

Preliminary Construction Environmental Management Plan

Proposed 110kV Substation and Underground Grid Connection at Killoran, Co. Tipperary

**On behalf of
Soleirtricity Lisheen Ltd**



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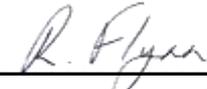


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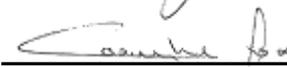
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Preliminary Construction Environmental Management Plan
Proposed 110kV Substation and Underground Grid Connection at Killoran, Co.
Tipperary
Soleirtricity Lisheen Ltd

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1 INTRODUCTION

Malone O'Regan Environmental ('MOR Environmental') has been commissioned by Soleirtricity Lisheen Ltd ('the Applicant') to prepare a preliminary Construction Environmental Management Plan ('pCEMP') in respect of the Construction Phase of the proposed 110kV substation (henceforth referred to as the '110kV Substation') and associated 110kV underground cable (henceforth referred to as the 'UGC') connecting the Proposed Development to the existing Lisheen 110kV ESB Substation and all associated works.

The 110kV Substation and UGC (henceforth collectively referred to as the 'Proposed Development') will be located at Killoran, Thurles, Co. Tipperary (ITM OS Reference 621463 666719).

The Proposed Development will transmit power from the permitted Lisheen Solar Photovoltaic ('PV') Farm (Planning Ref: 21/1128) (henceforth referred to as the 'Permitted Solar Development') via the UGC, which will connect into the existing Lisheen 110kV ESB substation located circa ('ca.') 750m west of the Permitted Solar Development. Please note that this Permitted Solar Development has received a 76MEC AC EirGrid Grid Connection Offer to export to the national electricity transmission system.

Figure 1-1: Site Location



1.1 Background

The Proposed Development will be critical infrastructure, intrinsically linked to permitted and planned renewable energy projects, that will initially comprise a large-scale consented solar development.

The Proposed 110kV Substation will be required to facilitate a step-up of the medium voltage supply (33kV) from the Permitted Solar Development to the existing Lisheen 110kV ESB Substation. The design of the Proposed Development will mean that it could be readily

expanded in the future to accommodate other renewable energy projects and, as such, it will be a key node on the grid.

It is proposed that, subject to obtaining consent for the Proposed Development, the proposed 110kV substation will be developed in place of a previously permitted 38kV substation granted by Tipperary County Council (Planning Ref: 211128).

It is predicted that the Proposed Development will be constructed in conjunction with the Permitted Solar Development as part of one development (henceforth known as the 'Overall Development').

Tipperary County Council Planning Ref: 211128 – Granted

The construction of a Solar PV development with a maximum export capacity ('MEC') of up to 122MW, comprising ca. 214,800 no. photovoltaic panels laid out in arrays, the construction of a 38kV Substation (ca. 57.31m² x 4.45m tall), along with associated ancillary development, including 30 no. Transformer Stations (ca. 7.27m² x 2.6m) with an integrated bund, 716 string Inverters, 1 no. DNO Substation Building (16.28m² x 5.42m), 1 No. Storage and maintenance building (ca. 57.31m² x 4.45m tall), 38 no. CCTV cameras mounted on ca. 3.8m high poles, perimeter security fencing and all ancillary works. The total development area will be ca. 77ha.

Tipperary County Council granted the Permitted Solar Development on 23rd February 2022. Figure 1-2 illustrates the Permitted Solar Development and the Proposed Development.

Figure 1-2: Site Context



1.2 Objectives of the pCEMP

The key objective of this pCEMP is 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 potential environmental risks that

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

This document contains an assessment of the likely on-site risks, outlining procedures for monitoring the effectiveness of environmental protection measures and for disseminating 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:

- Construction Information and Research Industry Association ('CIRIA') C811 – Environmental Good Practice on Site (5th edition) [1];
- CIRIA C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [2];
- CIRIA C753 – The Sustainable urban Drainage Systems ('SuDS') manual [3];
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes [4];
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes [5];
- Guidance on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads [6];
- Requirements for the Protection of Fisheries Habitat during Construction and Development [7];
- BS 5228-1 + A1:2014: Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise [8] and Part 2: Vibration [9]; and,
- Guidance for Invasive Non-Native Species [6].

Further objectives of this pCEMP are to:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management Requirements / Best Practice Guidelines;
- 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, minimise and mitigate 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 on-site works. This pCEMP should be used as a live, working document. If required by the conditions of the grant of planning permission, the updated plan will be approved by the Planning Authority ('TCC') for any works commencing on-site. The approved plan will be implemented for the duration of the construction works to protect the receiving environment from potential impacts arising during the construction works.

The Project Manager will be responsible for ensuring that this document reflects the status of the project. Any reviews of the document will be carried out in consultation with those affected by the changes. The adopted construction stage CEMP 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 CEMP should be:

- Viewed as mandatory and common practice on-site; 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 ca. 2 hectares ('ha') in size and situated in the townland of Killoran, North Tipperary, ca. 6.3km northwest of Urlingford and ca. 12.6km southeast of Templemore. The Site is accessed from the existing Lisheen Mine entrance via the L3201 road. The Site is in proximity to Junction 4 on the M8 (north of Urlingford) motorway and the R502 and R639 regional roads.

The Site is currently vacant and comprises predominantly of recolonising bare ground and areas of artificial surfaces. The existing Lisheen 110kV ESB substation is located immediately to the north of the Site. To the east, the Site is bounded by the former Tailing Management Facility and the Permitted Solar Development. To the west of the Site is a building currently occupied by Irish Bioeconomy Foundation personnel, recently acquired by Tipperary County Council. To the south of the Site are two buildings occupied by AQS Environmental Solutions personnel, along with associated carparking.

The surrounding wider area is a mix of the Lisheen Mine Windfarm and associated infrastructure, agricultural farmland and bogland currently harvested by Bord Na Móna.

