

# OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (OCEMP)

## Magheralin Solar Farm



Outline Construction  
Environmental Management  
Plan (OCEMP)  
Magheralin Solar Farm  
Version F01  
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# 1 INTRODUCTION

## 1.1 Purpose of this Document

This document is an Outline Construction Environmental Management Plan (OCEMP) and contains appropriate environmental mitigation and management techniques to help ensure no significant impacts are caused to the environment during the construction phase of the Proposed Development. The document is a 'live' document and may be updated as the project progresses. This OCEMP sets out the minimum requirements which will be adhered to during the construction phase of the Proposed Development.

The OCEMP will be adopted by the appointed contractor for the construction of the Proposed Development and will be used throughout the construction period.

## 1.2 The Proposed Development

Details of the Proposed Development application are presented below:

**Location:** Lands located south of Magheralin and southeast of Dollingstown. From north to south lands comprise:

- **Parcel 1** – Lands accessing onto Springhill Road, immediately northwest of No.22 Springhill Road, Lurgan and immediately to the rear and northeast of 66, 68 and 70-90 Inn Road, Dollingstown (c. 9.3 ha);
- **Parcel 2** – Lands c.300m southeast of 15 Springhill Road, Lurgan, c.240m northwest of 117 New Forge Road, Magheralin, Lurgan, and c.400m east of 64 Dromore Road, Lurgan (c.33.3ha);
- **Parcel 3** – Lands c 80m northeast of 102 Dromore Road, Waringstown, and immediately adjacent to and west of 108 Dromore Road (c.9.4ha); and
- **Parcel 4** – Lands c.660m southeast of 105 Dromore Road, Donaghcloney and extending south/southeast to c.80m north/northeast of 67 Drumlin Road, Craigavon and c.70m to the rear and south west of 119 Dromore Road, Donaghcloney. (c. 11.5 ha).

Parcels 2 and 3 will be connected via underground cables which will pass through agricultural fields utilising existing agricultural lanes where available. The northernmost land-parcel (Parcel 1) will be connected via an interconnection cable across Springhill Road and intervening agricultural lands and the second interconnection route proceeds northwards from the southern-most land parcel (Parcel 4) across Drumlin Road and through intervening agricultural lands. It is proposed to traverse the River Lagan via horizontal directional drill before crossing Dromore Road to the north, and entering Parcel 3 of the site. The interconnection cable areas comprise 0.93ha.

**Applicant:** Renewable Energy Systems Ltd (RES)

**Project Description:** Installation and operation of a 29.9MW solar farm including photovoltaic panels, mounting frames, transformer / inverter units, and on-site substation with associated ancillary development including security fencing, pole mounted CCTV, associated landscaping, internal access tracks, new site access, internal cabling and associated site works.

The landholding upon which the development is proposed measures c. 64.43 hectares / 159.23 acres. The site boundary encompasses 12 field areas with an associated cabling area, as illustrated in Figure 1.



Figure 1: Proposed Site Boundary

## 1.3 Key Components of the Proposed Development

Project components are listed in the bullet points below and described in greater detail within subsequent text:

- Photovoltaic (PV) Solar Panels erected on steel/aluminium frames set out in south/south-west-facing arrays;
- 1 onsite Primary 33kV Sub-station typically measuring 10.34m x 5.7m x 6.45m high and a solar control building 8.3m x 3.45m x 4m high;
- 9 No. Inverter Substations typically comprises of inverter measuring 5m x 3m x 2.5m high and an associated transformer typically measuring 4m x 3m x 2.5m high to be located across the site;
- Perimeter post and wire security fencing (2.4m high);
- A number of strategically located pole mounted CCTV security cameras (3.5m high);
- New or upgraded access points onto Dromore Road (Centre), Drumlin Road (South), and Springhill Road (North);
- Internal and interconnecting underground cabling;
- Associated internal service tracks (permeable stone); and,
- Temporary construction compounds.

### 1.3.1 Solar Panels

Solar panels will be composed of bifacial photovoltaic cells, opaque in design to maximise the absorbency of the sun's rays and to minimise the potential for reflection or glare. The solar panels will be arranged in south facing arrays, fixed within the site. There are no moving parts and they do not move to follow the sun.

The proposed panels will measure typically 2.5m by 1.1 m. These will be mounted in frame tables at an inclination of min 10 to a max 40 degrees depending upon localised topography. Each frame table will be supported on steel/aluminium posts/frames that will be pushed or screwed into the ground to depths of up to 2.4m. The front bottom edge of the panels will be typically 0.8m above existing ground level and within a range of 500mm to 1.2m above ground level, again depending on local topography.

Panels can be arranged in either portrait or landscape orientation. Regardless of their arrangement, overall panel heights from ground level will not exceed 3.5m. There is a minimum spacing of 2m between the arrays.

#### 1.3.1.1 Mounting System

Each frame table will typically be made of aluminium or steel posts/frames upon which panels will be supported. Where posts are pushed into the ground this is via typical agricultural methods routinely used to erect fence posts on farms and in the rural area. Depending on ground conditions frames will be fixed to the ground by either:

- Option 1 - Single post ground fixture, which as suggested will be a single aluminium/steel frame driven into the ground.
- Option 2 - Table post ground fixtures - where frames will be fixed on duel posts driven into the ground; or
- Option 3 - In cases where it is required to safeguard potential archaeological assets frames can be mounted using a shallow concrete 'shoe'.

Option 3 as referred to, is typically employed where constraints are identified by archaeologists during the post planning monitoring of construction activities as part of an archaeological programme of works proposed which are typically required through applied planning conditions. This solution can also be applied where rock is encountered across the site which may prohibit the erection of the mounting system via options 1 and 2 above. Thirdly this option can be employed where sensitive soil conditions can occur on

the site. Where concrete shoes are required, these will be pre-cast and brought to site already made. All 3 options for construction of the mounting system involve a small track machine with a ram/screw attached. This machine tracks up and down in rows installing as it goes.

### 1.3.2 Connecting Cables

Connecting cables run along the back of each panel to the end of every row where they connect to the main cables which in turn connect to inverter stations and primary on-site substation located in land-parcel 3. Main cables will be undergrounded.

### 1.3.3 Interconnection

There are two interconnection routes the purpose of which is to transfer the energy created from the on-site inverter stations to the on-site substation which is proposed in the centre of the site – Parcel 3.

One interconnection route extends from the northernmost land-parcel (Parcel 1) across Springhill Road and intervening agricultural lands, then along internal tracks within the Proposed Development until it reaches the substation.

The second interconnection route proceeds northwards from the southern-most land parcel (Parcel 4) across Drumlin Road and through intervening agricultural lands. It is proposed to traverse the River Lagan via horizontal directional drill before crossing Dromore Road to the north, and entering Parcel 3 of the site.

### 1.3.4 Primary Substation Building

The substation and control building compound will accommodate all necessary equipment to enable the solar farm electrical system to be controlled, monitored, metered and connected to the network.

The control building will take the form of a multi-compartment prefabricated or building block structure atop a concrete foundation. Equipment to be accommodated within the substation typically include metering equipment, switchgear, transformers, the central computer system and electrical control panels. The substation building dimensions are 10.34 x 5.84m x 6.45m high. There is also a solar control building which will be 8.3m x 3.45m x 4m high. It is located within a larger compound 34x 27m comprising a permeable hardstanding area.

### 1.3.5 Inverter Stations

Inverter Stations will be located throughout the development area. These are small cabin-like buildings constructed on a concrete base / plinth with footprint dimensions of 5 x 3m, rising to a height of 3m and a transformer typically 4m x 3 x 2.5m high.

Figure 11 included as part of the planning application pack demonstrates two options for placing inverter stations on the site. Option 1 is for the inverter and transformer to be placed in the open air. Option 2 is for the inverter and transformer to be housed within an inverter container unit. Either option involves placing the inverter stations atop a permeable stone surface which measures 15m x 6m and there is 12 x 6m work area

These stations are connected to the panels by cabling (refer 1.3.2) which has been buried underground. The inverter stations convert the Direct Current electricity generated by the solar panels into Alternating Current (AC) electricity before being fed into the primary substation and then onward to the local electricity grid network.

### 1.3.6 Grid Connection

The grid connection point for the proposed Magheralin solar farm is likely to be to the 110kv/33kv Warringstown substation, which is located on the southern outskirts of Lurgan east of the A26 Banbridge Road. Connection will be by underground cable likely to be laid in the local road network or potentially including some third party lands. This connection does not form part of the planning application and will be delivered via a separate consenting process. If undertaken by a statutory undertaker, the connection would normally benefit from permitted development rights under the terms of Class C of Part 14 of the Schedule to the Planning (General Permitted Development) Order (NI) 2015.



## 2 DEFINING THE OCEMP

### 2.1 Purpose of the OCEMP

An OCEMP is prepared early in the development process, in this instance to accompany the submission of a planning application. It establishes best practice principles and sets out a framework of mechanisms by which the various construction activities will be managed to comply with the relevant environmental legislation and to ensure that potential impacts and effects on human receptors and environmental receptors are minimised. The OCEMP is informed by the suite of environmental assessments and associated reports that accompany the planning submission.

As set out previously within this document, the OCEMP remains a “live” document which is updated and develops as a project progresses. Prior to construction stage the Appointed Contractor will develop and implement a Final CEMP (CEMP) to help ensure that construction activities are planned and managed in accordance with the environmental requirements. The contractor will utilise the palette of measures contained within this OCEMP as the template for their own document.

The purpose of the OCEMP is to:

1. Record environmental risks and identify how they would be managed during the construction period;
2. Provide a means of identifying environmental commitments, objectives and targets;
3. Provide a means of monitoring and reporting performance against the objectives and targets;
4. Provide a framework to ensure that all parties are aware of their responsibilities;
5. Establish a checklist of control procedures which can then be integrated into an overall environmental management protocol;
6. Describe how construction activities would be undertaken and managed in accordance with the obligations of environmental legislation and policy, and the requirements of environmental regulatory authorities;
7. Provide detailed environmental mitigation measures for reducing the potential for environmental impacts during pre-construction and construction;
8. Highlights that some activities may require consents or licences;
9. Act as a link and main document reference for environmental issues between the design, and construction stages; and,
10. Ensure the mitigation requirements of the associated environmental assessments (contained in supporting environmental documents for the planning application) are met.

**The Appointed Contractor is required to develop and implement a CEMP to help ensure that construction activities are planned and managed in accordance with the environmental requirements. The contractor will use this OCEMP as the template for their own individual CEMP.**

## 2.2 Scope of the OCEMP

The scope of the OCEMP covers all environmental effects related to the construction of the Proposed Development. The term 'construction' in the OCEMP includes all site preparation, earthworks, any waste removal and related engineering and construction activities as authorised by the local authority and associated permissions. The OCEMP will confirm the Contractor's responsibilities to ensure compliance with their legal and contractual obligations as well as implementation of best practice in construction environmental management. The OCEMP will be applicable to all works associated with the Proposed Development including those carried out by sub-contractors.

## 2.3 Status of the OCEMP

The status of the OCEMP is as follows:

- 1. This document comprises the OCEMP and has been prepared during the preliminary design and in parallel with submission of a full planning application for the Proposed Development.**
- 2. The OCEMP (and adopted version before onsite works i.e. CEMP) is a 'live' document that will be reviewed on a regular basis and updated where necessary to include further requirements as they emerge including those from the local planning authority.**
- 3. The CEMP will include and take account of any further mitigation methods and control measures proposed and agreed with key stakeholders as part of any pre-planning process, including NIEA, DAERA and the District Council. As required these will be in place before construction begins.**
- 4. During construction, the CEMP may be revised to take into account any modifications to the design, changes in external factors (for example, regulations or standards), any unforeseen circumstances, and any failings in environmental performance arising from routine inspections.**
- 5. The provisions of the OCEMP would be incorporated into the contracts for construction of the Proposed Development. It would be a mandatory requirement for both the Principal Contractor and all subcontractors to comply with the OCEMP to ensure that best practice is implemented during construction and to safeguard the environment.**
- 6. The requirements of the OCEMP do not remove or overwrite the legal duties, responsibilities or obligations of the Principal Contractor (and subcontractors) and other parties in accordance with the contract documents and legislation.**
- 7. As set out the purpose of the OCEMP is to inter-alia help inform the CEMP. The CEMP remains the mechanism for ensuring that the Proposed Development adopts relevant best practice management techniques for sustainable construction.**

## 2.4 Structure of the OCEMP

In addition to this main document, the OCEMP contains the following Appendices:

- Appendix A: Proposed Site Layout
- Appendix B: Environmental Inspection Schedule
- Appendix B1: Complaints Form
- Appendix C: Incident Report Form
- Appendix D: Site Waste Management Plan
- Appendix E: Construction Method Statement
- Appendix F: Pollution Prevention Plan
- Appendix G: Emergency Response & Environmental Plan
- Appendix H: Outline Horizontal Directional Drilling Methodology

## 3 ROLES AND RESPONSIBILITIES

### 3.1 Introduction

The Project Manager/Construction Manager will have overall responsibility for the construction of the Proposed Development. An Environmental Manager will be responsible for developing the OCEMP and implementing the CEMP (and its various potential iterations as it is a 'live' document) during construction.

Other members of the project team will be assigned specific roles to assist the Project Manager in the implementation of the OCEMP and individual specialists will be appointed to provide expert advice.

The assigned environmental roles and responsibilities for the relevant project personnel are detailed in sections 3.2 to 3.8 below.

**For the Proposed Development the environmental officer role maybe combined with the site manager role due to the size of the project and development area. All roles are still listed for completeness.**

### 3.2 Construction Director

The Construction Director will have an overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The principal duties and responsibilities of this position will include:

1. Overall responsibility for the Proposed Development and implementation of the CEMP;
2. Allocating resources to ensure the implementation of the CEMP;
3. Participation in the management review of the CEMP for suitability, adequateness and effectiveness; and,
4. Setting the focus of environmental policy, objectives and targets for the Contractor.

### 3.3 Construction Manager/Site Manager

The Construction Manager/Site Manager is directly responsible to the Construction Director. The principal duties and responsibilities of this position will include:

1. To report to the Construction Director on the on-going performance of the CEMP;
2. To discharge his/her responsibilities as outlined in the CEMP; and,
3. To support and augment the Environmental Officer through the provision of adequate resources and facilities in the implementation of the CEMP.

### 3.4 Environmental Officers

The Environmental Officer will be responsible for, but not limited to, the following activities:

1. Ensuring that the requirements of the CEMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements;
2. Reviewing the environmental responsibilities of other managed Contractors in scoping their work and during contract execution;
3. To ensure that advice, guidance and instruction on all CEMP matters are provided to all their managers, employees, construction contractors and visitors on site;
4. Report to the Construction Manager on the environmental performance of Line Management, Supervisory Staff, Employees and Contractors;

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5. Advise site management (including, but not limited to, the site Construction/Commissioning Manager) on environmental matters;
6. Maintaining environmental records;
7. Providing guidance for the site team in dealing with environmental matters, including legal and statutory requirements affecting the works;
8. Reviewing environmental management content of method statements;
9. Reporting environmental performance to the Site Manager;
10. Liaison with statutory and non-statutory bodies and third parties with an environmental interest in the Proposed Development;
11. Monitoring and completing the waste register and ensuring the correct waste management procedures are implemented (An example Site Waste Management Plan (SWMP) is set out in **Appendix D**);
12. Implementing and maintaining environmental controls on site. Refer to **Appendix B** Environmental Inspection Schedule and details of what is included in method statements **Appendix E – Construction Method Statement**;
13. Attending to any spills or environmental incidents that may occur on site. Refer to **Appendix F** Pollution Prevention Plan, **Appendix G** Emergency Response & Environmental Plan;
14. Undertake site environmental monitoring and walk overs. Refer to **Appendix B** Environmental Inspection Schedule;
15. Ensuring correct procedures are followed in the event of environmental incidents. Refer to **Appendix C** Incident Report Form and **Appendix G** Emergency Response & Environmental Plan.

### 3.5 Site Supervisors

Site Supervisors are required to:

1. Promote a Health & Safety culture on site, to read, understand and implement the CEMP;
2. Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance;
3. Ensure that environmental matters are taken into account when considering Contractors' construction methods and materials at all stages;
4. Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management;
5. Ensure plant suggested is environmentally suited to the task in hand;
6. Co-ordinate environmental planning of all construction activities to comply with environmental authorities' requirements and with minimum risk to the environment. Give Contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists;
7. Where appropriate, ensure Contractors method statements include correct waste disposal methods;
8. Be aware of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management; and,
9. Ensure materials/waste register is completed as appropriate.

### 3.6 Site Personnel

All Contractors, and other site personnel, on the project will adhere to the following principal duties and responsibilities:

1. To support and promote the Health & Safety culture on site;

2. To co-operate fully with the Principal Contractor and the Environmental Officer in the implementation and development of the CEMP at the site;
3. To conduct all their activities in a manner consistent with regulatory and best environmental practice;
4. To participate fully in the environmental training program and provide management with any necessary feedback to ensure effective environmental management at the site; and,
5. Adhere fully to the requirements of the site environmental rules.

### 3.7 Ecological Clerk of Works (ECoW)

An Ecological Clerk of Works (ECoW) will be employed to ensure that all works are undertaken in line with the mitigation outlined in the Ecological Assessment Report.

#### 3.7.1 Role and Responsibilities

Where any person on site identifies a burrow, resting site or a sighting of what they believe to be of a protected species (i.e. water vole, badger, otter, pine marten, red squirrel, nesting birds) within the designated working area, the ECoW shall be notified immediately. If these signs are present within a working area, works will be stopped immediately until further information can be gathered by the ECoW.

If during any phase of the proposed development a trapped animal be encountered, the ECoW will be contacted immediately for further advice.

In the unlikely event of a protected species being injured or killed, or a burrow being accidentally damaged, the ECoW will be contacted immediately. They will attend the Site and make a written and photographic record, including details of the time, location and personnel involved in the incident. This information will be supplied to the appropriate environmental authorities (e.g. NIEA) within 24 hours.

### 3.8 Team Structure & Distribution List

All personnel working on the project will be responsible for the environmental control of their own work and will perform their duties in accordance with the requirements of the CEMP (as updated) and in compliance with the controls referenced therein.

A distribution list for the CEMP will be developed when all contact names and companies are known. The purpose of the distribution list is to establish communication channels that will enable more effective control of environmental-related issues. The distribution list should identify individuals and organizations that have received or will receive a copy of the construction stage CEMP for implementation.

Individuals of importance could include the developer, the environmental consultant, lead contractors, subcontractors, and any appointed environmental managers (or other identifiable titles for the persons in charge of implementing the contents of the construction stage CEMP).

The distribution list will be established prior to commencement of construction by the appointed contractor. Prior to commencement of construction, all roles and responsibilities will be confirmed in the CEMP as updated. Table 3.1 provides a template for project roles and responsibilities and can act as a distribution list for the CEMP.

