within the active working area during the construction phase, works within the area will stop within the area and the project ECoW will be consulted.
	e. Impacts on Trees / Hedgerows	Slight	Low	<ul style="list-style-type: none"> Trees and hedgerows close to construction areas will be fenced off to prevent accidental disturbance from construction vehicles. Care will be required to prevent disturbance to root systems – a buffer zone of 6m of unexcavated ground will be maintained along the retained hedge and tree lines. The sections of hedge / treelines to be retained will be fenced. No materials or equipment will be stored within the buffer zone. In order for hedge protection measures to work effectively, all personnel associated with the operation of machinery must be familiar with the above principles for the protection of hedgerows / treelines.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
8. Invasive Species	a. Spread of Invasive Alien Species	Slight	Low	<ul style="list-style-type: none"> • All vehicles, machinery and any other equipment used for the works will be washed prior to its use at the Site to prevent the import of plant material or seeds. • Before machinery or equipment is unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris has been removed. • Any vehicles and machinery that are not clean will not be permitted entry to the Site. • All materials to be imported to the Site including additional planting will be sourced from a reputable supplier and records of all material and supplies will be maintained. • In advance of works, all Site personnel will receive a toolbox talk with regards to invasive species. • Everybody working onsite must understand the role and authority of the ECoW managing the issue of the non-native species.

6 EMERGENCY MANAGEMENT PLAN

Although the construction works will be managed, there remains a low risk from the unexpected occurrences, such as accidental spillages onsite that may result in environmental pollution. Incidents onsite will follow a similar emergency response template. This template is outlined in the schematic presented in Figure 6-1.

Figure 6-1: Emergency Response Template



6.1 Incident Response

Where an environmental incident is identified then it will be reported to the on-duty Project Manager and thereafter the Health and Safety Officer. Each incident will have the following information gathered and reported:

- Location of the incident;
- Time and date;
- Scale of the incident;
- Nature of the incident, including any specific environmental dangers;
- Remediation actions taken;
- Name of personnel noting the incident, and who they work for; and,
- Any other relevant details.

Works in the vicinity of the incident must be stopped until the incident is resolved and an all clear is issued by the Health and Safety Officer. All personnel in the immediate area of the release/spill shall be alerted to the circumstances and any dangers to them (Health and Safety) and to the environment.

The Project Manager will ensure, where required, that the incident details are communicated to the relevant regulatory authorities.

7 MONITORING AND IMPLEMENTATION OF THE PCEMP

7.1 Complaints, Comments and Enquiries

Any complaint related to the Site will be dealt with by the Project Manager. The source of the complaint will be investigated immediately. If possible, the source of the complaint will be stopped, moved or modified immediately. All complaints must be recorded including details of the complaint and any required corrective actions.

7.2 Site Visits and Evaluation of Compliance

A pre-construction Site walkover by the project ECoW will take place followed by additional Site visits as required. The aim of these visits will be to ensure compliance with procedures set out in the pCEMP and environmental conditions established under planning.

This will be done by means of a Site inspection and the auditing of different aspects of the works including documentation. Checklists for compliance will be drawn up, corrective actions will be required for any non-compliances identified and follow-up surveys will be scheduled to ensure compliance.

All monitoring results and reports detailing the compliance or otherwise of the works will be maintained at the Site office. In the event of an incident, an incident report will be completed and that will document both the cause of the incident and the corrective action taken to address the incident. These incident forms will be available for inspection within the Site office.

7.3 Control of Records

Environmental records, including waste management records, will be maintained in accordance with the respective company procedure and legal requirements. The records are to be maintained, in either hard copy or electronic format as required by the individual procedure that the records relate to, in such a way that they are readily identifiable, retrievable and protected against damage, deterioration or loss. The procedure that the records relate to also specifies the retention time for the records and who has the authority to dispose of them.

8 IMPLEMENTATION, REVIEW AND TRAINING

The Appointed Project Manager will be responsible for developing an updated site-specific pCEMP prior to commencement of Site works. The Project Manager will be responsible for ensuring compliance with the pCEMP with Ecological support provided by the Ecological Clerk of Works (ECoW) as required. Each sub-contractor will be responsible for appointing a point of contact for matters related to environmental protection.