2.2 Hydrological Features

2.2.1 Watercourses within the Vicinity of the Site

The Site is located within the Suir Catchment (Catchment ID: 16) and the Suir_SC_040 Sub Catchment (Subcatchment ID: 16_21) [10]. There is one hydrological feature of note within 500m of the Site:

1. Cooleeny stream

The Cooleeny stream (IE_SE_16D020100) is located ca. 40m to the south of the Site, at its closest point. The stream flows in a southerly direction and is a tributary of the Cooleeny River, which it joins ca. 1.6km downstream of the Site. The Cooleeny River continues in a southerly direction before joining the Drish 16 ca. 4km downstream of the Site. The Drish 16 continues to flow in a southwesterly direction before discharging into the River Suir, ca. 14km downstream of the Site. The River Suir forms part of the Lower River Suir Special Area of Conservation ('SAC').

Water Quality Status and Risk

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 [11]. According to the river waterbody WFD 2019-2024, the most recent data available at the time of writing these reports, the status of the Cooleeny Stream is '*moderate*' [11]. In addition, this waterbody is considered to be '*at risk*' of not achieving a good water quality status [11]. The location of the key surface water features in the vicinity of the Site is illustrated in Figure 2-1 below.

Figure 2-1: Watercourses in the Vicinity of the Proposed Development



2.2.2 OPW Flood Maps

The Office of Public Works ('OPW') Flood Maps identifies Drainage Districts, Arterial Drainage Schemes and Benefited Areas. Arterial Drainage Schemes were works that were carried out under the Arterial Drainage Act, 1945, to improve land for agriculture and to mitigate flooding. The Benefited land identifies land that was drained as part of the Drainage District with the aim of improving land for agriculture and mitigating flooding.

The OPW did not identify any on-site arterial drainage schemes or drainage districts, and the Site does not form part of the Benefitted Lands Scheme [12].

2.2.3 Drainage Ditch Network

During the Site visits, no drainage ditches were noted traversing the Site.

2.3 National Barriers Programme

Irish rivers are heavily fragmented by weirs, dams, sluices, culverts, bridges and other artificial barriers. The National Barrier Programme ('NBP') has created a national database of potential barriers to fish passage (over 70,000) encompassing assessed structures which can impact on both fish passage and hydromorphology. For primary assessment, Inland Fisheries Ireland ('IFI') has developed the IFI Barrier Assessment and Screening Tool ('I-BAST') application as an initial screening and barriers assessment tool.

As per the National Barriers Programme Dataset, no barriers were identified within the watercourse outlined in section 2.2 above [13].

2.4 The Proposed Development

The Proposed Development will consist of the following:

- Construction of a new 110kV tail-fed transmission substation; and,
- Underground cable connecting the substation to the existing Lisheen 110kV ESB Substation.

2.4.1 110kV Tail-Fed Substation

The Proposed Development will consist of a 10 year permission for a 110kV electrical substation and associated 110kV underground grid connection, cabling and associated works. The Proposed Development will transmit power from a solar farm (permitted under Tipperary County Council Reg. Ref: 21/1128), which will connect into the existing Lisheen 110kV ESB substation.

The proposed 110kV electrical substation in Killoran, on a site of 2ha will consist of:

- a) 1 no. electrical substation compound and access road, palisade fencing and gates;
- b) 1 no. electrical substation compound / IPP control building measuring 10.74m x 20.15m and 6.920m in height;
- c) Station compound extension required at Lisheen 110kV station to facilitate the new Cooleeny 110kV cable bay;
- d) 1 no. Eirgrid switch room building measuring 18m x 25m and 8.55m in height;
- e) 1 no. lightning protection monopoles measuring up to 22m in height;
- f) A main step-up transformer;
- g) Associated ancillary equipment such as electrical apparatus, plant and equipment;
- h) Overhead and underground electrical and communications cabling and ancillary works; and,
- i) All associated ancillary works above and below ground, including raising a portion of the site by ca. 1m using imported engineering fill.

This switchyard will be enclosed in a palisade-type security fence. The proposed 110kV substation will also have its own control building to house the indoor switchgear and control and protection equipment.

The Proposed 110kV Substation is required to coincide with the 76 MEC AC EirGrid Offer for the Permitted Development. This switchyard will be enclosed in a palisade-type security fence. The proposed 110kV substation will also have its own control building to house the indoor switchgear and control, and protection equipment.

The Proposed 110kV Substation is required to coincide with the 76 MEC AC EirGrid Offer for the Permitted Development.

CCTV

The on-site CCTV would be remotely monitored via a 24/7 operational team who would alert all relevant personnel in the event of a break-in or vandalism at the Site. The cameras will only be focused along the fence line and will not be focused on any residential properties.

Fencing

The switchyard will be enclosed in a palisade-type security fence. A perimeter fence will be installed to provide security and restrict access by wildlife.

Lighting

Emergency lighting will only occur as part of the Proposed Development.

2.4.2 110kV Underground Grid Connection

The 110kV underground cabling is proposed from the proposed 110kV substation to the existing Lisheen 110kV ESB substation, will consist of:

- a) Ca. 225m of underground 110kV electrical cables and associated communications cables;
- b) Three 125mm diameter HDPE power cable ducts;
- c) One 100mm diameter HDPE communications ducts;
- d) One 125mm diameter earth continuity duct to be installed in an excavated trench, typically 825mm wide by 1,315mm deep;
- e) 1600sq mm Al cable;
- f) 240sq mm copper earth continuity cable;
- g) One fibre cable; and,
- h) All associated ancillary works above and below ground.

The UGC will be installed in a cable trench as per industry standards, including ducting, fibre optic conductor, insulated earthing conductor where required, as well as link boxes at some jointing locations. The Energy Supply Board ('ESB') will ultimately be responsible for ensuring that the most appropriate connection option is selected. This asset, together with the substation, will be owned and operated by the Independent Power Producer ('IPP').

The Proposed Development layout is shown in Appendix 5-1.