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Table 3.1: Role, Company, Named Contact & Contact Details

ROLE	COMPANY	NAMED CONTACT	CONTACT DETAILS
Construction Director	Write name of company here	Write name of person here	Write phone number here
Construction Manager	Write name of company here	Write name of person here	Write phone number here
Principal Contractor	Write name of company here	Write name of person here	Write phone number here
Environmental Officer	Write name of company here	Write name of person here	Write phone number here
Site Supervisors	Write name of company here	Write name of person here	Write phone number here
Site Personnel	Write name of company here	Write name of person here	Write phone number here
Health & Safety Representative (May be combined with Construction Manager role)	Write name of company here	Write name of person here	Write phone number here
Other specialists as required (e.g. geotechnical , drainage/civil engineer)	Write name of company here	Write name of person here	Write phone number here
Other specialists as required (e.g. geotechnical , drainage/civil engineer)	Write name of company here	Write name of person here	Write phone number here
Other specialists as required (e.g. geotechnical , drainage/civil engineer)	Write name of company here	Write name of person here	Write phone number here
Other specialists as required (e.g. geotechnical , drainage/civil engineer)	Write name of company here	Write name of person here	Write phone number here
Other specialists as required (e.g. geotechnical , drainage/civil engineer)	Write name of company here	Write name of person here	Write phone number here

NIEA Pollution Prevention Hotline

NIEA's Pollution Prevention Hotline Number

**0800 80 70 60**

Any spillages / pollution incidents should be reported to the NIEA water pollution hotline within 30 minutes of the incident occurring unless it is not safe to do so

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The Principal Contractor as appointed has ultimate responsibility for the successful environmental performance of the Proposed Development including appointment and management of subcontractors and environmental specialists, as required, as detailed in Table 3.1. Specifically, this includes:

1. Principal Contractor & all sub-contractors will need to **comply with all** relevant environmental legislation when carrying out work on the site;
2. **Definition** of environmental standards and requirements for the contractors throughout the contract stages;
3. **Acting as a point of contact** for consultation and feedback with landowners/occupiers, statutory and non-statutory consultees, other interested parties and the public;
4. **Auditing** of the performance of sub-contractors;
5. **Environmental monitoring and reporting (in conjunction with Environmental Officer)** - Environmental issues relevant to the project will be discussed during weekly Site Progress Meetings attended by the Site Manager and Environment Manager. Environmental performance will also be discussed at regular HSEQ meetings. This will include dissemination and discussion of the findings of audits, environmental reports and other inspections where appropriate. Other responsibilities are as follows:
  6. **Health and Safety** - The site will be managed by a full-time project management team who will be responsible for the Health and Safety of all personnel on site;
  7. **Site Rules** - All personnel must comply with the rules and regulations laid down in the appropriate site rules;
  8. **Induction and signing in and out** - All visitors to the site will be required to sign in and out and all personnel working on the site will be subject to an induction by the Principal Contractor;
  9. **Training** - All construction staff, including sub-contractors, will receive structured training on the requirements of the CEMP and the associated environmental control plans, as developed. They would also be required to attend a site induction which would include the key environmental issues identified for the Proposed Development. The briefing would emphasise the methods and working practices which must be employed to protect the environment, including emergency procedures for reporting and dealing with environmental incidents. Records of training and those attended will also be retained.

## 4 COMMUNICATIONS

Effective communication is essential to ensure the appropriate employment of environmental standards and relaying of information, reports/assessments and data. The following points are some of the key forms of communication required:

1. **Statutory and Non-Statutory Bodies** - During the construction works, communication may be required with external parties such as, statutory authorities, interest groups and the public/business owners. Communication may take the form of scheduled meetings, site visits and written correspondence;
2. As the project progresses, there may be a requirement by the client, his representatives and any appointed contractor to clarify potential issues with relevant statutory bodies – including those with an environmental remit;
3. Detailed in Table 4.1 is a draft list of statutory bodies with an environmental remit within Northern Ireland as well as the local authority area who may require consultation – in particular during the construction phase of the project. Also provided is a link to their internet sites from which useful information and contact details of these organisations can be obtained.
4. This list will be reviewed by the contractor, added to or amended if required. This list therefore should not be seen as definitive.
5. It should also be noted that there are a wide range of non-statutory bodies within Northern Ireland who play an active role in protecting the environment. These organisations are not listed in this OCEMP. In the event that organisations emerge as interested in the Proposed Development during the pre-construction or construction project phases they will be added within the OCEMP or CEMP documents;
6. **Public/businesses** - The Site Manager shall ensure that the public/businesses are kept informed of operations that may have an effect upon them. This may involve letter drops and meetings to keep local residents/commercial premises owners up to date with progress with the Proposed Development and any new operations that are to be carried out. The Site Manager will provide details of contacts within the project team for the public/businesses to contact should any issues arise;
7. **Consents, Licences and Permits** - The provisions for controlling, pumping and discharging water will be agreed with the Northern Ireland Environment Agency (NIEA). The Contractor will ensure that any licences required are in place;
8. **Changes in legislation or guidance** - Legislative changes or proposed improvements to manage processes on site that have a bearing on the commitments given in the supporting environmental documents or other consultations will be communicated by the Site Manager to the Client; and
9. **Meetings & Records** - Environmental issues relevant to the project will be discussed during weekly Site Progress Meetings attended by the Site Manager and Environment Manager. Environmental performance will also be discussed at regular Health, Safety, Environment and Quality (HSEQ) meetings. This will include dissemination and discussion of the findings of audits, environmental reports and other inspections where appropriate.



**Table 4.1: Basic list of statutory bodies with an environmental remit within Northern Ireland**

Organisation	Weblink
Department of Agriculture, Environment and Rural Affairs (DAERA)	<a href="https://www.daera-ni.gov.uk/">https://www.daera-ni.gov.uk/</a>
DAERA Northern Ireland Environment Agency (NIEA)	<a href="https://www.daera-ni.gov.uk/contacts/northern-ireland-environment-agency-contact">https://www.daera-ni.gov.uk/contacts/northern-ireland-environment-agency-contact</a>
Northern Ireland Environment Agency (NIEA) – Environmental Protection	<a href="https://www.nidirect.gov.uk/contacts/contacts-az/northern-ireland-environment-agency">https://www.nidirect.gov.uk/contacts/contacts-az/northern-ireland-environment-agency</a>
Department for Infrastructure – Rivers Agency	<a href="http://www.riversagencyni.gov.uk/">http://www.riversagencyni.gov.uk/</a>
Department for Infrastructure – Inland Waterways	<a href="https://www.infrastructure-ni.gov.uk/topics/waterways">https://www.infrastructure-ni.gov.uk/topics/waterways</a>
NI Water	<a href="http://www.niwater.com/">http://www.niwater.com/</a>
Armagh City, Banbridge and Craigavon Borough Council	<a href="https://www.armaghbanbridgecraigavon.gov.uk/">https://www.armaghbanbridgecraigavon.gov.uk/</a>

## 5 POLLUTION CONTROL AND CONTINGENCY PLAN

### 5.1 Emergency Procedures

A Site Environmental Emergency Plan will be prepared prior to construction and communicated to all members of the project team including sub-contractors and emergency services. A Pollution Incident Emergency Response Plan will be developed in accordance with the guidance set out in the Guidance for Pollution Prevention GPP 21: Pollution Incident Response Plans. **Appendix G** of this OCEMP contains an example Emergency Response & Environmental Plan. The Environmental Emergency Plan will set out the procedures to be followed and measures to be implemented in the event of a pollution incident. These incidents may be the result of:

1. **Delivery and use of materials;**
2. **Spillages of oils or chemicals;**
3. **Discharge of silty water or other pollutants to watercourses;**
4. **Flooding event; and,**
5. **Fire (emissions to air) and failure to contain firewater runoff.**

Emergency procedures are developed to support the response plan. The procedures define the circumstances when the plan should be activated and include:

1. **The names and contact details of staff trained in incident response;**
2. **Clearly defined roles and responsibilities;**
3. **The types and location of emergency response equipment available;**
4. **The location of the emergency assembly point; and**
5. **Procedures for recovering spilled product.**

Responsible staff will be trained in emergency procedures to form an Emergency Team, so that these procedures can be implemented swiftly and effectively. Periodic testing of emergency procedures will be undertaken by the Site Manager.

The Environmental Manager will observe the test and to report on results. Any corrective actions are taken forward for review and approval.

**Should an emergency incident occur, the Environmental Manager will be notified immediately. The emergency response will be co-ordinated by the Site Manager.**

Protective measures, mitigation, clean up and remediation actions will be identified from the evaluation and shall be put into place, having regard for the sensitivities of the environment.

A record of the emergency incident will be kept to record the nature of the corrective action undertaken. (See **Appendix C** for an Incident Report Form example template).

**Appendix G** of this OCEMP contains an example Emergency Response & Environmental Plan. All relevant staff will be trained in how and when to contact the emergency services, NIEA and other organisations identified in the Emergency Response & Environmental Plan.

## 5.2 Oil Storage and Refuelling

Oil storage and refuelling areas should they be required will not be located within 10m of any local watercourses or any drainage ditch which feeds into a watercourse. The following measures must be implemented:

1. Dedicate specific areas for oil storage and refuelling, with bunds sized to contain 110% of fuel storage capacity;
2. The contractor will use fill point drip trays, bunded pallets and secondary containment units;
3. The temporary site construction compounds will be enclosed and secured and fuel storage areas will be secondarily secured within same;
4. All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring; and
5. Storage of Control Of Substances Hazardous to Health (COSHH) items is not permitted and only brought to site as required, fuel is provided by client from an existing bunded static supply, where small portable machines are to be fuelled up a drip tray is used.

## 5.3 Concrete Pouring

Concrete, cement and grouts are very alkaline and corrosive and can cause serious pollution to water. The following measures shall be followed on-site during construction and pouring of concrete:

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Ensure that concrete pours are contained within the working area and do not enter any watercourses or surface water drains;</li> <li>2. If mixing grout on site, construct a suitable barrier around mixing areas, supply lines and around working areas to prevent its escape;</li> <li>3. Trucks, hoppers, mixers and concrete pumps that have contained concrete must be washed out in a contained area, see</li> </ol> | <p style="text-align: right;">‘management of concrete wash out areas’ below;</p> <ol style="list-style-type: none"> <li>4. All concrete pours will be carried out under supervision;</li> <li>5. Pours will be properly prepared to avoid run off (shuttering, mud mats, membranes used) and waste and</li> <li>6. Pouring of concrete should not take place when heavy rain is imminent.</li> </ol> |
|--|--|

**Wash down water arising from the washing of equipment that has come into contact with concrete will be collected in an impervious container.**

## 5.4 Stockpiles

Management of stockpiles in accordance with best practice will include a 10 metre buffer zone between the stockpile and any watercourse. If required additional mitigation such as silt fencing at the toe or geotextile wrapping of the stockpiles will be considered to manage contaminated run off. The following measures are proposed to environmentally manage any stockpiling of materials:

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Locate stockpiles out of the wind or provide wind breaks to minimise dust generation;</li> <li>2. Keep stockpiles to minimum practicable height and use gentle slopes;</li> <li>3. Minimise the storage time of materials on site;</li> <li>4. Store materials away from the site boundary;</li> </ol> | <ol style="list-style-type: none"> <li>5. Minimise the height of fall of all materials;</li> <li>6. Avoid spillage, and clean any spill up as soon as possible; and</li> <li>7. Good soil handling and storage methods including protection of stockpiles with geotextiles.</li> </ol> |
|--|--|

**Stockpiled material is located more than 10m away from the exclusion zone around the water body.**

## 5.5 Silt Management

Good soil use and management is crucial to preventing silt pollution which is a major cause of environmental incidents. It can harm water quality, damage and kill aquatic life by smothering and suffocation and can cause flooding by blocking culverts and channels. The following will be implemented on-site:

1. Do not allow water containing silt or mud to discharge directly to any waterway;
2. Minimising the amount of time stripped ground and soil stockpiles are exposed;
3. Only removing vegetation from the area that needs to be exposed in the near future;
4. Using geotextile silt fencing at the toe of the slope, to reduce the movement of silt; this should be installed before soil stripping has begun and vehicles start tracking over the site;
5. Plant washing is carried out in a designated area of hard standing at least 10 metres from any watercourse or surface water drain;
6. Where run off water is contaminated with silt or other pollutants such as oil this water must not be pumped or allowed to flow (directly or indirectly) into the water environment without treatment;
7. Silt controls in place to prevent silt entering watercourses or drains;
8. Silt treatment options can be complex or relatively simple depending on the volume of water, the amount and type of silt and the type and size of site. Whichever method is used, an area where water can be undisturbed for a period of time will be identified for facilities. These facilities must be correctly installed, routinely maintained and inspected to ensure they are working efficiently.

## 6 ENVIRONMENTAL PERFORMANCE MANAGEMENT

### 6.1 Environmental Risk Register

The Environmental Manager/Officer should prepare and maintain an Environmental Risk Register having regard for legal requirements, project environmental commitments and the potential for aspects of works to cause significant environmental impact.

The Environmental Manager should record responsibilities assigned for actions, and those required for mitigation and control of the environmental risks in the Environmental Risk Register.

The Environmental Risk Register will be subject to regular review by the Environmental Manager together with the Site Manager.

### 6.2 Consents

Copies of legal consents, permits and licences obtained will be held in the site environmental file by the Environmental Manager.

### 6.3 Method Statements and Risk Assessments

Specific environmental risks will be assessed during preparation of method statements. Actions and environmental constraints associated with specific construction operations will be included in method statements, field control sheets and activity plans where appropriate. Generic environmental requirements will be included in all method statements. Details of what should be included in method statements are set out in **Appendix E** Construction Method Statement.

### 6.4 Inspections

Routine inspections to check that pollution control measures are in place will be undertaken by the Environmental Manager, who will produce weekly inspection reports. Daily inspections will be made by the supervisors during each shift and any environmental problems or risks that are identified will be actioned as soon as is reasonably practicable. Any issues arising from the daily inspections will be notified to the Environmental Manager. **Appendix B** of this OCEMP details an example Environmental Inspection Schedule.

### 6.5 CEMP Review Programme

The CEMP is a 'live' document that will be updated by the Contractor and reviewed by the Environmental Manager on a monthly basis as a minimum. The CEMP will also be reviewed following any environmental incidents which require the works methods to be updated or changed.

### 6.6 Notices of Non-Conformance

In instances where the requirements of the CEMP are not upheld a non-conformance and corrective action notice/procedure will be produced. The notice/procedure will be generated during the inspections conducted by the Supervisors, the Site Manager, Environmental Manager or any external third-party audits.

The Site Manager will be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming. A sample incident report form is set out in **Appendix C**.

## 6.7 Complaints Handling

The response to any complaints will be managed by the Site Manager, who will inform the Environmental Manager of any environmental complaints. A Complaints Register will be maintained to detail the name and contact details of the complainant, date and time of the complaint, nature of complaint, action taken to resolve issues, and date of complaint handover.

The Environmental Manager will ensure that all environmental complaints and concerns will be responded to in 24 hours. An example complaints form is contained with **Appendix B1** of this OCEMP.

## 6.8 Key Performance Indicators and Objectives

The Contractor should set environmental objectives in order to continuously improve environmental performance on the site. The Contractor will set objectives based on each significant environmental impact and they will be reviewed, and revised if necessary, on a monthly basis. Procedures, monitoring requirements and key performance indicators will be measured against achievable targets.

## 7 WORK PROGRAMME

### 7.1 Proposed Programme of Works

It is anticipated the proposal will be constructed across a 40 week period (worst case) - not allowing for holiday periods. A detailed construction programme for the whole works will be available prior to the start of the Construction Phase main works.

### 7.2 Construction Hours

It is assumed that the construction hours will be:

- **07:00 to 18:00 Monday to Friday;**
- **From 08:00 to 13:00 on Saturdays,**
- **No construction works on Sundays and Bank Holidays.**

Working hours outside of this regime will only occur in exceptional circumstances – if these are known in advance (i.e. not under emergency conditions), discussions will be held with representatives of Armagh City, Banbridge and Craigavon Borough Council environment and planning team to ensure that the works can be completed with minimal impact on sensitive receptors.

### 7.3 General Site Set Up

The following will be considered during site mobilisation:

#### 7.3.1 Site Construction Compound

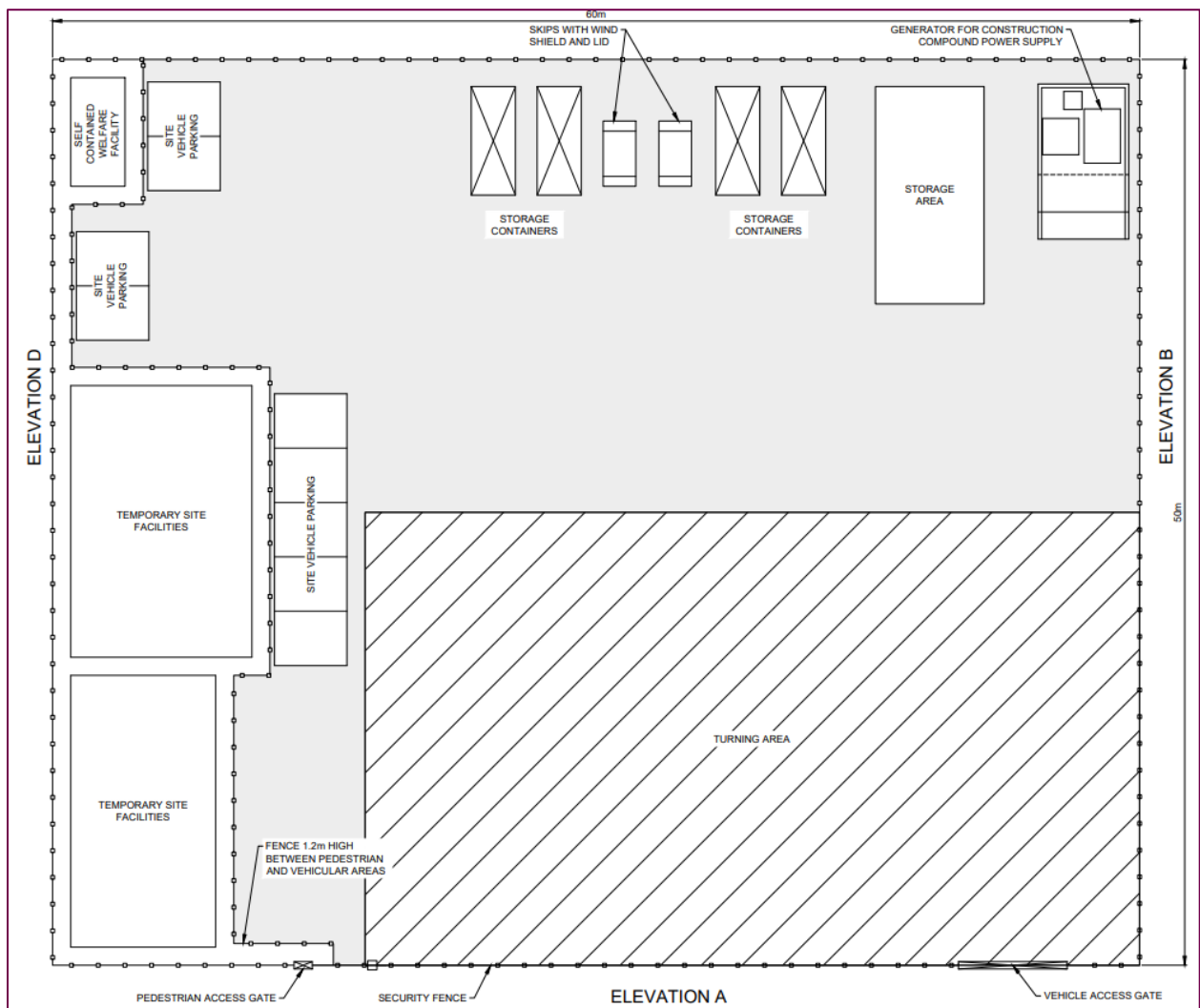
There will be 4 temporary site construction compounds, Compound 1 (North) and Compound 2 (South) which will support the proposed development during the construction period. The exact location of each site construction compound is illustrated in Appendix A Proposed Site Layout.