Copies of the pCEMP will be made available to all personnel onsite. All Site personnel and sub-contractors will be instructed about the objectives of the pCEMP and informed of the responsibilities which fall upon them as a consequence of its provisions. All staff will be required to have the appropriate training and certification to undertake their specific roles.

All staff will receive environmental awareness training as part of their Site induction to ensure they are aware of their responsibilities under the pCEMP. This will include:

- Site induction, including relevant environmental issues;
- Environmental posters and site notices;
- Method statement and risk assessment briefings;
- Toolbox talks, including instruction on incident response procedures; and,
- Key project specific environmental issues briefings.

The pCEMP will be reviewed on an as needed basis if the scope of works changes significantly or if the need is identified following a site audit.

8.1 Training Awareness and Competence

Site personnel shall be trained appropriately to ensure they are competent to perform tasks that have the potential to cause a significant environmental impact as part of the proposed development. Competence is defined in terms of appropriate education, training and experience.

All managers and supervisors will be briefed on the final CEMP.

Method Statements will be prepared for specific activities prior to the works commencing and will include environmental management / best practice measures and emergency preparedness appropriate to the activity covered. The Appointed Project Manager will review key Method Statements prior to their issue.

Method Statement briefings will be given before personnel carry out key activities for the first time.

9 CONCLUSIONS

This pCEMP document outlines the management procedures to enable the Appointed Project Manager to respond to potential environmental risks from construction activities onsite. The final CEMP will cover all aspects of the construction development.

In assessing risks onsite, full cognisance has been taken of best practice guidance including:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [1];
- C741 - Environmental Good Practice on Site (4th edition) [2];
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes [3];
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes [4];
- Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads [12];
- BS 5228-1+A1:2014: Code of Practice for noise and vibration control on construction and open sites- Part 1: Noise [5] and Part 2 Vibration [6].
- All works will be undertaken in accordance with the Inland Fisheries Ireland (IFI) 'Requirements for the Protection of Fisheries Habitat during Construction and Development' [7]; and,
- The recommendations included within the National Roads Authority (NRA) Guidelines for the Crossing of Watercourses [8].

The Appointed Contractor will be required to develop an updated pCEMP prior to the commencement of any construction works and this will be submitted to Louth County Council for approval.

The implementation of all the environmental management measures outlined in this pCEMP will ensure that the construction programme will be completed without significant adverse effects on the surrounding environment.

10 REFERENCES

- [1] CIRIA, "CIRIA C532 Control of Water Pollution from Construction, Guidance for Consultants and Contractors," Construction Industry Research and Information Association , 2001.
- [2] CIRIA, "C741 - Environmental Good Practice on Site (4th edition)," Construction Industry Research and Information Association , 2015.
- [3] NRA, "Guidelines for the Treatment of badgers prior to the Construction of National Road Schemes," National Roads Authority, 2006.
- [4] NRA, "Guidelines for the Treatment of Bats prior to the Construction of National Road Schemes," National Roads Authority, Dublin, 2006.
- [5] BSI, BS5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites. Noise, London: British Standards Institution, 2009.
- [6] BSI, BS 5228-2:2009 2009 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration, London: British Standard, 2009.
- [7] IFI, "Guidance and Protection of Fisheries during Construction Works in an adjacent to Water," IFI, Dublin, 2016.
- [8] NRA, "Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes," National Roads Authority, Dublin, 2005.
- [9] EPA, "EPA Map Viewer," July 2022. [Online]. Available: <https://gis.epa.ie/EPAMaps/>.
- [10] EPA, "Revised Guidelines on the Information to be Contained in Environmental Impact Statements (Draft)," Environmental Protection Agency, Dublin, 2015.
- [11] EPA, Guidance on assessing and costing environmental liabilities, Dublin: EPA, 2014.
- [12] NRA, "Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads," National Roads Authority, Dublin, 2010.