2.4.3 Drainage

Surface Water Drainage

The Proposed Development will comprise limited hardstanding, confined to the substation building footprint and access tracks required to EirGrid specification. These elements will represent a small proportion of the overall Site area.

The majority of the surfaces onsite will remain permeable surfaces, allowing rainwater to percolate directly to the ground. As a result, surface water runoff will be minimal and comparable to existing baseline conditions.

Given the limited extent of impermeable surfaces, no specific surface water drainage infrastructure will be required for the Proposed Development. The development will not require any alteration to the existing on-site drainage regime, and surface water will continue to be managed through natural infiltration.

Foul Water

There will be no foul drainage connections required. During the Construction Phase, portable toilets will be provided at the temporary Contractors' Compound. All waste from the portable toilets will be removed and disposed of off-site by an approved contractor.

During the Operation Phase, the facility will be unoccupied for the majority of their service life. However, for design purposes, it was assumed that a maximum projected attendance at the Site and in these buildings will be 2 to 3 people for one day every month.

The predicted irregular foul loading due to the sporadic occupancy of the buildings creates unsuitable conditions for a wastewater treatment system. It is proposed, therefore, to pipe the

foul water to a 5,000L tank for temporary holding storage. A maintenance agreement will be entered into 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 = 300 l/day.
- 300 (1 day every 4 weeks) x 12 weeks = 900 litres.

Therefore, a 5,000-litre tank that will be emptied every 3 months will provide ample capacity to store the foul water. There will be no foul water discharges arising from the Proposed Development.

2.4.4 Earthworks

The proposed 110kV substation will be developed on ca. 1ha within the overall ca. 2ha Site. These works will require the importation of engineering fill materials to raise site levels by ca. 1m over a total area of ca. 17,668m² as follows:

- Proposed 110kV substation area measuring 10,191m²; and,
- The extension over the fence area measuring 7,477m².

The detailed design will determine the extent of the earthworks required; however, it is known that the proposed 110kV substation will comprise a concrete foundation for the transformers and electrical equipment, with the rest of the area filled with crushed rock.

Any earthworks required for the Proposed UGC will be backfilled using suitable excavated material, with surface levels reinstated to match the surrounding ground profile.

The remainder of the Site is reserved for future expansion works, as specified by EirGrid. This identified expansion area is currently subject to seasonal groundwater emergence, which can result in localised flooding during periods of a high-water table. The required ground levelling works would not result in any adverse effects on surrounding land, drainage patterns and groundwater conditions, and would be fully integrated with the overall surface water management approach for the Site.

2.4.5 Site Access

The Site is well placed for national distribution and export. It is strategically located adjacent to the M8 motorway. A purpose-built 8km primary road connects the Site directly to the former N8 national road (now R639), which connects to the M8 motorway at Junction 4 (Urlingford) and Junction 6 (Horse and Jockey), midway between Dublin and Cork.

Construction Phase Access and Egress

The Site is accessed from the existing commercial Lisheen Mine entrance along the L5612 local road via the R502 regional road, which currently provides access for Lisheen Mine Complex. All Construction and Operational Phase access and egress will be via the existing access.

The existing entrance is wide and well-serviced and is capable of taking all the vehicle movements during the Construction Phase of the Proposed Development.

Internal Access

The construction of the Proposed Development will utilise the network of pre-existing hardcore tracks, which extend to all areas of the Site.

Operational Phase Access and Egress

All Operational Phase access and egress will be via the existing access.

All access and egress arrangements as detailed above were granted as part of the Permitted PV Development, and therefore the principle of use has already been established. It should also be noted that Transport Infrastructure Ireland ('TII') or the municipal district engineer had no objection to the access arrangement for the Permitted Development.

Figure 2-2: Site Access for 110kV Substation



2.4.6 Sightlines

All Site access and egress sightlines are in accordance with all sightline visibility requirements, as set out by the TII Design Manual for Roads and Bridges.

For vehicles entering the Site, the forward visibility in both directions is in excess of 150m, and for vehicles departing the Site, the forward visibility in both directions is in excess of 90m.

The L5612 provides adequate stopping Site distances and satisfies current standards; therefore, the Proposed Development will not significantly contribute to the risk to road users.

2.4.7 Security Fencing / Hoarding Fencing

The Site will be secured by palisade fencing and gates.

2.5 Specialist Ecological Input / Sensitive Design

Specialist ecological input was a key element of the design of the Proposed Development. This ensured that the design was sensitive to valued ecological features that occur or may occur within the Site and the surrounding landscape. The key sensitive design measures are as follows:

- The Proposed Development will use the approved access arrangements as per the Permitted Development, which utilises the existing Lisheen Mine Complex access point; and,

- Buffers will be implemented and maintained throughout the lifecycle of the Proposed Development, including:
 - A >1km buffer between the Proposed Development; and any designated European site;
 - A >40m buffer between the Proposed Development and all Environmental Protection Agency ('EPA')-designated watercourse;
 - A ca. 6m buffer between the Proposed Development and existing hedgerows / treelines; and,
 - A minimum ca. 200m buffer between likely acoustic emission infrastructure associated with the Proposed Development, and sensitive residential dwellings.

2.5.1 Waste Management

- All excavated materials within the Site will be reused on the Site, where possible. Excavated material from the UGC shall be employed to backfill the trench where appropriate, and any surplus material will be transported off-site and disposed of at a fully authorised soil recovery site;
- Waste materials will be collected and stored in suitable receptacles before they are taken off-site;
- Waste materials will not be allowed to accumulate because of the fire / vermin risk; and,
- All wastes will be appropriately segregated with the objective of maximising the level of recycling.

2.5.2 Hours of Work

Working hours will generally be restricted to between 08:00 and 20:00 hours Monday to Friday inclusive and between 08:00 and 18:00 hours on Saturdays. Construction work will not be permitted on Sundays, public holidays or at night-time except where safety concerns necessitate it or if agreed in advance with the Planning Authority.