All construction support activities will be controlled within the temporary site construction compounds, which will include the following;

- A site office;
- Self-contained welfare facilities;
- Storage areas
- Containers to facilitate storage of panels and tools;
- Site vehicle parking;
- Turning area;
- Fuel storage container;
- Skips with wind shield and lid;
- Generator for construction compound power supply
- Kitchen;
- Chemical toilets; and
- An area of storage for sand to facilitate cable laying.

Figure 2 below illustrates the temporary site construction compound layout.

## OUTLINE CEMP



**Figure 2: Temporary Site Construction Compound Layout**

### 7.3.1.1 Waste Disposal

The proposal will not generate any waste. Toilet facilities on-site during construction and operation will be self-contained to be appropriately disposed of off-site by qualified contractors.

### 7.3.2 Plant and Equipment

The plant and equipment likely to be associated with the construction process is set out as follows:

- Excavator Operator;
- General Operatives;
- Tracked excavator (only rubber tracked machines will be allowed on public roads);
- Tracked dumper or tractor and trailer;
- 360° tracked excavator (13 ton normally, 22 ton for rock breaker);
- 4x4 vehicles;
- Puller – tensioner;
- 360° tracked excavator;
- Teleporter X 2;
- Drum stands X 2;



- Drum carriers X 2;
- Stringing wheels;
- Conductor drums;
- Compression tools;
- Vans; and
- Chains/Hand tools.

### 7.3.2.1 Specific to Plant & Tools

Specific to plant and tools the following shall be adhered too:

- All electrical tools that will be used on site will have a valid PAT Test within the last 12 month period;
- All electrical/ hand tools are to be checked prior to use by the operators to ensure they are fit for purpose;
- In regard to kango hammers, grinders, still saws and drills all users are to be competent to operate and have had the relevant training applicable to that tool;
- Electrics will be provided on site for all tools by means of a Petrol and Diesel Generators these must have an RCD fitted for emergency purposes;
- All plant i.e. Forklift, excavator, dumper trucks, Cherry Pickers, Mobile Elevating Work Platforms (MEWPS) must be certified and a copy of this placed on file; and
- Any lifting equipment i.e. slings, chains, shackles and harnesses, inertial reels etc. must have valid certs every 6 months.

### 7.3.3 Site Clearance

The existing site currently consists mostly of agricultural land over the 64.43 hectares / 159.23 acres site. The majority of the site is comprised of low lying and generally flat agricultural fields.

Disturbance of the land during construction will be minimal as it is proposed the panels will not be placed on the entire site area and rather there will be significant areas of spacing including to allow for separation distances to existing field boundaries/ ditches within the site, and between the panel rows themselves.

Additionally the panels themselves, which constitutes the main project component, are pushed or driven into the ground. They do not require excavation or concrete to be secured. Again, this ensures that site clearance is minimised during construction.

### 7.3.4 Internal Service Tracks

The development will utilise existing agricultural lanes for servicing purposes in so far as is reasonably possible. Access will also be achievable during construction and operation via tractor or 4 x 4 vehicles around the periphery of existing fields where buffers to field boundaries are designed into development proposals. As such the extent of proposed new access tracks is minimised. Where new tracks are required these will be permeable and of stone construction. **Appendix A** identifies the 4m wide internal access tracks which are located at various points across the proposed development site.

## 7.4 Construction Traffic

Access to the site during both construction and operation will be via new road openings:

- Onto Springhill Road at the northern site extents (Parcel 1);
- Onto Dromore Road at the central site extents (Parcel 2 and 3); and
- Onto Drumlin Road at the southern site extents (Parcel 4).

## OUTLINE CEMP

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Traffic generation at the site will be mainly during construction. Across the 40 week construction period there will be c.1250 deliveries to the site. Deliveries will be via standard HGV and there will be no oversized loads associated with the proposal.

Traffic generation at the site will peak at week 10 (stone delivery) and week 20 (PV panels) of the c.40 week programme (Construction peak and delivery peak) when there is anticipated to be 9 daily HGV deliveries to the site.

Access designs and associated sight splays are proposed in accordance with standards. When delivering to the site, all materials will be dropped off within proposed temporary construction compounds which in turn have suitable vehicle turning areas proposed therein. This will enable all vehicle movements onto or from the public road to be carried out in forward gear. Existing provision is also made on the site access for internal surface water drainage by way of ditches to ensure the surface water does not run from the site onto the public road or vice versa.

Typical construction traffic will comprise of ready mix lorries, articulated low loaders, plant delivery and rigid vehicles. As stated, specialist vehicles are not required to serve the Site during construction or operation.

A speed limit will be implemented on Site to reduce the likelihood of injury or death due to the movement of construction traffic.

### 7.4.1 Deliveries

Delivery of equipment and materials will be carefully controlled and managed at the site. All materials will be left and stored within proposed temporary construction compound areas which will also facilitate parking and vehicle turning. Access and egress to the proposed area will be managed by the Principal Contractor. Delivery times will be planned in advance through a Construction Traffic Management Plan (CTMP) which is likely to be required as a Condition to any emerging planning consent at the site. Delivery times of materials will occur outside of the traditional commuter peak periods of 08:00 - 09:00 and 17:00 - 18:00.

### 7.4.2 Anticipated Types of Construction Vehicles

Typical construction deliveries would comprise, ready mix lorries, articulated low loaders, plant delivery and rigid vehicles. However, if an abnormal load is required, prior notice would be agreed with the police and local authorities. Following this, appropriate routing requirements would be put in place.

### 7.4.3 Temporary Construction Traffic Management Measures

The primary means of controlling construction vehicular traffic will be through an approved Construction Traffic Management Plan (CTMP) – reference previously - which will inter alia present the minor routes that should be avoided during construction activities. This CTMP will form part of the contractor agreements, offering a means of enforcement by the Site Manager.

Within the site itself, as above, a construction compound area will provide an area for loading and unloading of vehicles and will provide a turning area to allow vehicles to exit the site in forward gear, in line with Department for Infrastructure (DfI) Roads requirements. All delivery drivers and construction workers will be advised of the construction route prior to making their delivery or commencing work.

It is also proposed that temporary signage be located in the vicinity of the site access during the construction period to warn drivers of the site entrance, as shown in Figure 3.



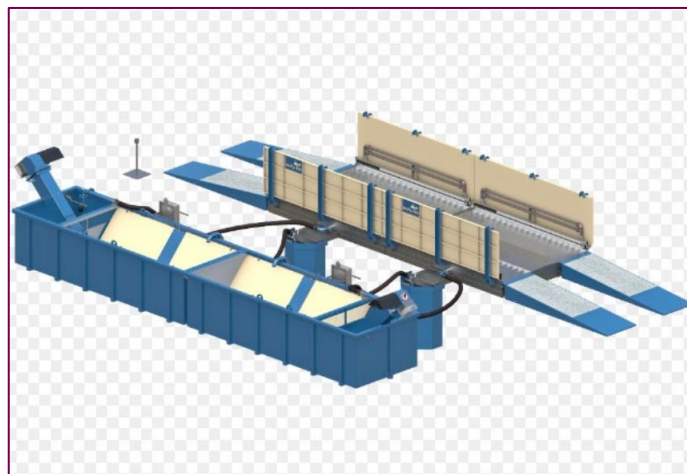
**Figure 3: Temporary Signage in Vicinity of the Site**

The Site Manager for the project will undertake the transport co-ordination role. In this respect, their main responsibilities will include:

- Managing implementation of the CTMP;
- Vehicle scheduling;
- Checking for scheduled road works that could disrupt arrivals;
- Checking for scheduled refuse collections to avoid conflict with HGV deliveries within built up areas;
- Handling any complaints; and
- Acting as a point of contact for employees, contractors and the general public.

#### 7.4.4 Potential for Mud and Debris

Mud and debris on the road are regarded as one of the main environmental nuisances and safety problems arising from construction sites. The contractor will ensure that the area around the site including the public highway is regularly and adequately swept to prevent any accumulation of dust and dirt. One option to alleviate such concerns is provision of a temporary wheel wash system with overground settlement tank will be installed at the construction exit points from the site to prevent soil from being carried onto the public road network. The overground settlement tank will contain the washings and remove solids and oils from the water. The wash water can then be tankered off site for authorised disposal. The effectiveness of the wheel wash facilities will be monitored throughout the construction of the development.



**Figure 4: Example Wheel Wash**

In the event of wheel wash provision, this will be undertaken at least 10m away from any water course or drain.

## 7.5 Services

Note that in relation to working near services such as electricity, gas, water etc, liaison will take place with the service provider.

**!!! All utility services discovered adjacent to the site will be treated as “live” until proven otherwise and the co-ordination of switchovers and temporary disruptions for new constructions will be undertaken in accordance with the standard procedures of the relevant statutory authorities !!!**

## 7.6 Construction Site Security

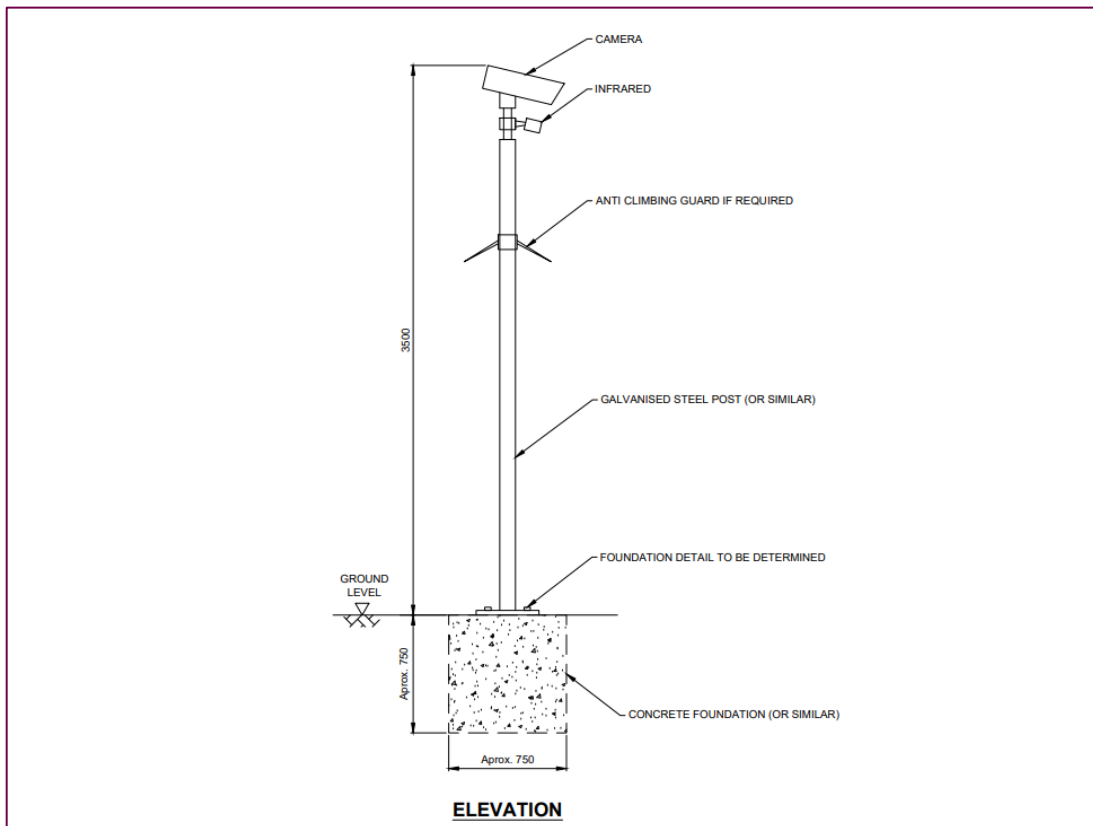
Throughout the construction phase, adherence to high standards of Health and Safety for all construction workers, site visitors and members of the public will be of paramount importance. All construction activities will take place in the context of the relevant Northern Ireland Health and Safety legislation.

As such, it is important that the construction site is secured adequately to ensure that uncontrolled access e.g. by children or vandals, is restricted as much as possible. As well as the potential health and safety risk from uncontrolled access, it is recognised that one of the biggest causes of pollution events from construction sites is due to the activities of vandals.

### 7.6.1 CCTV Cameras

For security purposes there will be CCTV cameras placed strategically throughout the development site. These will be pole mounted to heights of 3.5m, be directed along fence-lines and utilise infra-red technology.

Cameras are designed to not move either intentionally or unintentionally due to adverse weather conditions or animal activity. Please refer to Figure 5 below for a typical CCTV elevation.



**Figure 5: CCTV Camera Details**

## 8 BIODIVERSITY PROTECTION ZONES

### 8.1 Perimeter Fencing

For security purposes the area of development will be enclosed by 2.4m high post and wire fencing.

The materials used are chosen to be in keeping with the landscape. Where hedgerows exist or where planting is proposed the fencing will be located on the internal side of said planting to obscure visual impacts. The fence will have mammal gates to allow continued unrestricted access for small mammals across the site.

An image of the typical fencing to be employed around the site perimeter is provided below in Figure 6.



**Figure 6: Proposed Perimeter Fencing**

### 8.2 Lighting

During the construction phase of the proposed development the use of artificial lighting will be kept to a minimum. This this will be achieved by limiting dawn or dusk working. Where artificial lighting is required, practical use deflectors/baffles or angle lighting will ensure it is directed away from water courses, hedgelines, field boundaries or any identified areas of ecological constraint to minimise disturbance.

## 9 ENVIRONMENTAL MITIGATION MEASURES

Supporting environmental assessments (submitted in support of the planning application) have been undertaken which have assessed the likely impacts that the Proposed Development may have on the environment. Those supporting environmental assessments also propose mitigation measures to reduce the magnitude of effect of those likely impacts. Sections 9.1 - 9.5 details mitigation measures proposed for the Development.

An environmental inspection schedule is set out in **Appendix B**. An incident report form is set out in **Appendix C**. A site waste management plan (SWMP) is set out in **Appendix D**. An Emergency Response & Environmental Plan is located in **Appendix G** of this document. Details of what should be included in method statements are set out in **Appendix E** Construction Method Statement.

### 9.1 The Water Environment

#### 9.1.1 Existing Watercourses

The River Lagan flows adjacent to some areas of the site. Two smaller watercourses, the Springhill Stream Extension and the Ballymacmaine Stream, also flow through the area.

All of these watercourses are designated under the Drainage (Northern Ireland) 1973, which means that Department for Infrastructure (DfI) Rivers are responsible for their maintenance. The locations of the watercourses are shown in Figure 7 below.

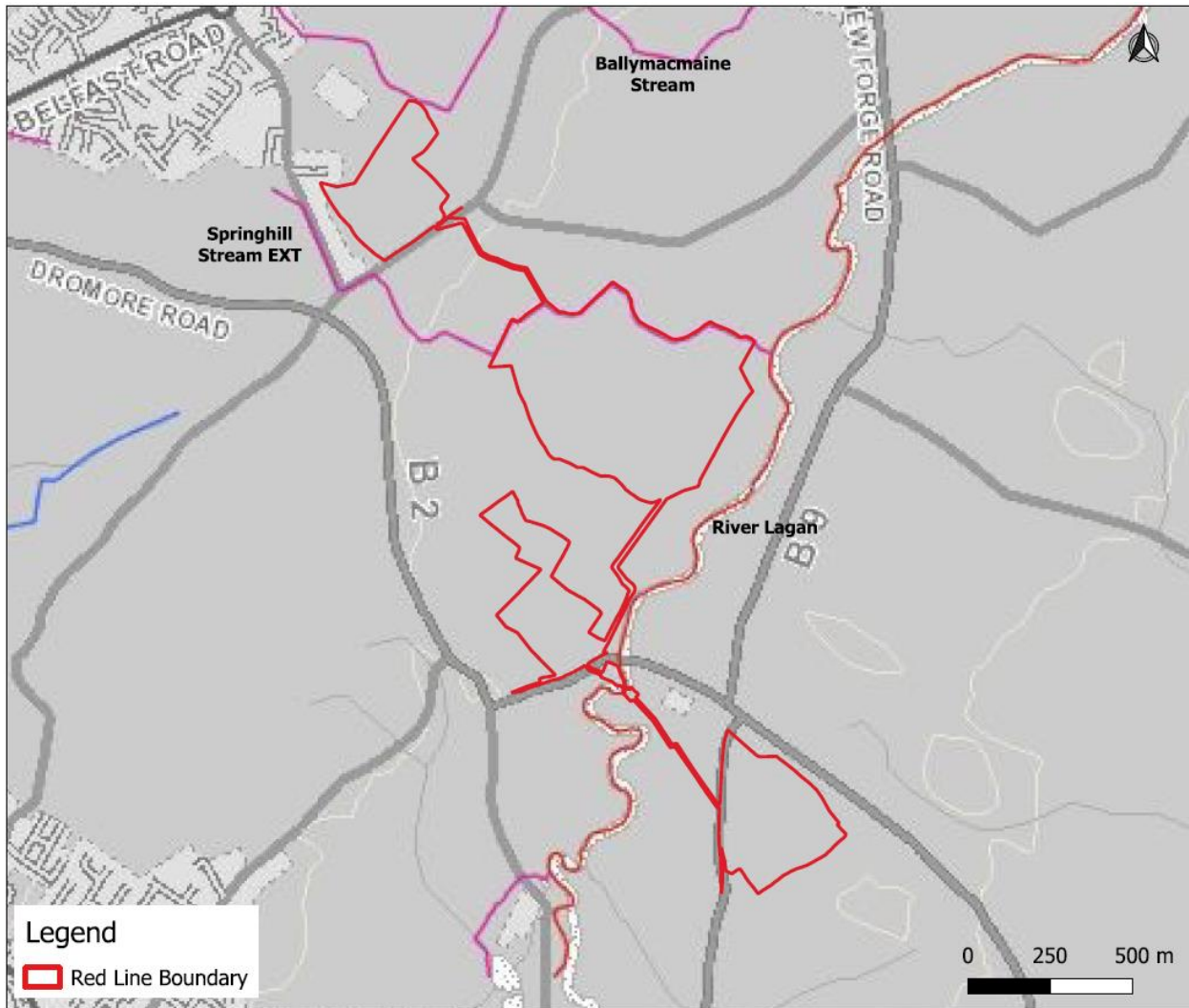
One of the two interconnection cables will route from the southern land parcel in a northerly direction across the Drumlin Road, along agricultural fields and under the River Lagan via horizontal directional drilling. Further details on the horizontal directional drilling can be found in Section 9.15 as well as **Appendix H** Outline Horizontal Directional Drilling Methodology and **Appendix I** – River Lagan HDD Crossing Drawing.

#### 9.1.2 Buffer/Exclusion Zone

A minimum **5-metre buffer zone** has been applied between development and either side of all existing watercourses/ drains within the application site, identified in Figure 7.

During the construction phase of the Proposed Development, the following measures will also be implemented.

- **Dedicate specific areas for oil storage and refuelling, separated a minimum of 10m from any adjacent waterbodies and comply with legislation, including providing bunds sized to contain 110% of fuel storage capacity.**
- **The contractor will use fill point drip trays, bunded pallets and secondary containment units.**
- **The site will be enclosed and secured, and fuel storage areas will be secondarily secured.**
- **All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.**
- **Storage of COSHH items is not permitted and only brought to site as required, fuel is provided by client from an existing bunded static supply, where small portable machines are to be fuelled up a drip tray is used.**
- **No material shall be stored within the exclusion zone.**
- **There shall be no cement, concrete, grout, fuels/ oil/ hydrocarbons stored in the exclusion zone.**



**Figure 7: Locations of Designated Watercourses**

### 9.1.3 Surface Water Runoff

Surface water flooding occurs when the ground is unable to absorb the rainwater, causing it to flow over the surface and fill depressions and low spots in the landscape where the local natural and engineered drainage systems are overwhelmed.

Some areas of potential flooding from surface runoff have been identified within the site, but they will not impact the proposed development as they are mostly of limited depths (less than 0.3m) and the panels will be typically 0.7m above existing ground level.

There are some areas identified where the surface water flooding has depths of up to 1m and in these areas the panels will be raised to 1.2m above ground level.

### 9.1.4 Suspended Sediment / Sedimentation

Preventing run-off is an effective method of preventing sediment pollution in the water environment. The adoption of appropriate sediment controls during construction is essential to prevent sediment pollution.

The contractor will ensure that mitigation measures are carried out in accordance with the CEMP. Sediment control measures will be consistent with the following guideline:

- **GPP 1: Understanding your environmental responsibilities - good environmental practices (October 2020);**
- **GPP 2: Above ground oil storage tanks**

- **GPP 5 Works or maintenance in or near water (February 2018).**

The following measures are suggested to limit any potential water quality issues during construction:

- **The location of any stockpile storage areas will be carefully chosen, clearly identified and planned to ensure the best location to reduce material movements and minimal possibility of erosion and cross contamination;**
- **The exclusion zone shall be marked out with tape and cones to provide a visual reminder of the exclusion zone.**

### 9.1.5 Concrete and Cement Pollution

The impacts in relation to cement and concrete for the proposed development are, for the most part (but not limited to) the installation of concrete foundations for buildings comprising inverter stations and substation building as well as the CCTV bases. Mitigation measures to prevent cement contamination of water bodies will be carried out in accordance with the outlined recommendations within the CEMP. The following measures are to be undertaken to mitigate against potential water quality issues:

- **A risk assessment will be carried out to ensure the best location for concrete washout facilities for plant required on site;**
- **If required, washout from mixing works will be undertaken in a contained impermeable area;**
- **Any stockpile storage areas will not be located within the exclusion zone;**
- **The exclusion zone shall be marked out with tape and cones to prevent provide a visual reminder of the exclusion zone.**

In circumstances where the above mitigation measures are employed during construction operations, the potential magnitude of the impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to minor on a temporary basis.

### 9.1.6 Horizontal Directional Drill (HDD)

As stated previously within this Report, the interconnection cable from the southern-most land parcel (Parcel 4) involves a route across Drumlin Road and through intervening agricultural lands. It is proposed to traverse the River Lagan via horizontal directional drill (HDD) before crossing Dromore Road to the north, and entering Parcel 3 of the site.

The HDD can be achieved by excavating temporary drill pits within the site area, at a maximum span of c.100m. In order to accommodate the drill and associated operations, entry and exit pits within compound areas are required on the eastern side and western side of the River. It is proposed to initiate a HDD to navigate a path beneath the river Lagan riverine feature. The working areas will be setback from the river and located within two c10\*15m work zones with further environmental protection measures enforced. The installation will be carried out adhering to specification with NIEA Waters Management Unit in relation to achieving a minimum depth of 3000mm beneath the riverbed to accommodate the cable ducts.

Further details on the horizontal directional drilling can be found in **Appendix H** Outline Horizontal Directional Drilling Methodology and **Appendix I** – River Lagan HDD Crossing Drawing.

### 9.1.7 General Construction Works

The risk of water quality impacts associated with works machinery, infrastructure and on-land operations (for example leakages/spillages of fuels, oils, other chemicals and wastewater) will be controlled through good site management and the adherence to codes and practices which limit the risk to within acceptable levels.

In circumstances where mitigation measures are employed during construction operations, the potential magnitude of the impact on receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to minor on a temporary basis.



Appendix F details GPP 1 in full and Table 9.1 gives a summary of mitigation measures.

**Table 9.1: The Water Environment Mitigation Measures**

Mitigation Measure	When?	By whom?
i. All mitigation measures detailed herein will be subject to periodic inspection and maintenance.	Before Construction Phase	Principal Contractor to deliver
ii. The contractor should adhere to standard requirements for the protection of watercourses adhering to the exclusion zone.	Construction Phase	Principal Contractor to deliver
iii. The Principal Contractor will allocate a dedicated area for material deliveries separated a minimum of <b>10m</b> from adjacent waterbodies, manage the same and make sure that over-ordering and stockpiling is kept to a minimum.	Construction Phase	Principal Contractor to deliver
iv. The Principal Contractor will dedicate specific areas for oil storage and refuelling and will use fill point drip trays, banded pallets and secondary containment units. The site will be enclosed and secured and fuel storage areas will be secondarily secured.	Construction Phase	Principal Contractor to deliver
v. Reference and adherence to all the relevant precepts contained in NIEA Pollution Prevention Guidance paying particular attention to where further information can be found regarding oil storage, safe storage - drums and intermediate bulk containers, and the use of oil separators in surface water systems (including the restrictions due to use of detergents).	Construction Phase	Principal Contractor to deliver
vi. A discharge consent, issued under the Water (Northern Ireland) Order 1999, is required for any discharges to the Aquatic Environment and may be required for Site Drainage during the construction stages of the development. Reference to Standing Advice Discharges to the Water Environment.	Construction Phase	Principal Contractor to deliver
vii. Reference and adherence to all the relevant precepts contained in Standing Advice Discharges to the Water Environment.	Construction Phase	Principal Contractor to deliver
viii. Guidance for Pollution Prevention (GPPs) {Replacing Pollution Prevention Guidelines (PPGs)} are a series of documents developed by the Environment Agency for the Northern Ireland Environment Agency (NIEA) The GPPs/PPGs make reference to environmental legal obligations and are an acknowledged source of best practice guidance for pollution prevention across different sectors. Whilst some of these PPGs have now been withdrawn they still provide useful information on good practice and DAERA recommend they are used as a source of information and	Construction Phase	Principal Contractor to deliver

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Mitigation Measure	When?	By whom?
<p>good practice. <b>Appendix F</b> details GPP 1 October 2020 in full for convenience.</p> <p><b>A full list of PPG/GPPs are set out at the end of this section and will be adhered to as appropriate.</b></p>		
<p>i. The contractor will adopt a site specific Emergency Response &amp; Environmental Plan (<b>Appendix G</b> of this <b>OCEMP</b> provides a template than can be adopted and used) in accordance with PPG6, appoint a responsible person and train operatives in implementation and testing of the Plan periodically throughout construction of the works. An Emergency Spill Response Plan, the content of which is included in this <b>OCEMP</b> (Please refer to <b>Appendix G</b>), will detail actions to be taken in the event of an accidental spillage of fuel, chemicals or other hazardous material.</p>	Construction Phase	Principal Contractor to deliver
<p>ii. During the construction stage foul discharges will be collected and stored locally for removal off site. As such, no burden will be placed on any existing foul infrastructure and no further mitigation measures are required.</p>	Construction Phase	Principal Contractor to deliver
<p>iii. Suitable training will be provided to relevant personnel detailed within the Emergency Response &amp; Environmental Plan (Please refer to <b>Appendix G</b>) to ensure that appropriate and timely actions will be taken should an incident occur.</p>	Construction Phase	Principal Contractor to deliver

### 9.1.7.1 Environmental Guidance - Guidance for Pollution Prevention (GPPS)

GPPs provide environmental good practice guidance for the whole UK, and environmental regulatory guidance directly to Northern Ireland, Scotland and Wales. The proposed works will demonstrate adherence to good working practices as detailed in current guidance in the PPGs<sup>1</sup> and GPPs below.

**GPP 1:** Understanding your environmental responsibilities - good environmental practices.

A basic introduction to pollution prevention, covering the main aspects of good environmental practice. Appropriate for all business types it includes signposts to other GPPs that might be useful, and publications from organisations that provide support and guidance to the business community. (October 2020)

**GPP 2:** Above ground oil storage

Provides information on the regulations that cover above ground oil storage, including fuel storage for vehicles, oil fired heating storage and portable containers. Includes the requirements for secondary containment, pipework, dispensing and filling. This guideline excludes oil refineries and distribution depots. (January 2018)

**GPP 4:** Treatment and disposal of wastewater where there is no connection to the public foul sewer

If no foul sewer is available for a dwelling, or other building, this guideline provides information on how to select the correct sewage disposal, treatment and disposal system. It also provides information regarding

maintenance and the legal requirements of your system. This guideline is also useful by outlining what to have in mind, in terms of wastewater treatment, when buying a house. (November 2017)

**GPP 5: Works and maintenance in or near water**

A guideline that provides information for construction firms carrying out construction or maintenance works near, in, or over water. This applies to works that might have contact with streams, rivers or ponds/lochs/loughs/lakes. (February 2018)

**GPP 8: Safe storage and disposal of used oils**

A guideline covering the storage and disposing of used oils. It covers the regulations that need to be followed, and provides information on the site requirements and suitable containers. The guidance applies to activities ranging from a single engine oil change to those of large industrial users. (July 2017)

**GPP 20: Dewatering underground ducts and chambers**

Information on the steps to be taken to avoid pollution when dewatering underground ducts and inspection chambers. (January 2018)

**GPP 21: Pollution incident response planning**

A guideline for all business types with information that will help businesses produce emergency pollution incident response plans. This will help prevent pollution and damage if you ever need to deal with accidents, spillages or fires. (June 2021)

**GPP 22: Dealing with spills**

A guideline that is for anyone who is responsible for storing and transporting materials that could cause pollution if they spill. This applies to liquids such as oil or dairy products, and also to powdered materials such as cement or chemicals, that would cause pollution if they soaked into the ground or entered surface water drains or watercourse. (October 2018)

Spill kit must be kept on site with sand, earth or commercial products for the containment of fuel and other material spillages. All staff will receive appropriate training in the use of these kits and are to be made aware of where the kit is stored.

In the event of a spillage of oils or chemicals resulting in contamination of water courses or damage to habitats, the following procedure will be adopted:

- The appropriate spill kit is to be deployed immediately and the site manager is to be informed.
- The incident is to be recorded within the site logbook; and
- In the event of contaminants being discharged directly to water courses, or in the event of significant spillage (in excess of 10 litres), the NIEA is to be contacted on **0800 80 70 60**.



**Figure 8: Example Spill Kit**

**GPP 26: Safe storage - drums and intermediate bulk containers**

For site operators of industrial and commercial premises storing and handling drums and intermediate bulk containers (IBCs) containing oil, chemicals or potentially polluting substances. (February 2019)

All of the GPPS are downloadable in full from this link:  
<https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

**NIEA’s Pollution Prevention Hotline Number**

**0800 80 70 60**

It is recommended that in the event of a water pollution incident the NIEA pollution hotline is contacted within 30 minutes unless it is not safe to do so.

**9.2 Unexpected Contamination**

During construction works, should unexpected contamination be encountered in soils or groundwater with visual or olfactory signs of contamination, samples of the potentially contaminated material should be obtained and sent for chemical analysis. An updated risk assessment should be completed to assess risks to human health and environmental receptors. Should unacceptable risks be identified then appropriate remedial works will be conducted and agreement sought from the relevant regulatory bodies.

**9.3 Ecology**

All construction works will be carried out in accordance with DAERA Pollution Prevention Guidance (DAERA, 2017) to ensure safeguarding of the water environment.

Extensive mitigation measures to protect watercourses from adverse effects associated with the proposed project are detailed in Section 9.1 of this OCEMP.

### 9.3.1 Habitats

The proposed development has been designed to avoid and/or reduce direct habitat loss within the site. There is no infrastructure proposed within 10 m of the River Lagan. The proposed access tracks to service the site will utilize existing access track through the site where possible. New tracks where necessary will be created using permeable materials. If necessary these will be upgraded using stone. A sensitive design approach ensures there is a 5m Ecological Exclusion Zone (EEZ) maintained between all infrastructure and the priority habitats hedgerows and also between broadleaved woodland and trees.

Construction works will result in the installation of solar panels within improved grassland habitat. The mounting system for the solar panels consists of aluminium and steel posts/frames that will be driven or screwed into the ground and the existing habitat will be retained beneath the solar panels. There will be a small permanent loss of grassland habitat under the footprint. There will also be temporary disturbance to grassland habitat to accommodate installation of the main cables. Turves will be removed and set aside, the trench will be excavated using traditional open trenching techniques, the cable laid, and the ground immediately reinstated using the turves.

### 9.3.2 Species

#### 9.3.2.1 Bats

The proposed project will have No Significant Effect on bats and a Significant Positive Effect for biodiversity at a site level with a net gain in species rich hedgerow habitat.

There is no infrastructure proposed within 10 m of the River Lagan. A 5 m Ecological Exclusion Zone (EEZ) will be maintained between all infrastructure and woodland, hedgerows, drains and trees. The existing grassland habitat will be retained beneath the solar panels. There is no additional lighting required to accommodate the proposed development.

#### 9.3.2.2 Otter

A pre-construction protected species survey for otter will be undertaken by an Ecological Clerk of Works (ECoW) to provide the most up to date information and to ensure the continued absence of the species immediately prior to construction works.

If any otter underground holts or above ground couches are found within 30 m of construction works or an otter natal den is found within 150 m of the construction works, work will stop immediately to avoid breaking the law and the ECoW will be contacted. Construction work within 30 m of an otter holt or couch and/or 150 m of an otter natal den will require a derogation licence from NIEA to permit otherwise illegal activities that could result in disturbance to an otter and/or damage or destruction of an otter holt. The licence will be issued to the ECoW who will supervise all licensed activities.

#### 9.3.2.3 Badger

As stated, the design of the Proposed Development has taken account of the baseline environment and to ensure an appropriate minimum 25m buffer between any proposed infrastructure and any badge location. Notwithstanding this, a pre-construction protected species survey for badger will be undertaken by an ECoW to provide the most up to date information and to update the status of badger setts recorded on site immediately prior to construction works.

An EEZ will be set up around each badger sett located on site immediately prior to the commencement of construction works under the supervision of an ECoW. Temporary hi-visibility fencing will be erected 25 m from the nearest sett entrance. The specification of the fence will aim to keep Construction Contractors out of the EEZ while allowing free access/egress to the sett so that badgers can continue to move within their territorial boundaries. No vehicles, storage or stockpiling of materials will be allowed within the EEZ.

A derogation licence will be required for one badger sett that is located within 25m of the existing access track that will be used to access the site. Construction work within 25m of a badger sett will require a

derogation licence from NIEA to permit otherwise illegal activities that could result in disturbance to a badger and/or damage or destruction of a badger sett.

Construction works within the vicinity of the 25 m EEZ of all badger setts will cease two hours prior to sunset. Open excavations and/or trenches will either be covered to avoid access by mammals, or a means of escape installed to facilitate egress at the end of each working day.

Badger setts are protected by law even when badgers are not presently occupying a sett. If any additional badger setts are found during construction works or within 25m of construction works, work will stop immediately to avoid breaking the law and the ECoW will be contacted.

### 9.3.2.4 Birds

The proposed development will have No Significant Effect on birds and a Significant Positive Effect for biodiversity at a site level with a net gain in species rich hedgerow habitat.

The proposed development will provide enhancement measures with new landscaping planting that will be incorporated into the site. Landscaping will prioritise the use of native species and enhance the ecological connectivity of the site to the surrounding environment. The proposed landscaping will provide additional roosting and foraging habitat for birds.

### 9.3.3 During Construction

Where any person on Site identifies a burrow, resting site or a sighting of what they believe to be of a protected species (i.e. water vole, badger, otter, pine marten, red squirrel, nesting birds) within the designated working area, they shall notify the ECoW immediately. If these signs are present within a working area, works will be stopped immediately until further information can be gathered.

In the unlikely event of a protected species being injured or killed, or a burrow being accidentally damaged, the ECoW will be contacted immediately. They will attend the Site and make a written and photographic record, including details of the time, location and personnel involved in the incident. This information will be supplied to NIEA within 24 hours.

### 9.3.4 General Mitigation and Enhancement Measures

The following mitigation and enhancement measures are to be undertaken to reduce the impacts of the proposed Magheralin Solar Farm facility on ecological receptors;

- An Ecological Clerk of Works (ECoW) will be employed to ensure that all works are undertaken in line with the mitigation outlined in this plan.
- Any trenches or pits will be inspected each morning to ensure that no animals have become trapped overnight. Should a trapped animal be encountered the ECoW will be contacted immediately for further advice. NIEA will be contacted if necessary.
- All machinery will be checked each morning for the presence of animals in the unlikely event that an individual may be resting beneath or within them.
- Limit night or dawn and dusk working but where artificial lighting is required, where practical use deflectors or angle lighting away from the water course to minimise disturbance.
- Implementing speed limit on Site to reduce the likelihood of injury or death due to the movement of construction traffic.

## 9.4 Noise

The construction phase of the proposed development will involve the movement of plant and machinery in order to facilitate the construction of the proposed access tracks, sub-station and control room and the installation of the PV panel structures. Such works have potential to give rise to airborne noise. Sections 9.41 and 9.4.2 below outline a number of mitigation measures which can be implemented to reduce noise levels during the construction phase of the proposed development.

### 9.4.1 Control of Noise at Source

There are many general measures that will be used to reduce noise levels at source. Such as:

- The avoidance of unnecessary revving of engines and switching off equipment when not required;
- Keeping internal haul routes well maintained and avoiding steep gradients;
- The use of rubber linings in, for example, chutes and dumpers reduce impact noise;
- The minimisation of drop heights; and
- Starting up plant and vehicles sequentially rather than all together.

The use of conventional audible reversing alarms can be a noise nuisance issue on some sites, the reversing alarms used on the proposed site will be of a type which, whilst ensuring that they give proper warning, has a minimum noise impact on persons outside the proposed site. Where practicable, alternative reversing alarm systems will be employed to reduce the impact of noise outside of construction sites.

Prior to the construction phase, the contractor shall review the specification for all plant and equipment to be employed on-site to ensure that the quietest plant/equipment available is to be used. Modifications to plant and equipment to improve sound reduction will be implemented if required, but any alterations shall be conducted in consultation with the plant manufacturer.

### 9.4.2 Construction Noise General Mitigations

British Standard *BS5228:2009+A1:2014 – Noise and vibration control on construction and open sites* outlines a range of measures that can be used to reduce the impact of construction phase noise. These measures will be applied by the contractor where appropriate during the construction phase of the proposed development.