2.5.3 Monitoring

An Ecological Clerk of Works ('ECoW') will inspect the Site in advance of works commencing and will undertake Site inspections as required during the works to ensure that they are completed in line with the measures detailed within this pCEMP, along with the Appropriate Assessment ('AA') and Environmental Report ('ER') prepared as part of this planning submission to ensure compliance with all relevant wildlife legislation.

The ECoW will either deliver the Site induction directly or provide the resident engineer with sufficient environmental information to ensure that a comprehensive Site induction is delivered to all personnel working on the Site.

3 CONSTRUCTION SCHEDULE

3.1 Programme of Works

The Proposed Development will be constructed in tandem with the Permitted Solar Development; the construction programme, indicative phasing and construction details have been prepared on the basis of one construction project.

A typical construction timeline for a 214,800-panel solar farm and on-site substation is outlined in Table 3-1 below. This is an indicative Construction Programme with corresponding construction-related traffic. The entire construction, including enabling works, mobilisation of the Permitted Solar Development and Proposed Development, is anticipated to last for approximately 18-20 months.

The heavy construction traffic will be broadly spread evenly over the majority of the construction programme, namely between weeks 0 – 45. Outside of this period, traffic will mostly be limited to light traffic from workers commuting to and from the 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 will be based around the delivery of materials to the Site, which will be concentrated in a period of 45 weeks at the beginning of construction (weeks 0-45). Outside of this period, traffic will mostly be 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	20-30	30-40	40-45	45-50	50-55	55-60	65-70	70-80
Mobilisation Period												
Enabling Works												
Construction Phase												
Phase 1												
Phase 2A												
Phase 2B												
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 Phase Details

Phase		Timeline (weeks)	Phase Description	Vehicle Movements
Mobilisation and Site Prep		0-10	<ul style="list-style-type: none"> • Notice to proceed; • Detailed design finalisation; • Grid compliance coordination; • Health & Safety planning and Construction Management Plan; • Procurement of long-lead items (transformers, HV switchgear); and, • Site mobilisation and welfare setup. 	Ca. 1-3 lorry movements per day.
Enabling Works		0-15	Importation and placement of engineering fill (where required) <ol style="list-style-type: none"> 150 mm thick crushed stone 50 mm single sized crushed limestone Estimated 20,000 Tonnes to be required. 	Typical maximum of 15–20 deliveries per day during peak importation periods. Engineering fill quantities and delivery rates to be managed to avoid peak traffic impacts.
1	Site Setup and Laying Foundations	15-30	This Phase involves: <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; • Substation platform formation • Drainage and attenuation installation; and, • Temporary construction compound. 	Maximum of 5 deliveries per day
2A	Installation of Solar Panel Frames	30-55	This Phase involves: <ul style="list-style-type: none"> • Installing ballast solution, setting-out of the frame and inverter positions; • Mounting frame assembly; • Inverter station foundations; • Internal access track; 	Typically, 5–10 deliveries per day at peak installation.

Phase		Timelin e (weeks)	Phase Description	Vehicle Movements
			<ul style="list-style-type: none"> Installation of transformers and cabling; and, Opening and reinstatement of service trenches. 	
2B	110kV Substation Construction	30-55	<ul style="list-style-type: none"> Substation civil foundations Control building construction Transformer bund construction Installation of primary plant (transformers, circuit breakers, busbars) Protection and control installation 	<p>Transformer delivery will require abnormal load deliveries, typically limited to 1–2 planned events.</p> <p>General activity: approx. 5–10 deliveries per day during peak build-out.</p>
3	Installation of Cabling and Ducting	55-65	<p>This Phase involves:</p> <ul style="list-style-type: none"> Installation of MV and LV AC cables, the DC submains and mains, comms and security ducts, earthing systems, inverters and MV subs. Inverter installation MV cabling and trenching Earthing system installation 110kV cable / UGC installation. 	Maximum of 2-8 deliveries per day
4	Connections and Commissioning	65-80	<p>This Phase involves:</p> <ul style="list-style-type: none"> Electrical testing; Energisation of 110kV substation; Phased commissioning of PV arrays; Grid compliance testing; and, Demobilisation and reinstatement 	Maximum of 2-5 deliveries per day

3.1.1 Construction Deliveries

The construction delivery generation for the Proposed Development has been informed through discussion with the Applicant and through assessment of recently constructed solar farms and consultation with designers.

There will be two distinct elements during the Construction Phase:

1. The enabling phase will involve site preparation and the importation of engineering fill to raise finished ground levels. This phase is currently estimated to extend for

approximately 15 weeks within the overall 80-week programme. It is anticipated that approximately 27,000 tonnes of stone will be required to achieve the proposed level increase across the Site. This will comprise 150 mm graded crushed stone overlain with 50 mm single-sized crushed limestone to provide a stable, free-draining surface suitable for operational access and equipment installation; and,

2. The construction period is currently estimated to last for up to 45 weeks of the 80 weeks, with deliveries fluctuating within this period. The main deliveries to the construction compound will be the solar panels, their frames and supports, including piles, materials associated with the 110kV substation (including transformer, switchgear, control building components and electrical plant), and other associated infrastructure. Solar panels, mounting systems and ancillary electrical components are typically delivered in containerised units and are readily transported to the Site by standard articulated HGVs.

Given the size of the overall development, there will not be a requirement to remove a significant amount of materials from the Site. All surplus excavated materials arising from development works will be reused onsite for landscaping works, thereby minimising the potential for traffic generation. Any necessary exceptions to this will be collected and stored in suitable receptacles before they will be taken off-site and transported to a suitably licensed waste facility in strict accordance with all requirements of the Waste Management Act and subsequent regulations.

3.1.1.1 Enabling Phase

The predicted total number of HGV deliveries during the Enabling Phase is ca. 1,115, and the weekly and daily distribution of those deliveries over the 15-week enabling timeline is indicated in Table 3-3 below.