Examples of some of the best practice measures included in BS5228 are listed below:

- Ensuring that mechanical plant and equipment used for the purpose of the works are fitted with effective exhaust silencers and are maintained in good working order;
- Careful selection of quiet plant and machinery to undertake the required work where available;
- All major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use;
- Any ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines in intermittent use will be shut down in the intervening periods between work;
- Ancillary plant such as generators, compressors and pumps will be placed behind existing physical barriers, and the direction of noise emissions from plant including exhausts or engines will be placed away from sensitive locations, in order to cause minimum noise disturbance. Where possible, in potentially sensitive areas, acoustic barriers or enclosures will be utilised around noisy plant and equipment.
- Handling of all materials will take place in a manner which minimises noise emissions;
- Audible warning systems will be switched to the minimum setting required by the Health & Safety Executive;

In order to minimise the likelihood of complaints, Armagh City, Banbridge and Craigavon Borough Council and affected residents must be kept informed of the works to be carried out and of any proposals for work outside normal hours. A complaints procedure must be operated by the Contractor throughout the construction phase. Best practice will therefore be implemented in order to minimise noise and vibration and comply with the contents and recommendations of the BS 5228 “Code of Practice for Noise Control on Construction and Open sites”.

### 9.5 Air Quality

Construction impacts associated to the proposed development may result in the generation of dust and exhaust emission to the atmosphere. As a precaution the following mitigation measures will be adopted during the construction phase of the proposed development in order to control fugitive dust and emissions to air.

#### 9.5.1 Communications

With respect to communications, the following will be implemented:

- Display the name and contact details of person(s) accountable for environmental issues on the site boundary. This may be the Project Manager or the Site Manager.
- Appropriate training will be provided to all staff to ensure that they are aware of and understand the dust control and other environmental control measures; and,
- Display the head or regional office contact information.

**To be implemented before works commence on site and training given as appropriate by the principal contractor.**

#### 9.5.2 Site Management

With respect to site management, the following will be implemented:

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints record available to the relevant regulatory authorities when asked;
- Use covered skips; and
- No bonfires and burning of waste materials on site.

**To be implemented during works as required by the principal contractor.**

#### 9.5.3 Earthworks

Earthworks are planned as part of the scheme including foundations (and associated excavation of soils and materials), creation of trenches and stockpiling. With respect to earthworks, the following will be implemented:

- Minimise drop heights from loading or handling equipment/materials and use fine water sprays on such equipment wherever appropriate; and,
- Dampening methods will be used where necessary.

**To be implemented during construction period by the appointed/principal contractor**

#### 9.5.4 Construction

As outlined in Section 1.3.3 of this report, construction works planned as part of the installation of solar panels, may consist of the following:



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- Option 1 - Single post ground fixture, which as suggested will be a single aluminium/steel frame driven into the ground;
- Option 2 - Table post ground fixtures - where frames will be fixed on dual posts driven into the ground; or
- Option 3 - In cases where it is required to safeguard potential archaeological assets frames can be mounted using a shallow concrete 'shoe' which sits at a maximum of 400mm above ground level.

With respect to construction, the following will be implemented:

- Ensure bulk cement and other fine powder materials are delivered in enclosed containers/bags;
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; and,
- Cleaning of hard stand areas by personnel only or if required mechanical road sweepers (with water suppressant fitted) to clean any site hard stand area.

**To be implemented during construction period by the appointed contractor**

### 9.5.5 Vehicle Movement and Vehicle Emissions

As with any construction site, there are associated vehicle movement, emissions and plant use. With respect to vehicle movement and vehicle emissions, the following will be implemented:

- The transportation of aggregates and fine materials will be conducted with dust suppression methods<sup>2</sup> put in place ;
- An onsite speed limit (10 mph) will be implemented by the main contractor that will be appropriate to the types of construction plant utilised;
- Ensure all vehicles switch off engines when stationary and not in immediate use - no idling vehicles (emissions to air controlled);
- All plant utilised should be regularly inspected (emissions to air controlled);
- Visual monitoring of plant will include ensuring no black smoke is emitted other than during ignition (emissions to air controlled);
- A wheel wash will prevent distribution of materials onto the road which could lead to dust or airborne materials during spells of dry weather;
- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturers limits (emissions to air controlled); and,
- Vehicle exhausts will be directed away from the ground and other surfaces and preferably upwards to avoid road dust being re-suspended to the air.

**To be implemented throughout by the principal contractor.**

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<sup>2</sup> Dust suppression methods will be used where deemed necessary as part of the management of aggregate and fine materials such as enclosed / sheeted vehicles, water spraying.

## 10 ENVIRONMENTAL RISK ASSESSMENTS

An example environmental inspection schedule is set out in **Appendix B**. An example incident report form is set out in **Appendix C**.

## 11 EMERGENCY RESPONSE & ENVIRONMENTAL PLAN

An emergency response & environmental plan is located in **Appendix G** of this document.

## 12 SITE WASTE MANAGEMENT PLAN

It is anticipated that the only waste generated during the construction phase of the proposed development will be the waste from the packaging of the PV Panels, Substation components etc.. This waste will be segregated for recycling where possible or otherwise disposed of by a licence waste carrier.

Excavated materials to facilitate foundations for inverter stations and substation buildings will be insignificant and will be reused across the site. In the unlikely event this cannot be facilitated, residual materials will be transported off-site to be disposed of by suitably accredited waste contractors.

Toilet facilities on-site during construction and operation will be self-contained to be appropriately disposed of off-site by qualified contractors. An example site waste management plan (SWMP) is located in **Appendix D** of this document.

## 13 FINAL COMMENT

The Contractor is required to implement this Construction Environmental Management Plan (CEMP) to help ensure that construction activities are planned and managed in accordance with the environmental requirements identified within and the relevant guidance and legislation.

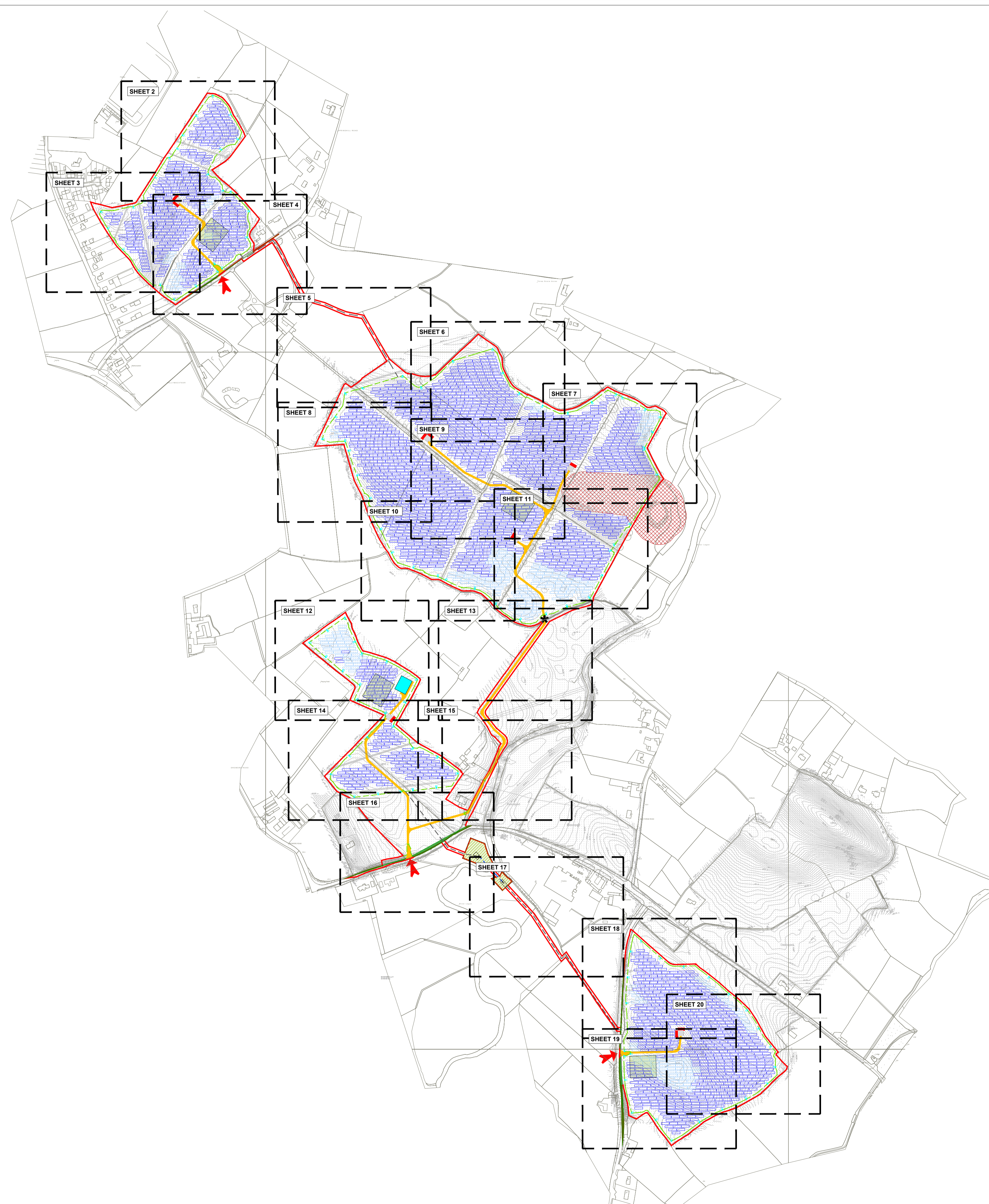
**This is VERSION 01 of the CEMP.**

**Future updates to the CEMP will be sequential and be saved as such (i.e. VERSION 02, 03 etc.) and shall be adopted on site in full.**

**Appendix A**  
**Proposed Site Layout**

X - 710251  
Y - 856383

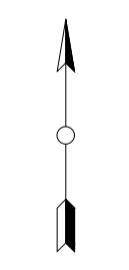
X - 713776  
Y - 856383



- KEY:**
- PLANNING APPLICATION BOUNDARY  
(OUTSIDE LINE DENOTES BOUNDARY)
  - ACCESS TRACK
  - FENCING
  - GATE (FENCE)
  - INDICATIVE SOLAR PV ARRAY
  - INDICATIVE SOLAR PV ARRAY TO BE RAISED
  - HARDSTAND
  - INVERTER SUBSTATION
  - 33kV SUBSTATION COMPOUND
  - TEMPORARY CONSTRUCTION COMPOUND
  - ▶ CCTV
  - ✱ INDICATIVE STREAM CROSSING
  - ➔ SITE ENTRANCE
  - SITE ENTRANCE - VISIBILITY SPLAY
  - UNDERGROUND CABLE
  - DIRECTIONAL DRILLING
  - PROPOSED ARCHAEOLOGICAL EXCLUSION ZONE
  - HDD LAYDOWN WORKING AREA

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**OVERVIEW**  
SHEET 1 OF 20



6	FG	JM	RB	2023-10-25	HDD crossing design added
5	FG	JM	RB	2023-10-03	Minor update (substation access added)
4	FG	JM	RB	2023-09-11	Substation key note updated
3	FG	JM	RB	2023-09-11	Minor update
ISSUE	DRAWN	CHKD	APPD	DATE	REVISION NOTES
PURPOSE				COORDINATES	
PERMITTING				IRENET95 ITM	
SCALE		@ A1		DATUM	
1:5,000				N/A	
LAYOUT DWG				T-LAYOUT NO.	
N/A				N/A	

PROJECT TITLE		MAGHERALIN	
DRAWING TITLE		FIGURE 4 SITE LAYOUT	
RES DRAWING NUMBER	05215-RES-LAY-DR-PT-005	REV	6

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Y - 85638

**Appendix B**

**Environmental Inspection Schedule**



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<b>Environmental Inspection Schedule</b>		<b>Site:</b>	
<b>Inspected by:</b>		<b>Date:</b>	
	<p><i>Assessment Ratings</i>            0 – Not in place = Non Compliance            1 – In place but not full Compliance = Non Compliance            2 – Full Compliance</p> <p><b><i>Actions raised from this audit must be closed out within the agreed time scale with Armagh City, Banbridge and Craigavon Borough Council.</i></b></p>	0/1/2	
<b>1.0</b>	<b><u>Emergency preparedness and incidents response</u></b>	0/1/2	Comment
1.1	Is environmental response equipment held on-site?		
1.2	Where is it located?		
1.3	Is it all in working order?		
1.4	Can site staff operate the equipment?		
<b>2.0</b>	<b><u>Environmental Incidents</u></b>	0/1/2	Comment
2.1	Have any incidents been reported?		
2.2	Have all such incidents been investigated?		
2.3	Have they all been documented?		
2.4	Have all relevant parties been made aware of any incident?		
2.5	Has the Incident Report Form (Appendix C) been completed ?		
<b>3.0</b>	<b><u>Hazardous Materials Storage</u></b>	0/1/2	Comment
3.1	Are hazardous materials kept in secure areas?		
3.2	Are stores of fuels or oils bunded?		

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3.3	<i>Has any damage occurred to Mobile Browsers or tanks?</i>		
3.4	<i>Are containers/drums labelled with content and capacity?</i>		
3.5	<i>Are drip trays empty of water ?</i>		
3.6	<i>Are hoses inside bunds/cabinets ?</i>		
3.7	<i>Are spill kits fully stocked and have all staff been trained to use equipment ?</i>		
3.8	<i>Has an individual been appointed for the safe handling of fuels ?</i>		
<b>4.0</b>	<b><u>Waste minimisation</u></b>	0/1/2	Comment
4.1	<i>Are all waste containers covered and labelled?</i>		
4.2	<i>Is waste segregated correctly ? Do skips need to be emptied ?</i>		
4.3	<i>Have waste skips been located on-site?</i>		
4.4	<i>Are different waste types segregated for recycling?</i>		
4.5	<i>Are staff and contractors encouraged to recycle? Is relevant signage in place</i>		
4.6	<i>Has litter been removed from site and the external boundary</i>		
4.7	<i>Is all appropriate duty of care documentation in place i.e. waste licence, Carrier's licence all kept on file ?</i>		
4.8	<i>Does the external appearance of the site present a positive image of the industry?</i>		
4.9	<i>Does the site appear well organised, clean and tidy?</i>		

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4.10	<i>Does the appearance of all facilities, stored materials, vehicles and plant make a positive impression?</i>		
<b>5.0</b>	<b><u>Water Discharges &amp; Pollution Control</u></b>	0/1/2	Comment
5.1	<i>Are there any de-watering activities conducted on-site?</i>		
5.2	<i>Any visible signs of spillage on site (fuel, oil, lubricants etc)? Including from machinery and plant.</i>		

5.3	<p><i>PPG/GPP guidance being followed as stipulated in CEMP/CEMP ?</i></p> <p><b>1. Annotated Sketch if appropriate of any spillage and clean up detailed</b></p>
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6.0	<u>Site Boundary &amp; Access</u>	0/1/2	Comment
6.1	<i>Site boundary fencing in place ? No visible signs of breaches</i>		
6.2	<i>Site signage and information boards in place ?</i>		
6.3	<i>Appropriate sign in followed and appropriate health and safety followed ? Hi-vis, boots, hard hat worn for site visit. Appropriate PPE and H&amp;S recommendations for this site in particular.</i>		
7.0	<u>Land contamination</u>		
7.1	<i>Has any unforeseen historical land contamination been discovered on-site? IF yes, please detail. <b>Annotated Sketch if Appropriate</b></i>		

**OUTLINE CEMP**

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7.2	<p><i>Has this been managed?</i>  <b><u>Please detail</u></b></p>
<b>8.0</b>	<p>Site Photographs – labelled, detailed and saved on file</p>
8.1	<p><b>SITE PHOTOS TO BE TAKEN DURING CONSTRUCTION PHASE (From first commencement of works). These will include; boundary photographs, internal roadways, fuel storage areas, pollution control in place (inc. spill kits), spills, waste storage areas, recycling signs, machinery.</b></p>
8.2	<p><i>Have site photos been taken of any specific environmental incidents ? If yes please details:</i></p>
8.3	<p><i>Have site photos been stored on file, labelled and dated ? Please ensure this is completed</i></p>

**OUTLINE CEMP**

Corrective Action Plan relating to this environmental inspection schedule:						
		Site :	Actionee	Target date (if not immediate)	Close out by Actionee	Issue dealt with ? Y/N
Count	Proposed Corrective Action					
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
<b>Managers use only</b>	<b>Follow up Action from Incidents?</b>			<b>Closed out by Manger</b>		
Acknowledged	Signed:			Signed:		

**PLEASE KEEP ON FILE with other completed environmental inspections**

**Appendix B1**  
**Complaints Form**



**OUTLINE CEMP**

Excavation soils and C & D Waste-derived aggregates are considered suitable for certain on-site construction applications. It is proposed that the following quantities, corresponding to all C & D Waste arisings from the project, will be used within the works and beyond the site confines:

***Standard form that will be completed by the contractor on-site: Proposals for Beneficial Use/Management of C & D Material Surpluses/Deficits and Waste Arisings on and off the Project***

<b>C &amp; D Waste Type</b>	<b>Clay and Stones (t)</b>	<b>Concrete (t)</b>	<b>Masonry (t)</b>	<b>TOTALS</b>
<b>Proposed Use</b>				
<b>Earthworks</b>	To be completed for Final CEMP			
<b>General Fill/Hardcore</b>				
<b>Pipe Bedding</b>				
<b>Selected Trench Backfill</b>				
<b>Fill to Structures</b>				
<b>Beneath Road Structure</b>				
<b>Other Site Use A</b>				
<b>Other Site Use B</b>				
<b>Off-Site Use</b>				
<b>TOTAL</b>				

It is anticipated that waste materials will have to be moved off site. It is the intention to engage specialist waste service Contractors (as required), who will possess the requisite authorisations, for the collection and movement of waste off-site, and to bring the material to a facility which currently holds a Waste Licence/Waste Permit. Accordingly, it will be necessary to arrange the following waste authorisations specifically for the Project:

<b>Complaints Form</b>	
<b>Make the complaints log available to the local authority when asked</b>	
<b>1.</b>	<b>Have any complaints been received? If so please detail</b>
<b>2.</b>	<b>The name and contact details of the complainant:</b>
<b>3.</b>	<b>Date and time of the complaint:</b>
<b>4.</b>	<b>Nature of complaint:</b>
<b>5.</b>	<b>Action taken to resolve issues:</b>
<b>6.</b>	<b>Date of complaint handover:</b>
<b>7.</b>	<b>Name of person addressing the complaint:</b>  <b>Company:</b>  <b>Signature:</b>

**Appendix C**  
**Incident Report Form**

## OUTLINE CEMP

---

INCIDENT DATE	INCIDENT TIME	REPORT DATE	REPORT TIME

INCIDENT OWNERSHIP		
DIVISION	SUB-DIVISION	UNIT OR DEPT

DESCRIPTION OF WHAT HAPPENED

EXACT INCIDENT LOCATION						
<table border="1"> <thead> <tr> <th>On or Off Site</th> <th>Location</th> <th>Sub-Area</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	On or Off Site	Location	Sub-Area			
On or Off Site	Location	Sub-Area				

### PERSON INVOLVED

CATEGORY OF PERSON <input checked="" type="checkbox"/>									
Employee	<input type="checkbox"/>	Contractor	<input type="checkbox"/>	Visitor	<input type="checkbox"/>	Environmental	<input type="checkbox"/>	Mem of. Public	<input type="checkbox"/>

NATURE OF INVOLVEMENT <input checked="" type="checkbox"/>					
Witness	<input type="checkbox"/>	First Person on Scene	<input type="checkbox"/>	Other	<input type="checkbox"/>

PERSON'S NAME					
Name:	Mr/Mrs/Miss/Ms	First Name:		Last Name:	

### OTHER INFORMATION

Site Manager in attendance (if applicable)	
Reported in Duty Log/Site Book?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>

**OUTLINE CEMP**

TYPE OF INCIDENT [✓]					
Breach of Limits/Licence Cond.	[ ]	Oil & Chemical Storage	[ ]	Spillage/Spillage Response	[ ]
Waste Storage & Disposal	[ ]	Serious Public/Other Complaint	[ ]	Water Abstraction/Disposal	[ ]
Third Parties and Supply Chain	[ ]	Smoke, Fumes & Odours	[ ]	Natural Envrnment & Wildlife	[ ]
Light Pollution	[ ]	Noise Nuisance	[ ]	Other	[ ]
If "Other" please describe:					

Is this a reportable incident?	Yes	[ ]	No	[ ]	Unknown	[ ]
If "Yes" which agency						

What are the actual or foreseeable potential consequences known at this time? [✓]					
Prosecution	[ ]	Enforcement Notice (Imp/Proht)	[ ]	Civil Claim	[ ]
Clean-up/Restoration	[ ]	Breach of Licence Requirements	[ ]	Adverse Publicity/Reaction	[ ]
Adverse Customer Reaction	[ ]	Contamination of Water	[ ]	Habitat or Species	[ ]
Health Effects	[ ]				

Please provide any other relevant information

What immediate actions have been taken?

INCIDENT REPORTED BY		
Name	Telephone No.	Date

**Appendix D**  
**Site Waste Management Plan (SWMP)**

## OUTLINE CEMP

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In the course of the Project, it is estimated that the following quantities of Construction Wastes/material surpluses will arise:

Construction Waste Material	Quantity (tonnes)
Clay and Stones	To be completed for Final CEMP
Concrete	To be completed for Final CEMP
Masonry	To be completed for Final CEMP
Wood	To be completed for Final CEMP
Packaging	To be completed for Final CEMP
Hazardous Materials	To be completed for Final CEMP
Other Waste Materials	To be completed for Final CEMP
<b>TOTAL Arisings</b>	To be completed for Final CEMP

### Proposals for Minimisation, Reuse and Recycling of C & D Waste

- a.** It is anticipated that the only waste generated during the construction phase of the proposed development will be the waste from the packaging of the PV Panels, Substation components etc.. This waste will be segregated for recycling where possible or otherwise disposed of by a licence waste carrier.
- b.** The Contractors Purchasing Manager etc. shall ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.
- c.** Excavated soils will be carefully stored in segregated piles on the site for subsequent re-use/removed from site for direct beneficial use elsewhere.
- d.** Concrete waste will be recycled where possible or source segregated/collected in receptacles with mixed C & D Waste materials, for subsequent separation and recovery at a remote facility.
- e.** Masonry and wood will be source segregated/collected in receptacles with mixed C & D Waste materials, for subsequent separation and recovery at a remote facility.
- f.** Packaging will be source segregated for recycling or return to suppliers.
- g.** Hazardous wastes will be identified, removed and kept separate from other C & D Waste materials in order to avoid further contamination.
- h.** Other C & D Waste materials will be collected in receptacles with mixed C & D Waste materials, for subsequent separation and disposal at a remote facility.

## Specific Waste Authorisations Necessary for the Scheme

Authorisation Type	Specific Need for Project (Yes/No?)	
Waste Licence	Yes	No
Waste Permit	Yes	No
Waste Collection Permit	Yes	No
Transfrontier Shipment Notification	Yes	No
Movement of Hazardous Waste Form	Yes	No

## Assignment of Responsibilities

- a. The appointed contractor shall be designated as the Responsible Person and have overall responsibility for the implementation of the on-site Waste Management Plan.**
- b. The Responsible Person will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan.**
- c. At the operational level, a site manager/foreman from the main contractor and appropriate personnel from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Waste Management Plan are performed on an on-going basis.**

## Training

- a. Copies of the Waste Management Plan will be made available to all personnel on site (as required).**
- b. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions.**



Site Waste Management Plan Checklist

**Planning and preparation**

- Have you set aside time to prepare your SWMP?
- Have you considered the construction methods and materials that you can use to reduce the amount of waste your project produces?
- Have you thought about ordering materials that have less or reusable/returnable packaging?
- Have you recorded all of your waste reduction decisions in your plan?

**Allocation responsibility**

- Has someone with authority been assigned overall responsibility for the SWMP?
- Have you included a declaration from the client and principal contractor in your SWMP?

**Identifying your waste**

- Have you assessed the waste produced at each stage of the project- the types, how much and when, including the processes involved?
- Have you identified which workers will produce waste?

**Managing your waste**

- Has an area of the site been set aside for storing new materials and waste, including separate containers for different types of waste? You must store new materials separately from waste, and make sure storage areas are secure against vandalism.
- Have you set targets for the different types of waste likely to be produced by the project? Include targets for the amounts of each waste type to be reused, recycled and disposed of.
- Have measures been put in place to deal with expected and unexpected hazardous waste?
- Have you considered whether you can reuse materials either on-site or off-site?
- Have you considered on-site and off-site processing and reuse of materials?

### Disposing of your waste

- Have you considered how you will dispose of liquid wastes such as wash-down water and lubricants?
- Have you got agreement from your water and sewerage operator for trade effluent discharge?
- Are you complying with your duty of care, including waste transfer notes or consignment notes for all movements of waste from your site and checking the details of those removing the waste?
- Has someone been made responsible for checking that loads of waste leaving your site are accurately described, and waste transfer notes and consignment notes completed correctly?
- Have you checked that every waste carrier you use is registered with your environmental regulator?
- Have you checked that all sites receiving your waste have the appropriate permits, licences or registered exemptions?
- Have you identified your nearest waste sites? Use our Waste Directory ([http://www.netregs.org.uk/library\\_of\\_topics/waste/waste/site\\_directories.aspx](http://www.netregs.org.uk/library_of_topics/waste/waste/site_directories.aspx)).
- Have you considered how to reduce disposal costs by reusing or recycling waste materials with a commercial value?

### Organising materials and waste

- Have you assessed the quantities of materials you need to order to reduce over-ordering and site waste?
- Can you return unused materials to the supplier, sell them or use them on another job?
- Have you considered using recycled materials?
- Can you return unwanted packaging to the supplier for reuse or recycling?
- Will you separate different types of waste to enable you to get best value from good waste management practices?
- Have you labelled containers and skips clearly to avoid confusion? Colour coding your containers could help.
- Are your storage areas secure and weatherproof to prevent wind and rain damaging your materials?

- Have you covered or nettled any loose materials to prevent them being spread and possibly causing pollution?
- Is everyone who will handle waste aware of the SWMP requirements?

### **Communicating and training**

- Have you planned site inductions and toolbox talks for all site staff?
- Are contractors and subcontractors trained and aware of their responsibilities?
- Have contractors and subcontractors understood and agreed the SWMP?
- Are SWMP requirements built into contracts?
- Are you carrying out spot checks and monitoring your staff regularly to make sure they are following procedures?

### **Measuring and monitoring your waste**

- Are you updating your plan every time waste is removed from your site?
- Are you checking the SWMP regularly and making sure targets are being reached?
- Are the agreed waste management procedures being checked and monitored regularly?
- Are you producing regular reports on waste quantities, treatment/disposal routes and costs?
- When construction is underway, are you making notes of problem and recording them for your next plan?

**Appendix E**  
**Construction Method Statement**

**The Appointed Contractor** is aware of Northern Ireland Environmental Legislation and will ensure the following measures are taken:

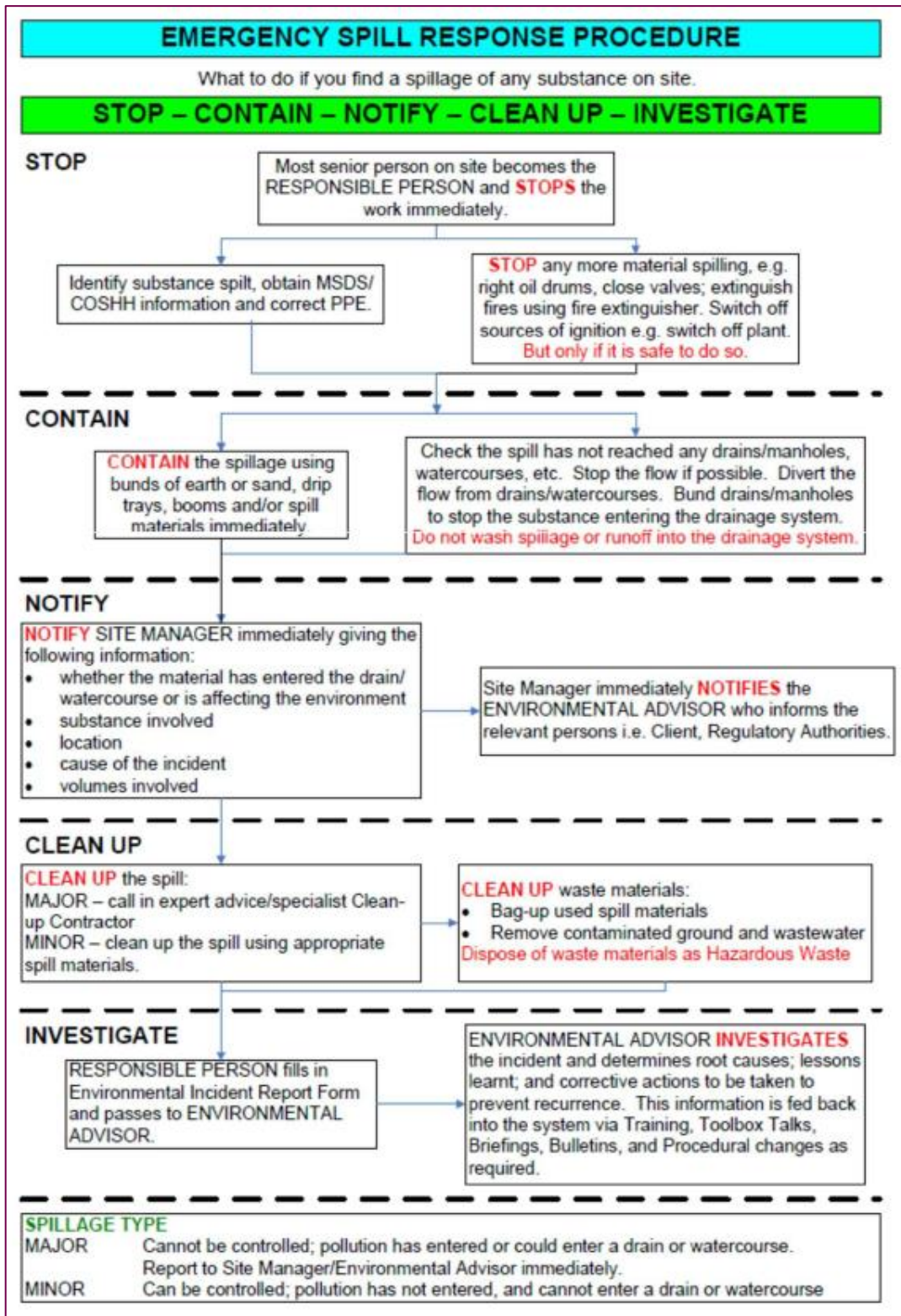
1. The handling, use and storage of hazardous materials will be undertaken in line with the Guidance for Pollution Prevention (e.g. GPP2 above Ground Oil Storage Tanks).
2. All site operatives will receive a Site Induction which includes Health & Safety, Waste & Environmental details (Pollution Prevention Requirements) and Quality Management Procedures.
3. Regular Environmental Toolbox talks will be delivered on site - at least one per week.
4. **A named person** has been nominated as the responsible person for pollution prevention on site.
5. **The Appointed Contractor** will have spill kits on site and all concerned will be briefed during site inductions on the contents and their use.
6. A spill kit will be on hand during fuel deliveries
7. **The Appointed Contractor** will manage any waste arising on site and ensure it is kept to a minimum
8. **The Appointed Contractor** will keep in touch with weather forecasts throughout the project and take appropriate action.
9. Daily site inspections will be carried out to check for pollution incidents and/or potential problems.
10. Times for deliveries will be controlled to avoid major disruption to neighbouring traffic.
11. The site manager/site foreman will be on hand to supervise deliveries.
12. Any drums, containers and/or tanks whether used for deliveries to site or on site will be inspected and verified as fit for purpose before accepted to site or used on site.
13. Any plant wheel and/or boot washing will be sited at least 10 metres from the waterbody on the site periphery.
14. There will be no oil or fuel stored on site.
15. Appropriate fuel transfer techniques will be employed such as fuel transfer pumps, drip trays and spill kits.
16. **The Appointed Contractor** will inspect and maintain on a regular basis all temporary and permanent drainage systems and water courses.

## Protection of Surface Waters

During construction, protection measures to control the risk of pollution to surface waters will be adopted, these will include:

- a. Any containers of contaminating substances on site will be leak proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. No fuel will be stored on site and areas for transfer of contaminating substances will be sited at least 10m away from any surface watercourse and will be located away from any drains leading to a watercourse.
- b. All refuelling, oiling and greasing will take place at least 10 metres away from the watercourse, above drip trays or on an impermeable surface (when available) which provides protection to underground strata and watercourses and away from drains. Vehicles will not be left unattended during refuelling.
- c. Only construction equipment and vehicles free of oil/fuel leaks which could cause contamination will be permitted on site.
- d. There will be regular inspections of machinery on site.

**Appendix F**  
**Pollution Prevention Plan**



# GPP 1: A general guide to preventing pollution

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## Guidance for Pollution Prevention

**Name: GPP 1**

Date 30/10/2020

These guidelines are produced by the environmental regulators Natural Resources Wales (NRW), the Northern Ireland Environment Agency (NIEA) and the Scottish Environment Protection Agency (SEPA).

For Northern Ireland, Scotland and Wales, this document provides guidance on environmental legislation. These guidelines are not endorsed by the Environment Agency for use in England however you may find them useful. For guidance on environmental regulations in England go to [www.gov.uk](http://www.gov.uk)

To find the relevant regulations visit [www.legislation.gov.uk](http://www.legislation.gov.uk)

Guidance for Pollution Prevention documents are based on relevant legislation and reflect current good practice. Following these notes will help you manage your environmental responsibilities to prevent pollution and comply with the law.

If you cause pollution or allow it to occur, you may be committing a criminal offence. Following these guidelines will help you reduce the likelihood of an incident. If one does occur contact your environmental regulator immediately on the hotline number 0800 80 70 60



## SECTION 1

### 1.1 Legal compliance

The basis of any good environmental performance is compliance with environmental regulations. You must be aware of your environmental responsibilities and make sure that you operate in a completely legal way.

Non-compliance brings the risk of enforcement action, possible fines and real damage to your reputation as a business.

### 1.2 Save money

Good environmental performance includes reducing waste, minimising energy and water use and taking steps to reduce other environmental impacts that your business might have. This creates a leaner and more efficient business with lower costs.

### 1.3 Manage risk

Businesses which manage the risks to their success are often better prepared to deal efficiently with problems when they happen. Managing risks gives you peace of mind and maximises your chances of running a successful business.

### 1.4 Enhance your reputation

Legal compliance and implementing good practice will improve your reputation with customers and your neighbours. Your environmental credentials can help you win contracts; an increasingly relevant part of the tendering process for many sectors.

### 1.5 Why we need to protect our environment

Pollution occurs when substances released to water, land or to air have a harmful effect on our environment. It can affect our drinking water supplies, people's health, business activities, wildlife and habitats, and our enjoyment and use of the environment. You might not see it, but you can pollute it.

Pollution can happen accidentally or deliberately, and can come from a single place (point source) or from lots of different, possibly unknown and unconnected sources (diffuse sources).

Many different substances can cause pollution – common examples include:

- fuels and oils
- chemicals
- sewage
- farm manure
- slurry
- detergents
- milk
- fire-fighting run-off.

You should understand your premises and how your activities could affect the environment and cause pollution. Think about what pollution linkages you have.



**Figure F1 Source, Pathway, Receptor**

Your site and activities will only cause harm to the environment or people if you have all of these present: a source, a pathway and a receptor.

You should put in place measures to break the links or weaken the links between potential sources, the pathways and the final receptor.

By doing this, you can identify how to prevent or reduce the likelihood of pollution and reduce the impact of any problems which may occur.

## SECTION 2

### 2.1 Where does “dirty water” come from?

Where does “dirty water” come from?

Almost all premises produce dirty water which could cause pollution if it enters rivers, streams, ditches or groundwater.

Dirty water comes from:

- Kitchens
- Bathrooms
- Toilet and laundry facilities
- Vehicle washing
- Rainwater run-off from dirty areas of your premises
- Rainwater run-off: spills from storage and delivery areas
- Liquid wastes or trade effluents from your business activities.

Many premises also store liquid materials such as chemicals, fuels and oils, milk or fertilisers which can spill, leak or release their contents if there is a fire or flood.

To protect your environment from spills, leaks and other accidents it is very important that you make sure that you know where your drains are, and where they go.

### 2.2 Drains - why are they important?

Drains are common pathways for dirty water to enter the environment and cause pollution. This can happen through wrong connections, spills and leaks, fires and poor or inadequate maintenance.

Your site can have two types of drain: surface water drains, and drains that connect to the sewer.

#### You must not allow dirty water to enter surface water drains

To reduce the risk of pollution, you should know where your drains are, where they go and correct any problems you may find, such as wrongly-connected pipes.

If you make changes to your premises, such as building an extension or changing activities, you should understand your drainage systems so you can manage these changes safely, cost-effectively and without causing pollution.

If you want to discharge anything other than clean rainwater runoff from your site onto land, or into a watercourse you must contact your environmental regulator (NIEA) and get permission. You will probably have to treat any dirty runoff before you can discharge it. Contact details are at the end of this document. If you want to put dirty water into a sewer, you must contact your water and sewerage provider.

### 2.3 Where do your drains go?

All premises should have a drainage plan.

This will show where **surface water drains** are located and where they discharge to any nearby ditches, streams, rivers or other watercourses. This includes storm drains.

It will also show where **drains that connect to the sewer** are located. These can be sewers that remove dirty water only, or combined sewers, which take dirty water and runoff from some surface water drains to the sewage treatment plant.

This information should be available when you need it:

- when you plan activities on your site,
- when you to carry out inspection and maintenance of your drains
- when contractors or visitors need this information.

You can get help to work out where your drains are, and where they go, from:

- your sewerage provider
- your landlord
- a drainage consultant.

Produce a clear plan of your site, with all the drains identified, and include the direction of the drain, where it leaves your premises and where it goes. Include any nearby watercourses in your plan.

Colour code manhole covers and drains, **red for drains that lead to the sewer** and **blue for drains that lead to surface water**. This can prevent accidental contamination of the surface water drain.