Table 3-3: Indicative deliveries over the Enabling Phase

Weeks	HGV deliveries	Weekly HGV Deliveries	Maximum Daily HGV deliveries
1-5	372	74	15
5-10	372	74	15
10-15	371	74	15
Total	1,115	222	45

The median average weekly delivery rate during the enabling works (weeks 1 - 15) equates to 74 deliveries (74 inbound / 74 outbound movements) each week.

It is envisaged that the majority of movements would be Monday to Friday, with only a limited number of movements on a Saturday. Adopting these figures, the average daily trip rate over the enabling works period (15 weeks) would be approximately 15 deliveries (15 inbound / 15 outbound movements) per day.

3.1.1.2 Construction Phase

The predicted total number of HGV deliveries during the Construction Phase is ca. 1,125, and the weekly and daily distribution of those deliveries over the 55-week construction timeline is indicated in Table 3-4 below.

Table 3-4: Indicative deliveries over the construction period

Weeks	HGV deliveries	Weekly HGV Deliveries	Maximum Daily HGV deliveries
15-20	125	25	5
20-25	150	30	6
25-30	160	32	7
30-35	160	32	7
35-40	155	31	6
40-45	150	30	6
45-50	75	20	3
50-55	50	10	2
Total	1,125	225	45

The median average weekly delivery rate during the main construction period (weeks 1 - 45) equates to 20 deliveries (20 inbound / 20 outbound movements) each week.

It is envisaged that the majority of movements would be Monday to Friday, with only a limited number of movements on a Saturday. Adopting these figures, the average daily trip rate over the course of the main construction period (45 weeks) would be approximately four deliveries (four inbound / four outbound movements) per day, with five deliveries (five inbound / five outbound movements) per day throughout the peak weeks of 20–35.

Delivery of the main power transformer to the 110kV substation will constitute an abnormal load; however, this will occur on a limited number of pre-planned occasions.

Delivery vehicles will likely attend the Site for approximately one hour per vehicle. There will be sufficient space within the Site and construction compound areas to ensure that no vehicles will have to wait at any time on the surrounding road network.

3.1.2 Construction Staff

During construction, taking into consideration the normal intensity of on-site activity and the duration of the programme, it is expected that the construction schedule is likely to require no more than 30 staff to be on the Site at any one time. Staff will arrive at the Site in the 30-minute period preceding the start of the operating day (i.e. 07:30 to 08:00hrs) and depart in the 30-minute period following the end of the operating day (i.e. 18:00 to 18:30hrs). Staff will likely travel from different origins and hence distribute their impact across the roadway network.

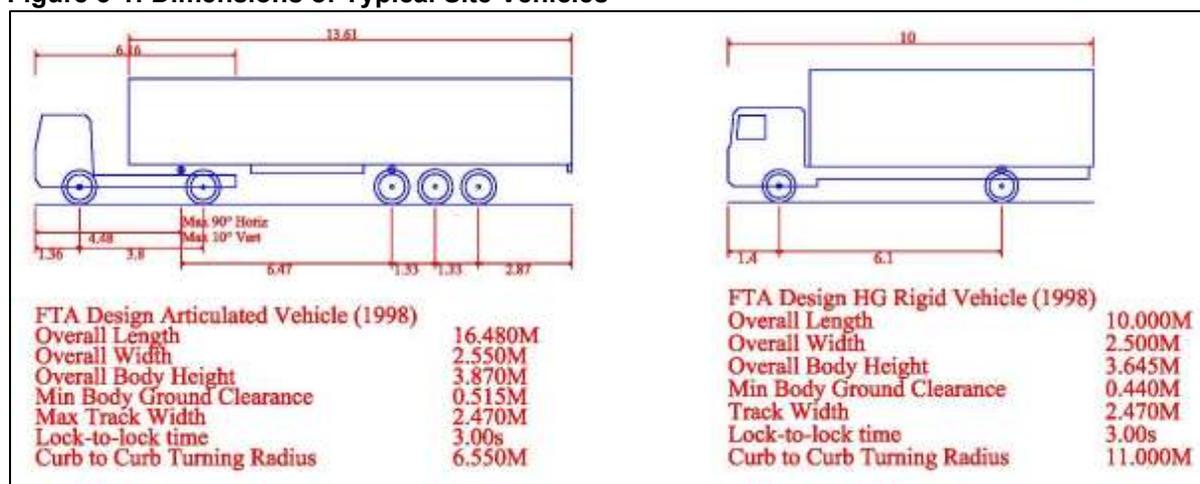
It would be expected that teams of specialist operatives will arrive together in shared transport and that other general operatives will arrive in single-occupant cars. It was assumed that no operatives will arrive by walking, cycling or use of public transport.

All workers' vehicles will park within the Site to avoid obstruction to the operation of the public roadway, and this will be strictly enforced. Temporary signage will be used to prohibit the parking of staff vehicles on the local road. The signage will direct drivers to the staff parking area.

3.1.3 Vehicles

The variety of vehicles that will need to access the Site during construction will include low-loaders to deliver plant / machinery and articulated goods vehicles to deliver materials. The dimensions of the largest of the typical vehicles likely to visit the Site during construction are shown in Figure 3-1 below.

Figure 3-1: Dimensions of Typical Site Vehicles



3.1.4 Traffic Management Speed Limits

Adherence to posted / legal speed limits will be emphasised to all staff / suppliers, and contractors during induction training.

Drivers of construction vehicles / HGVs will be advised that vehicular movements in sensitive locations, such as schools and local community areas, shall be restricted to 60km/h, or other as requested by Tipperary County Council. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic. It is not proposed to signpost such speed limits in the interest of clarity for local road users.

3.1.5 Temporary Construction Compounds

Given that the Overall Development will be constructed as a single construction project, the secure construction compound will be established in accordance with the arrangements approved under the Permitted Development. TCC previously granted the construction compound permission as part of the Permitted Development, and no change to its location or extent is proposed.

All materials for the construction of the Proposed Development will be deployed and stored within a temporary construction compound. All equipment and materials unloaded in the construction compound would be distributed throughout the Site using smaller machines, such as bobcats, via a network of pre-existing hardcore tracks.