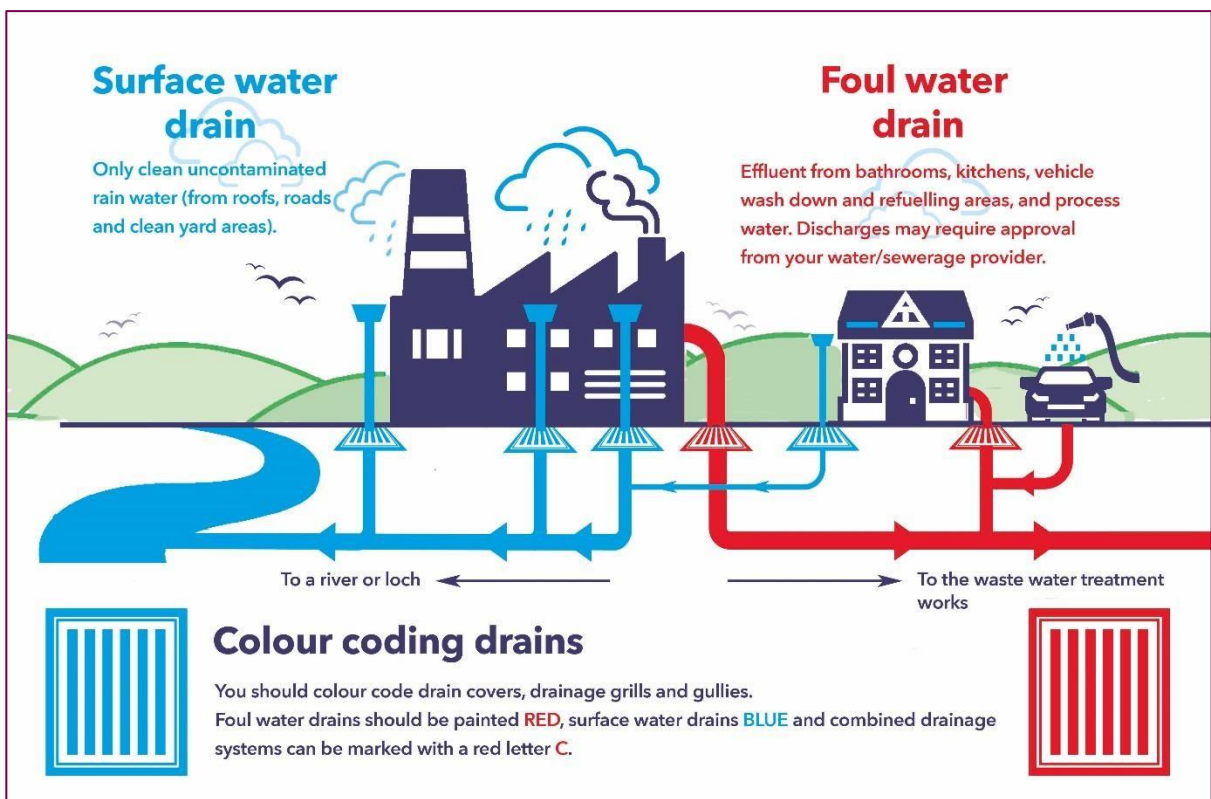


Figure F2: Surface Water and Foul Water Drainage

## 2.4 On site treatment facilities

You might have treatment facilities on your site, such as septic tanks, package treatment plants or oil separators. Make sure that these are maintained properly as they can be a source of pollution if they are not working correctly.

Manufacturers will provide information on how to maintain these facilities, you should make sure you have this information available so you can correct any problems, or if you need to change your site layout.

## 2.5 SuDS

You might also use Sustainable Drainage Systems (SuDS) to treat lightly contaminated water that runs off your site. Speak to your environmental regulator before installing SuDS. It is important to make sure the system is properly maintained.

sSuDS can treat runoff where there is a possibility that runoff will collect light contamination, for example from car parks, and will trap and help break down these pollutants. SuDS will also reduce the risk of downstream flooding, and can add green space to built-up areas.

SuDS require a certain amount of land, and are not possible on every site. If you are designing new premises then consider SuDS from the outset. If you wash or clean vehicles on site then make sure runoff from this activity does not go into surface water drains. Make sure that you have permission from your sewerage provider if you want to discharge this runoff to the foul sewer.

## 2.6 More information on drainage

All GPPs can be found at: <https://www.netregs.org.uk/environmental-topics/pollutionprevention-guidelines-ppgs-and-replacement-series/guidance-for-pollutionprevention-gpps-full-list/>

- GPP 13 Vehicle washing and cleaning.
- GPP 3 Use and design of oil separators in surface water systems
- GPP 4 Treatment and disposal of wastewater where there is no connection to the public foul sewer
- GPP 5: Works and maintenance in or near water.
- NetRegs SuDS <https://www.netregs.org.uk/environmental-topics/water/sustainable-drainage-systems-suds/>

## SECTION 3

You might store a number of different materials at your premises. Even materials that you think of as safe can cause serious damage to the environment.

Think of all the materials that arrive on your premises, including those delivered, collected, stored and handled by staff, and also by visitors or contractors.

Oils and chemicals are obvious sources of potential environmental harm, but other materials such as food and drink products and detergents can cause significant pollution. For example a spill of milk can cause more harm to a watercourse than the same volume of sewage.

Remember, you have already paid for these materials, and if you lose a quantity of them you are losing money. You will then also have clean-up costs. You also want to avoid any health and safety problems which could affect people on your premises or people nearby.

### 3.1 Plan your storage areas.

Make sure that you understand the risks associated with any materials you store on site. Suppliers will provide product information and highlight materials with particular risks associated with their storage or handling.

You must pay the same attention to the storage of waste, waste management companies can advise you about containers and storage areas.

Use your drainage plan to identify the safest places to store materials. Consider when and how you use these materials, and use this to plan your storage areas.

You should avoid storing materials:

- Near to open drains
- On bare ground; always use impermeable surfaces
- Anywhere near to watercourses, soakaways or other sensitive areas
- Anywhere there is a risk of flooding

Choose areas that are:

- Under cover – to prevent rainwater carrying pollutants away
- Bunded to prevent spills spreading
- In a safe place away from vehicles, to prevent collisions.

Leaks and spills can soak into unmade ground where there is a risk of pollution to groundwater. This can affect drinking water, and the clean-up can be a lengthy and expensive task.



**Figure F3: Safe Storage, Bunded and Under Cover**

### **3.2 Use suitable containers**

Use containers that are suitable for the materials stored. Label them clearly and store them in a dedicated area.

Make sure your containers are in good condition by doing regular inspections. Any cracks or leaks can be dealt with before causing an incident.

Some materials must have specific storage, for example all kinds of oils and fuels.

Certain materials must be kept away from other materials to prevent reactions or fire.

Keep your storage areas secure, to prevent accidental damage, theft or vandalism.

You are responsible for clean-up costs even if the damage is caused by vandalism.

### **3.3 Contain leaks and spills**

You can't completely avoid spills and leaks, so put in place measures to reduce their likelihood and severity. You should be able to catch minor spills, leaks or overflows from your containers or stores, and be able to clean them up easily and safely.

Consider installing and maintaining secondary containment, such as a bund wall, or using bunded pallets. It's good practice for your secondary containment to be able to hold more than your tank or container is able to hold, commonly called 110% containment. In some cases this is a legal requirement, such as when storing oils. Secondary containment gives you time to either correct or minimise the problem and to get help.



**Figure F4: Bunded Storage Drums and Containers**

You should inspect and maintain your secondary containment so it's still effective, such as sealing any cracks or holes, making sure any walls or floors are rendered impermeable, and safely removing any rainwater from the secondary containment. If you store fuels or other liquids in underground storage tanks (USTs) you must take care when installing these tanks, or when decommissioning or removing them. If not carried out properly, these activities can result in serious pollution of soil, groundwater and nearby water courses.

You and others on your premises should know where to find your spill kits, understand how to use them properly and understand how to store and use materials safely. Label your spill kits and check their contents regularly.

If you have a spill or any pollution incident, report immediately on **0800 807060** (24 hours, 7 days a week) – your environmental regulator can advise you on what to do, and can help to inform any other agencies that might be required.

### 3.4 Deliveries

Delivery and handling of materials can be risky, and delivery areas should be managed to prevent incidents.

Have procedures in place for safe deliveries, and make sure all your suppliers understand them. Supervise deliveries to make sure that procedures are followed.

Keep spill kits or appropriate clean-up equipment close to where deliveries are made, and make sure staff and suppliers understand how to use them.

Minimise the handling and movement of materials around your site by planning where deliveries take place. This reduces the risk of spills, and also saves time and money.

### 3.5 More information on storage of materials

All GPPs can be found at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

GPP 2 Above ground oil storage tanks.

GPP 8 Safe storage and disposal of used oils

GPP 13 Vehicle washing and cleaning

GPP 21 Pollution Incident Response Planning

GPP 22 Dealing with spills

GPP 26 Safe Storage - drums and intermediate bulk containers

## Section 4

### 4.1 Minimising your waste (Appendix D details a SWMP)

Everything you buy and use on your premises might end up as waste, from food to packaging to off-cuts. Do you know what wastes are you generating at each stage of your activities?

Poorly managed wastes can pollute the environment, for example through illegal dumping or leaking into the ground or watercourses.

You have a responsibility – called **the duty of care** - to ensure you produce, store, transport and dispose of waste without harming the environment. This includes waste you produce directly and indirectly, such as waste produced by a contractor doing work on your behalf.



Wastes which are most hazardous to the environment or human health, such as solvents, asbestos and oils must be managed differently from other wastes. You have a legal duty to understand what types of waste you produce and how you need to manage them.

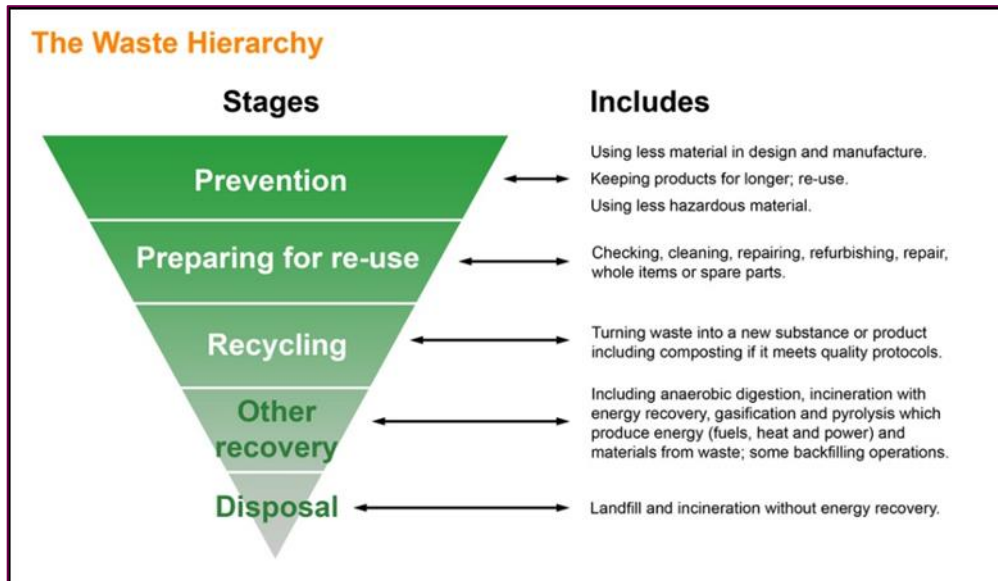


Figure F5: The Waste Hierarchy

## Reduce

There are a number of ways to reduce the amount of waste you produce. This ranges from simple measures such as purchasing goods with less packaging or buying in bulk, not in individual packs, to entirely redesigning your products and processes to eliminate waste.

## Reuse

Identify goods or materials that can be reused, perhaps with minimal cleaning and preparation. Design for re-use, e.g. your packaging.

## Recycle

Items that can't be re-used can often have the materials they are composed of recycled. Items made of a single material are easier, however you may be able to find a cheap way of removing recyclable parts from more complex items.

## Recover

Rather than dispose of materials to landfill, it is sometimes possible to recover some value from them, even if this is just heat from burning them. Energy from waste plants convert the waste into heat and power.

## Dispose of.

The least desirable destination for waste. A last resort if all other options have been tried and have not been feasible.

## 4.2 Storage and handling

Store waste in secure containers. If they contain liquids, make sure they don't leak. Where appropriate keep waste in containers with lids. This will prevent the wind blowing waste around your site, and will keep the waste dry. Rain water could pick up pollutants from the waste and this contaminated water would need to be managed as a waste too. Also, for example, wet cardboard weighs more than dry, and if soaked you could end up paying extra to have this material removed from your site.

## 4.3 Segregate your wastes

In Northern Ireland all businesses must segregate dry recyclable materials. Paper, cardboard, glass, metals and plastic must be segregated to allow for high quality recycling.

Clearly label the containers for different materials, and make your staff aware so the right materials go into the right containers. Identify all the waste materials you produce, then identify those that can be reused or recycled.

## 4.4 Hazardous/special waste

Some types of waste, called 'hazardous wastes', or 'special wastes', are very harmful to human health or to the environment. You must store, handle and dispose of these differently to non-hazardous wastes.

You must not mix different types of hazardous/special wastes together. Also, if you mix hazardous wastes with non-hazardous wastes then you must consider it all as hazardous/special waste. Consider the security of your premises too - any waste dumped on your property becomes your responsibility to remove, and it will cost you money.

## 4.5 Waste Disposal

You must only use a registered waste carrier to take your waste away. Check your environmental regulators website to find a list of all registered waste carriers. Ask where they will take your waste, and check that waste site is authorised to accept your type of waste. Not all waste management sites can accept all types of waste.

You can transport your own business waste to a site for recovery or disposal, but you will need to register with your environmental regulator. If waste is removed from your site you must complete a Waste Transfer Note, and keep your copy for 2 years. If the waste removed from your site is hazardous/special waste then you must complete a Consignment Note and keep your copy for at least 3 years.

## 4.6 More information on waste management

### Check if a waste carrier is licensed:

**Northern Ireland:** Registered waste carriers/transporters

<https://www.daerani.gov.uk/articles/registered-waste-carriers-transporters>

### Transfer Notes:

NetRegs: How to complete a waste Transfer Note

<https://www.netregs.org.uk/environmental-topics/waste/duty-of-care-your-wasteresponsibilities/waste-transfer-notes-and-how-to-complete-them/>

NRW: Completing waste transfer notes

<https://naturalresources.wales/guidance-andadvice/environmental-topics/waste-management/completing-waste-transfernotes/?lang=en>

NetRegs e-learning – How to complete a Waste Transfer Note, Consigning Hazardous/special waste, How to get the right EWC code

<https://www.enetlearn.com/netregs?gl=475c726f-2dfb-4358-8d884b744169f509&r=1>

### Waste Minimisation:

WRAP: Waste reduction:

<https://www.wrap.org.uk/category/subject/waste-reduction>

## SECTION 5

### 5.1 Preparation

Take time to consider all areas of your premises or site. Think about where things could go wrong and why. Consider fire, flooding, accidents, vandalism, leaks and spills and how materials and waste are moved around your premises.

Dealing with incidents mean significant disruption to your activities. The better prepared you are the less downtime you will experience. Preparing and incident response plan can save time and effort and will reduce the cost of dealing with an incident. Remember, you are responsible for any contractors working on your behalf, so you must make sure you give them clear work instructions and supervise them appropriately

### 5.2 Planning and training

The best way for you to cope when problems and emergencies arise is to plan. Well managed premises are less likely to have problems in the first place. You should create and implement an **incident response plan**. You may even have a legal responsibility to make a plan. It should include procedures to deal with problems and emergencies and importantly include a copy of your drainage plan.

### 5.3 Implement plans

Make sure everyone on your premises understands what to do in case of an emergency. Include advice to visitors and contractors. Keep a copy of your plan offsite, so you can always access it. Regularly train staff, and review your plans on a regular basis to make sure they are fit for purpose. Make sure the plan is updated if there are changes to you premises, or you change the materials or processes you carry out.

### 5.4 Flooding

You can check whether you are at risk from flooding on the flood maps available from your environmental regulator. You will also be able to sign up for free flood warnings direct to your phone.

### 5.5 Fire

Contact your local Fire and Rescue Service and ask them to visit and give you advice of fire safety and fire prevention. They can help you draw up a fire response plan for your premises.

### 5.6 Spill kits and pollution control equipment

Keep spill kits close to areas where there is a risk of spills, for example near to oil storage areas. Make sure these are maintained and restocked after any incident. Train staff in when and how to use them.

Have pollution control equipment that is appropriate to your site, your activities, and the risks they pose.

### 5.7 If you have an incident

Use the pollution hotline

**0800 807060**

**(24 hours a day, 7 days a week)**

Your environmental regulator can offer advice on what to do and can inform any other agencies that may be required.

## **5.8 More information on dealing with pollution incidents**

All GPPs can be found at: <https://www.netregs.org.uk/environmental-topics/pollutionprevention-guidelines-ppgs-and-replacement-series/guidance-for-pollutionprevention-gpps-full-list/>

**GPP 21 Pollution Incident Response Plans GPP 22 Dealing with spills**

### **Flood maps and guidance**

**Northern Ireland: Flood Maps NI**

<https://www.infrastructure-ni.gov.uk/topics/riversand-flooding/flood-maps-ni>

### **Northern Ireland Fire and Rescue Service: Business safety advice**

**Fire and Rescue contact information**

<https://www.nifrs.org/business-safety-advice/>

**Appendix G**  
**Emergency Response & Environmental Plan**

The contractor will be responsible for the preparation and implementation of the spillage response procedure. The key issues to consider for the spillage response procedure include:

- 1. If the main contractor already has a standard spill response procedure in operation then this should be amended to reflect the local conditions on site;**
- 2. It will be important to ensure that the Environmental Manager is notified of all incidents where there has been a breach in agreed environmental management procedures;**
- 3. As a general rule the following principles should apply In the event of an environmental emergency:**
  - a. If SAFE, stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers. Inform Engineer immediately**
  - b. IF SAFE (USE PPE), contain the spill using the absorbent spill material provided. Do not spread or flush away the spill. Cover or bund off any vulnerable areas where appropriate.**
  - c. If possible, clean up as much as possible using the absorbent spills materials. Do not hose the spillage down or use any detergents.**
  - d. Contain any used absorbent material so that future contamination is limited.**
  - e. Notify the Construction Project Manager and environmental officer so that used absorbent material can be disposed of using a specialist contractor.**
4. The Construction Manager, in conjunction with the contractor's environmental manager, will develop and test, through exercises, the Emergency Spillage Procedure to ensure that appropriate measures to prevent and mitigate damage due to accidents and spillages are in place.
5. Testing of the Emergency Spillage Procedure shall be recorded on the relevant environmental control form.
6. Inform all personnel about the spill response procedure through toolbox talks and/or induction training. Consider the need for refresher training on long-term construction projects.
7. Use reminder posters, identifying the key essential elements of the spill response procedure, located in appropriate areas such as fuel storage areas, mess cabins, security points or on the back of toilet doors.
8. Example control containment measures for different pollutants are given below:

Control/Containment Measure	Pollutants				
Spill on ground	Concrete / cement	Paints	Oils	Silt	Detergents
Sand	✓	✓	✓	x	✓
Straw bales	x	x	✓	✓	x
Absorbent granules	x	x	✓	x	x
Geotextile fence	✓	x	x	✓	x
Drip trays	x	✓	✓	x	x
Pads/rolls	x	x	✓	x	x
Drain seal	✓	✓	✓	✓	✓
Earth bunds	✓	✓	✓	✓	✓
<b>Spill in water</b>					
Straw bales	x	x	✓	✓	x
Pads/rolls	x	x	✓	x	x
Booms	x	x	✓	x	x
Stop further spill contain and inform appropriate personnel immediately	✓	✓	✓	✓	✓

In the event of a significant spill contact the **NIEA Hotline (0800 80 70 60)**

It will be important to incorporate the names and telephone numbers of others you need to inform (includes alerting people out of hours) and who should contact them within the spillage response plan.