The Site Compound (including welfare areas) would be erected on existing hardstanding only. No earthworks or sub-surface disturbance will occur as part of these proposed facilities.

The compound will operate as a secure, designated area and will be located away from any drainage ditches, watercourses, or other sensitive environmental receptors. This arrangement will ensure that construction activities are appropriately managed and that potential risks to the surrounding environment are avoided.

3.1.6 Working Hours

Working hours will generally be restricted to between 08:00 and 20:00 hours Monday to Friday inclusive and between 08:00 and 18:00 hours on Saturdays. Construction work will not be permitted on Sundays, public holidays or at night-time except where safety concerns necessitate it or if agreed in advance with the Planning Authority.

4 ENVIRONMENTAL MANAGEMENT FRAMEWORK

4.1 Environmental Policy

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

- TCC's Environmental Policy and Procedures; and,
- During construction works, management of the project will also need to comply with the appointed Contractor's 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 good environmental practices. These may include:

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

Monitoring of the construction processes against the project's environmental objectives will be the responsibility of the Appointed Project Manager.

4.3 Structure and Responsibilities

A management structure that includes an organisational chart encompassing all staff responsibilities for environmental work will be included within the CEMP. This will set out the respective roles and responsibilities regarding 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: Key Roles and Responsibilities

Role	Responsibility
Project Manager (Appointed Contractor)	Responsible for the management of the Construction Phase of the project. Has overall responsibility for the environmental performance of the project. Responsible for implementing the Site Waste Management Plan during the Construction Phase to ensure that waste is disposed of legally, economically, and safely. Ensure compliance with environmental legislation, consents, objectives, targets and other environmental commitments, including those outlined in the Environmental Report.
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 (Appointed by Appointed Contractor)	To provide information relevant to construction that may assist the Contractor in managing 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

This pCEMP will be distributed to the project team, including subcontractors, 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 on site.

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, 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;
- 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 Client Project Manager.

5 ENVIRONMENTAL RISK ASSESSMENT

5.1 Risk Classification

The classification of environmental risks arising from the Construction Phase will follow the definitions of significance as outlined by the EPA for Environmental Impact Statements [14] as shown 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 assessing risk arising from known sources, an assessment of the risk of an unplanned on-site event / incident was also conducted. These were rated as per the EPA's 'Guidance on assessing and costing environmental liabilities' [15]. The methodology for rating likelihood and consequences is presented in Tables 5-2 and Table 5-3.

Table 5-2: Rating of Likelihood of Risk Occurring

Rating	Likelihood	
	Category	Description
1	Trivial	Exceptionally 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 Consequences 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 on the environment.
4	Major	Severe impact on the environment.
5	Massive	Massive impact on a large area, irreversible in the 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 the context of the surrounding area;
- The local road networks;
- Local residences and businesses;
- The location of the Site in the context of the on-site surface water and closest water bodies;
- An increase in air and noise emissions during the Construction Phase; and,
- The biodiversity 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 risk 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 the Site works:

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

Table 5-4: Site Specific Risk Assessment

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
a. Access and Egress from the Construction Site	a. Collision risk with other vehicles, cyclists and pedestrians.	Moderate	Low	<ul style="list-style-type: none"> Construction traffic will utilise a one-way system accessing the site via the existing commercial Lisheen Mine entrance on the L5612 local road via the R502 regional road; The existing entrance is wide and well-serviced and is capable of taking all the vehicle movements during the Construction Phase of the Proposed Development; There will be sufficient space on the Site to ensure no vehicles will need to park, even temporarily on the adjoining public roads; and, The contractor will be required to ensure that all construction activities are undertaken in a manner that does not endanger pedestrians or cyclists at any time.
	b. Mud and dirt spilling onto the public road.	Slight	Low	<ul style="list-style-type: none"> Existing hardcore access tracks will be utilised on site, which will be supplemented with additional hardcore areas that will allow all delivery vehicles sufficient space to turn within the Site, to ensure that vehicles will be on hardcore at all times, minimising the risk that they will encounter mud and debris; The appointed contractor will develop mitigation measures within a Construction Traffic Management Plan ('CTMP') to address noise, mud, and debris associated with construction vehicles, which may include an on-site wheel washing facility, covering construction materials and waste to prevent spillage onto the local road network; and, The appointed contractor will be responsible at all times to ensure that the public roadway is kept free of any dirt or debris.
	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 08:00 to 20:00 Monday to Friday and 08:00 to 1800 on Saturdays.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
<p>b. Site Operations and Design</p>	<p>b. Traffic Incident on-site resulting in a fuel spill.</p>	<p>Moderate</p>	<p>Low</p>	<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; and, • Adequate signage shall be provided on the public network identifying the Site, access, speed limits, etc.
<p>2. Water Quality – Suspended Solids</p>	<p>a. Suspended sediment due to run-off from construction areas entering the drainage ditches, causing potential detriment to water quality.</p>	<p>Moderate</p>	<p>Low</p>	<ul style="list-style-type: none"> • Standard measures to control run-off will be incorporated into the Method Statements, to include Construction Industry Research and Information Association ('CIRIA') 2001 C532 – Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors and CIRIA 2015 C741 Environmental Good Practice on Site (4th edition); • The working area will be clearly defined, and construction activities will be carefully planned to minimise ground disturbance; • No surface water runoff will be discharged onto public roads, foul sewers or adjacent property; • There will be no direct or indirect discharges into any nearby waterbodies during the Construction Phase; • Silt fences will be installed on the southern perimeter of the Proposed Development area of the Site to ensure that any potentially contaminated runoff from the northern area of the Site won't enter the groundwater/ bedrock aquifer in the southern area of the Site, where extreme groundwater vulnerability conditions are present; • Any stockpile of material will be covered during periods of prolonged or heavy rain and will be located away from ditches; and, • Where drainage ditches are crossed with underground cables, the release of sediment over baseline conditions will be prevented by the use of silt traps, check dams and / or bunds. These will be put in place in advance of construction works and monitored on a regular basis.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
2. Water Quality - Oil	a. Oil Spill to ground / surface water.	Moderate	Low	<ul style="list-style-type: none"> • Any chemical / oils to be stored onsite will be placed within a bund on an area of hardstanding to ensure there is no seepage of pollutants into groundwater or surface water; • All bunds will have the capacity of the largest tank volume plus 10 per cent, at a minimum, with additional capacity to hold 30mm of rainfall; • All drainage from bund areas will be directed to secure containment prior to suitable disposal; • All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction; • Adequate spill kits, including absorbent booms and other absorbent material, will be maintained on site; • 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 secured against unauthorised access or vandalism, and provided with spill containment according to current best practice; • Any sediments adversely affected by contamination will be excavated and stored in appropriate sealed containers for disposal off-site in accordance with all relevant waste management legislation; and, • Prior to any works commencing, all construction equipment will be checked to ensure that it is 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"> • Adequate fuel storage facilities and re-fuelling protocols will be provided; • Fuelling and lubrication of equipment will be carried out off-site;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<ul style="list-style-type: none"> No vehicle or equipment maintenance work will take place within the construction site; and, Only emergency breakdown maintenance will be carried out on-site. Emergency procedures and spillage kits will be available, and construction staff will be familiar with emergency procedures.
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"> Concrete pours will be adequately planned and executed; Any spillage of cementitious materials will be cleaned up immediately; Any pouring of concrete will only be carried out in dry weather; and, Washout of concrete trucks will not be permitted on the Site.
3. Groundwater	a. Run-off from construction areas causing potential detriment to groundwater	Low / Moderate	Medium	<ul style="list-style-type: none"> All imported fill will be compliant with relevant waste and soil regulations; The material will be sourced from reputable, licensed suppliers; Silt fences and sediment traps installed downslope of construction zones; Wheel wash facilities to prevent sediment tracking; Where practicable, importation of stone will be scheduled during spring and summer months when groundwater levels are seasonally lower and flood risk is reduced; and, Daily weather forecasts will be monitored by the Site Manager;
4. Waste Management	a. Incorrect management of general Municipal Wastes / welfare facilities resulting in litter on-site and / or attraction of rodents.	Slight	Medium	<ul style="list-style-type: none"> Waste materials will be collected and stored in suitable receptacles before they are taken off-site; Waste materials will not be allowed to accumulate because of the fire / vermin risk; and,

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 – Toilet 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 works; and, There will be no foul effluent discharge arising from the initial site development works – portable toilet facilities will be used (emptied as required).
5. 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"> The appointed contractor will ensure that the area around the Site, including the public roadway, is regularly and adequately swept to prevent any accumulation of dust and dirt; Burning of materials on-site will not be permitted to prevent smoke emissions; A speed restriction will be enforced on the Site by the appointed contractor to prevent materials from becoming entrained in the air due to the tyre wheels; and, The contractor will use hoses to saturate all bulk materials with water, both during the process and whilst loading / unloading.
4. Nuisance – Noise	a. Generation of noise resulting in loss of amenity to the local area and causing disruption to the local species;	Slight	Medium	<ul style="list-style-type: none"> While increased levels of background noise are unavoidable during any construction works, all construction activities will be confined within the Site Boundary; Activities and deliveries to the Site to occur only during permitted hours; All plant equipment, where possible, shall be low noise rated; Where necessary, the use of enclosures and noise screens shall be used to control noise from plant;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<ul style="list-style-type: none"> Evaluation of construction methods to ensure the quietest option is utilised in proximity to an noise sensitive receptor ('NSR'); Positioning of the Site Compound at a distance from the closest NSR; On-site 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; and, 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 the importation of materials.
6. Archaeological Heritage	a. Loss of national / local heritage	Low	Low	<ul style="list-style-type: none"> All former archaeological remains have been removed by the archaeological excavation process; therefore, there is no potential effect from any elements of the Proposed Development. No monitoring is required.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
	b. Physical Impact –Non-intrusive construction method	Low	Low	<ul style="list-style-type: none"> As above
7. Biodiversity Protection	a. Impacts on Badgers	Medium	Low	<ul style="list-style-type: none"> In advance of works, all site personnel will receive a toolbox talk which will include reference to mitigation measures in relation to protected species, including badgers; To prevent badgers (and other fauna) from accidentally falling into deep excavations and becoming trapped in trenches / excavations, all trenches / excavations will be covered or backfilled at the end of each working day; Obvious mammal paths will be left clear of obstruction, and gaps in fences will be sited accordingly to allow for the free movement of smaller mammals such as badgers and rabbits throughout the landscape; 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 suitably qualified ecologist should be consulted for advice.
	c. 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; If any vegetation clearance works need to be undertaken within the main breeding season, this would be undertaken in

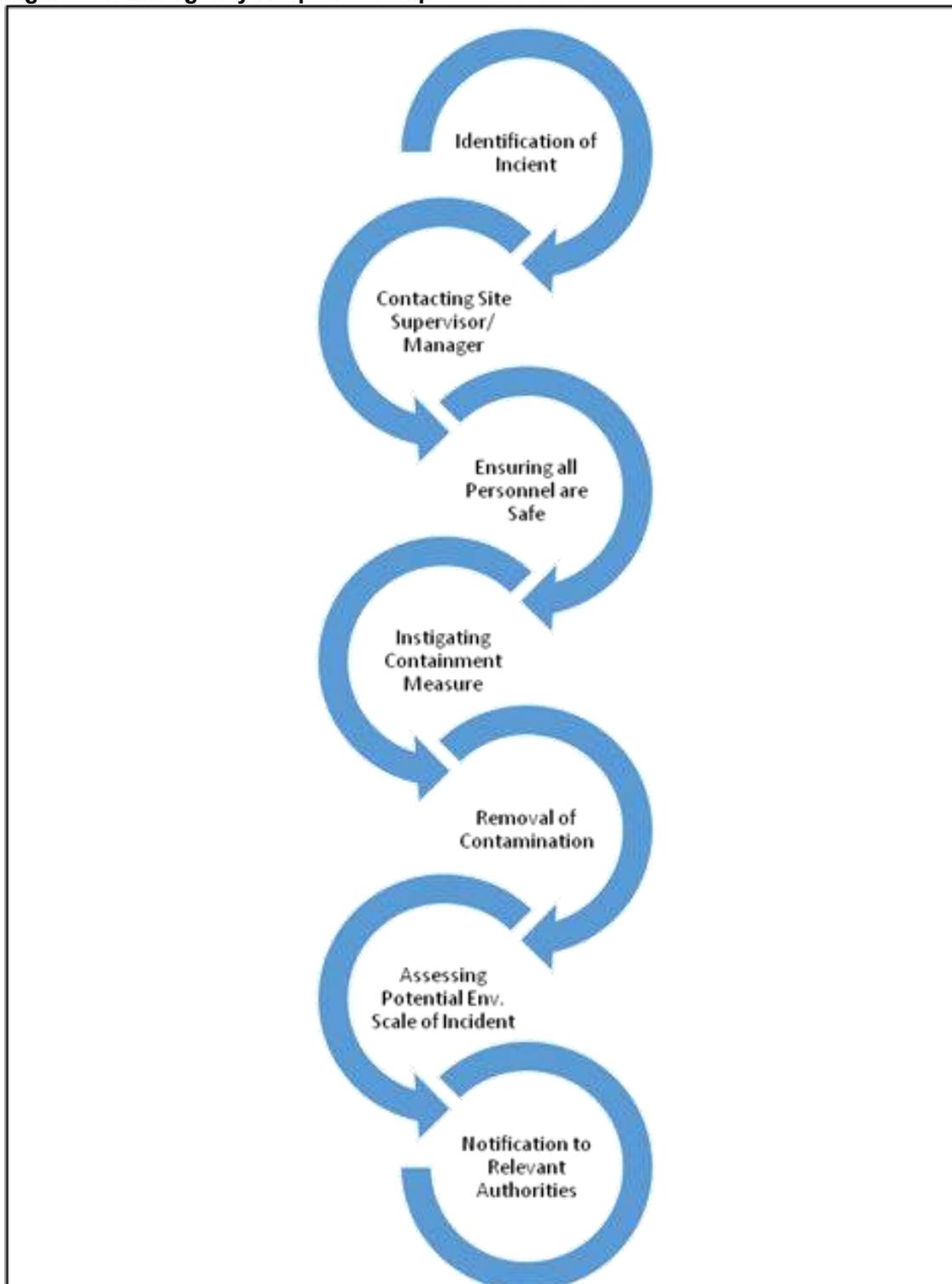
Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<p>consultation with the National Parks & Wildlife Services ('NPWS'); and,</p> <ul style="list-style-type: none"> Should birds' nests be found within the active working area during the Construction Phase, works within the area will stop, and the project ECoW will be consulted.
	d. 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; During any works close to the buffer zone, should the operatives encounter any roots smaller than 35mm diameter, they should be pruned carefully with an appropriate cutting tool such as a saw or secateur and roots larger than this will require consultation with an arboriculture specialist; No materials or equipment will be stored within the buffer zone; and, 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.
7. 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 their 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 have been removed; Any vehicles and machinery that are not clean will not be permitted entry to the Site;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				<ul style="list-style-type: none">• All materials to be imported to the Site, including additional planting, will be sourced from a reputable supplier, and records of all materials and supplies will be maintained;• In advance of works, all Site personnel will receive a toolbox talk concerning invasive species; and,• Everybody working on the Site must understand the role and authority of the ECoW in managing the issue of the non-native species.

6 EMERGENCY MANAGEMENT PLAN

Although the Site will be managed, there remains a minimal risk from the unexpected occurrences, such as accidental spillages on-site that may result in environmental pollution. Incidents on-site will follow a similar emergency response template. This template is outlined in the schematic represented in Figure 6-1.

Figure 6-1: Emergency Response Template



6.1 Incident Response

Where an environmental incident is identified, it will be reported to the on-duty Site Foreman and, thereafter, to the Employer's Representative. 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 the Employer's Representative issues an 'all clear'. 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 Employer's Representative will ensure, where required, that the incident details are communicated to the relevant regulatory authorities.

7 MONITORING AND IMPLEMENTATION OF THE CEMP

7.1 Complaints, Comments and Enquiries

Any complaints 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 a suitably qualified Ecologist will take place, followed by additional site visits as required. These visits will aim to ensure compliance with the procedures outlined in the CEMP and environmental conditions established under planning.

This will be done through a site inspection and the auditing of various aspects of the work, including documentation. Checklists for compliance will be developed, corrective actions will be implemented for any non-compliances identified, and follow-up surveys will be conducted to ensure ongoing 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, documenting the cause and the corrective action taken to address it. 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 company's respective procedures 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 identified, 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 CEMP prior to commencement of Site works. The Site Manager will be responsible for ensuring compliance with the CEMP. Each subcontractor will be responsible for appointing a point of contact for matters related to environmental protection.

Copies of the CEMP will be made available to all personnel on-site. All Site personnel and sub-contractors will be instructed about the objectives of the CEMP 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 CEMP. 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.

Furthermore, the provision of an Environmental Induction Sheet informs them of the specific measures that have been put in place and must be adhered to.

The CEMP 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 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 Construction 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 Contractor to respond to potential environmental risks from construction activities on-site. This pCEMP should be considered a live document, and as such, once a contractor is appointed, the pCEMP will be updated and will be developed as the project progresses. The final CEMP will cover all aspects of the construction development.

In assessing on-site risks, full consideration has been given to best practice guidance as outlined in Section 1.2.

The Appointed Contractor will be required to develop an updated CEMP before the commencement of any construction works. This updated CEMP will be submitted to TCC 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

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