Further issues to be considered when the main contractor is preparing a emergency spill response plan include:

- Details of a professional 24 hour call-out clean-up service e.g.: Alpha Environmental Systems Ltd. Tel +44 (1506) 637340
- Ensure sufficient types and quantities of spill response equipment are available on site. Keep spill kits where spills may occur, e.g. at refuelling points or on plant working near a watercourse.
- Material safety data sheets and COSHH assessments will assist in identifying appropriate spill measures for dealing with hazardous materials.
- Dispose of used spill response material appropriately, e.g. oily granules or pads should be bagged up and placed in the designated waste skip.

**EMERGENCY SERVICES & IMPORTANT TELEPHONE NUMBERS**

Emergency Contact Details	
Emergency Services	<b>999</b>
<p>Nearest hospital –</p> <p>Craigavon Area Hospital, 68 Lurgan Rd, Portadown, Craigavon</p> <p>BT63 5QQ</p>	
NIEA Environmental Incident Hotline	<b>0800 80 70 60</b> (Free 24 hr Emergency Hotline)

Contractor Contacts: (Out of Hours)	
Construction Director	TBC
Construction Manager/Site Manager	TBC
Environmental Manager	TBC



**Incident response plan KEY POINTS (From: GPP 21: Pollution Incident Response Plans)**

Procedure	Included?
Clearly define <b>when you will activate the plan</b> . This will depend on the nature of your site and the type of the incident.	
Ensure all relevant staff know how and when to <b>contact other emergency responders</b> : emergency services, environmental regulator, local authority, sewage undertaker and others identified in your plan.	
Agree <b>contact procedures</b> , if possible, with nearby properties, downstream abstractors, agricultural land or environmentally sensitive sites that could be affected by an incident on your site.	
Put in place <b>staff evacuation procedures</b> – your local authority emergency planning department will help you with these.	
Identify any special methods you need to deal with <b>substances</b> posing particular health or environmental risk.	
Train your staff in <b>the use of spill kits</b> , drain blockers and other pollution control equipment and the operation of pollution control devices.	
Identify procedures for recovering spilled product and the safe handling and <b>legal disposal of any waste</b> associated with the incident.	
Have staff available who are trained to deal with <b>media enquiries</b> .	

*From: Guidance for Pollution Prevention Dealing with spills: GPP 22 October 2018 (Version 1)*

**PRINT OUT AND DISPLAY SIGN (To be located throughout site)**

<p style="text-align: center;"><b>STOP</b></p> <ul style="list-style-type: none"><li>• Stop work immediately</li><li>• Stop the leak or eliminate the source of the spill</li><li>• Eliminate ignition sources and provide natural ventilation</li></ul>
<p style="text-align: center;"><b>CONTAIN</b></p> <ul style="list-style-type: none"><li>• Use pollution control equipment (e.g. spill kits, drip trays, bunds of earth and sand) to contain the spill</li><li>• Check the spill has not reached any drains, water courses or other sensitive areas</li><li>• Cover all drains / manholes to prevent the spill from entering the drainage system</li></ul>
<p style="text-align: center;"><b>NOTIFY</b></p> <ul style="list-style-type: none"><li>• Once the spill has been contained notify your emergency contact. Details at the bottom of the page.</li></ul>
<p style="text-align: center;"><b>CLEAN-UP</b></p> <ul style="list-style-type: none"><li>• Attempt to soak up the spill using absorbent material</li><li>• Always follow your Duty of Care for waste when disposing of contaminated materials including spill kit/equipment.</li></ul>

**EMERGENCY CONTACT DETAILS** (Complete with your business details)

NAME	TELEPHONE	NEAREST SPILL KIT

**NIEA's Pollution Prevention Hotline Number**  
**0800 80 70 60**

## Appendix H

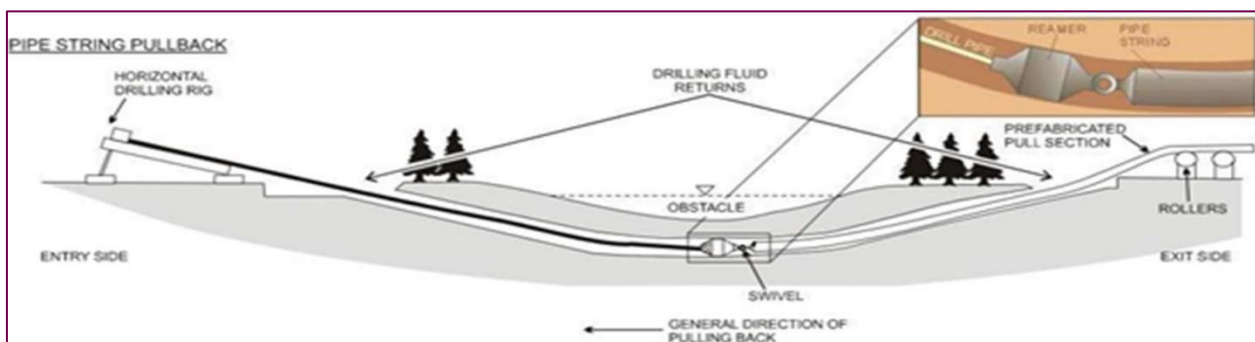
# Outline Horizontal Directional Drilling Methodology

## Outline Horizontal Directional Drilling (HDD)

Horizontal Directional Drilling (HDD) is a method of drilling under obstacles such as motorways, bridges, railways, watercourses, etc. in order to install cable ducts under the obstacle. This method is employed where installing the ducts using standard installation methods is not possible. The proposed UGC cable route requires the utilization of a HDD crossing under the River Lagan. It is envisaged that the setup, excavation, drilling/boring, installation, reinstatement and dismantling process will take an average of 5 no. day to complete. The proposed drilling methodology for is as follows:

- A works area of circa 40m<sup>2</sup> for the HDD entry side, and circa 20m<sup>2</sup> on the HDD exit side, will be required for the HDD equipment and vehicles. These areas will be fenced off during the HDD implementation.
- The drilling rig and fluid handling units will be located on the designated entry side of the river and will be appropriately banded using sandbags.
- Entry and exit pits (approximately 2m (width) x 3m (length) x 1m depth) will be excavated using an excavator. The excavated material will be temporarily stored within the works area and used for reinstatement or disposed of to a licensed facility.
- The HDD pilot bore will be undertaken using a wireline guidance system. Assembly will be set up by the drilling team and steering engineer.
- The pilot bore will be drilled to the pre-determined profile and alignment under the river crossing.
- The steering engineer and drill team will monitor the drilling works to ensure that modelled stresses and pressures are not exceeded.
- The drilled cuttings will be flushed back by drilling fluid to the entry pit and treated for re-use.
- Once the first pilot hole has been completed, a hole-opener or back-reamer will be fitted in the exit side which will then be pulled back to the entry side as part of the pre-reaming/hole opening process to enlarge the hole to the needed size.
- When the pre-reaming/hole opening/hole cleaning has been completed, a reamer of slightly smaller diameter than the final cut will be installed on the drill string to which the ducts will be attached for installation.
- The drilling fluid will be disposed of to a licensed facility. The interior of the ducts will be cleaned, and the ducts will be proven to ascertain their suitability. Their installed location will be mapped.
- The entry and exit pit areas will be reinstated to the specification of NIEA Waters Management Unit and any requirements of Armagh City, Banbridge and Craigavon Borough Council.
- A joint bay/transition chamber/transition coupler will be installed on either side of the drill shot, following the horizontal directional drilling procedure, as per requirements, which will serve as interface between the HDD ducts and the standard ducts.

The ducts will be cleaned and proven, and their installed location surveyed.



**Figure H.1: Typical HDD Installation**

## Best Practice Design and Construction & Environmental Management Methodology

The works will be carried out by employing accepted good work practices during construction, and environmental management measures such as those discussed below. Please note that the following measures will be supplemented by further specific environmental protection measures that will be included in method statements prepared for specific tasks during the works and will form part of the detailed Final CEMP. These method statements will be prepared prior to the construction phase of the proposed solar farm and will incorporate all of the mitigation measures identified in the CEMP as well as the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.

- All UGC construction materials shall be stored at the temporary construction compounds within the Magheralin Solar Farm site and transported to the works zone immediately prior to construction;
- Where drains and watercourses are crossed with underground cables, the release of sediment will be prevented through the implementation of best practice construction methodologies.
- Weather conditions will be considered when planning construction activities to minimise risk of run off from site;
- Provision of 10m exclusion zones and barriers (silt fences) between any excavated material and any surface water features to prevent sediment washing into the receiving water environment;
- If dewatering is required as part of the works e.g., in trenches for underground cabling or in wet areas, water must be treated prior to discharge or disposed of appropriately by a licenced contractor;
- The contractor shall ensure that silt fences are regularly inspected and maintained during the construction phase;
- If very wet ground must be accessed during the construction process bog mats/aluminium panel tracks will be used to enable access to these areas by machinery. However, works will be scheduled to minimise access requirements during winter months;
- The contractor shall ensure that all personnel working on site are trained in pollution incident control response. A regular review of weather forecasts of heavy rainfall is required, with the Contractor required to prepare a contingency plan for before and after such events;
- The contractor will carry out visual examinations of local watercourses from the works during the construction phase to ensure that sediment is not above baseline conditions. In the unlikely event of water quality concerns, the Environmental Manager and ECoW will be consulted;
- Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows.
- 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.
- Appropriate containment facilities will be provided to ensure that any spills from vehicles are contained and removed off site. Adequate stocks of absorbent materials, such as sand or commercially available spill kits shall be available;
- Concrete or potential concrete contaminated water run-off will not be allowed to enter any watercourses. Any pouring of concrete (delivered to site ready mixed) will only be carried out in dry weather. Washout of concrete trucks shall be strictly confined to a designated and controlled wash-out area within the Magheralin Solar Farm site; remote from watercourses, drainage channels and other surface water features;
- Entry by plant equipment, machinery, vehicles and construction personnel into watercourses or wet drainage ditches shall not be permitted. All routes used for construction traffic shall be protected against migration of soil or wastewater into watercourses;
- Cabins, containers, workshops, plant, materials storage, and storage tanks shall not be located near any surface water channels and will be located beyond the hydrological buffer at all times.

## Appendix I

### River Lagan HDD Crossing



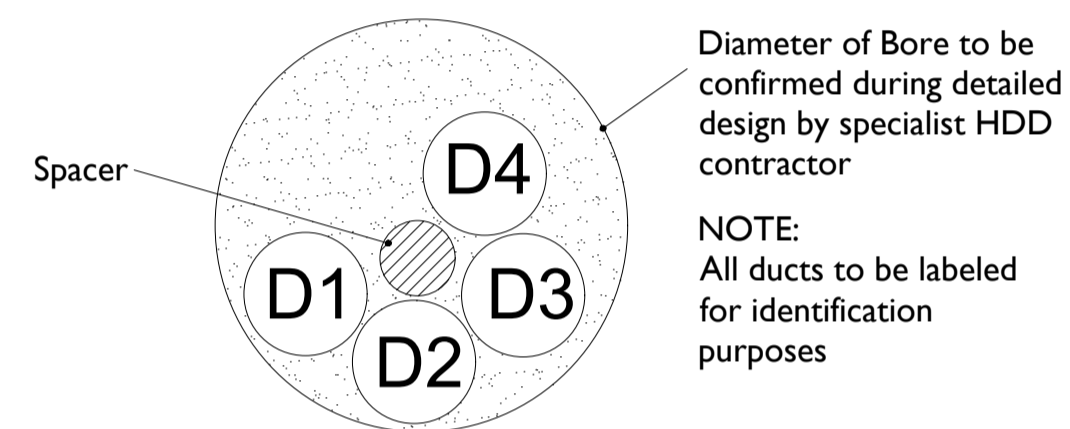
**Image 1 : Standard Directional Drilling Rig**



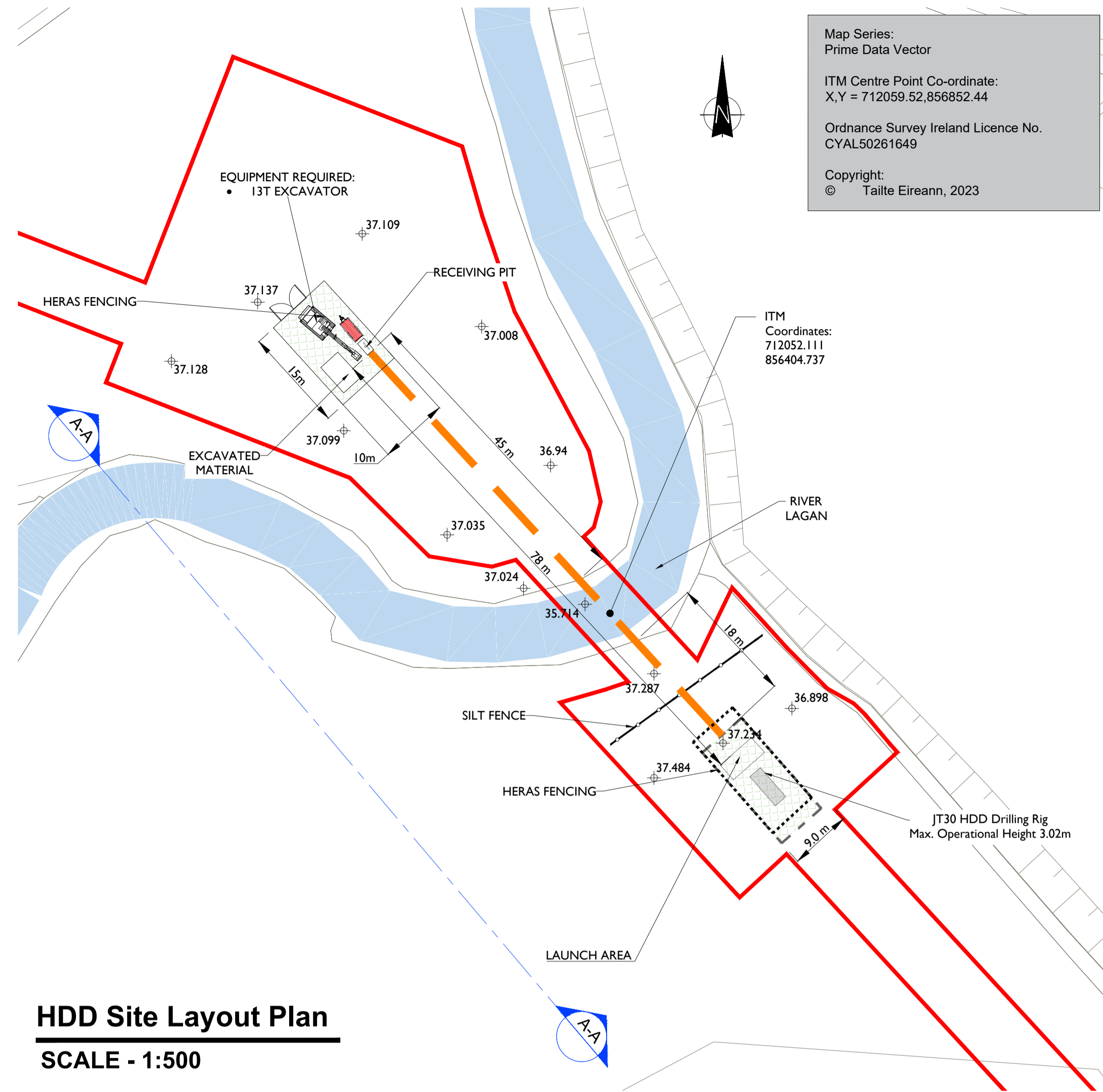
**Image 2 : Standard Launch and Receiving Pits**

**Notes:**

1. This drawing is to be used for design approval only and is not to be used for construction.
2. An individual HDD crossing design will be prepared for each HDD crossing following completion of site investigation works.
3. This drawing is to be read in conjunction with all other relevant information.
4. Do not scale from this drawing, use only printed dimensions.
5. All dimensions are in millimetres unless noted otherwise.
6. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an electromagnetic locator (EML) scan.
7. Hand dig only within 500mm of existing services.
8. All co-ordinates are referenced to ITM.
9. The Contractor is responsible for the design and construction of any temporary work required.
10. HDD launch and reception pits locations to be determined following site investigations works.
11. Final HDD design to be completed by Specialist Drilling Contractor in conjunction with the Cable Designer.
12. Transition couplers to be utilised to transition to standard power ducting after HDD. Comms ducts do not require a transition coupler and will be coupled directly using a chamfer between the two ducts.
13. All interstitial space between ducts and borehole to be bentonited thoroughly to maintain cable rating.
14. Where Transition pits are used after HDD the ducts shall approach the chamber in a straight alignment (horizontal & Vertical) for a minimum of 3 meters before the wall opening.

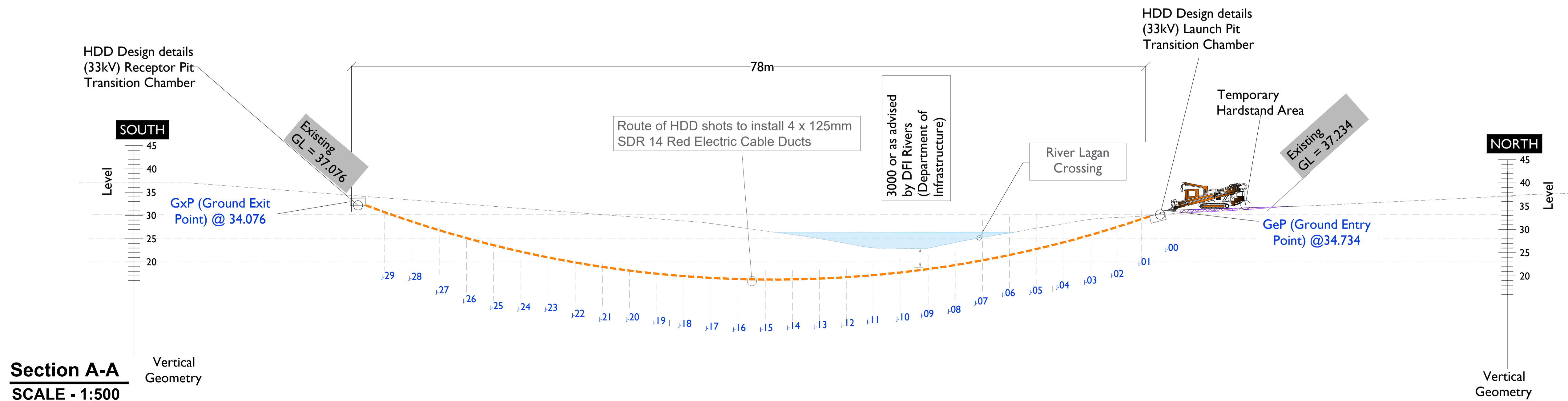


Typical Arrangement for 33kV circuit  
 D = 125mm Outer diameter HDPE, SDR = 14.  
 All dimensions in millimeters



**HDD Site Layout Plan**  
**SCALE - 1:500**

**SECTION A-A - LONGSECTION**  
**SCALE: H 1:500,V 1:500. DATUM: 30.000**



**Section A-A**  
**SCALE - 1:500**

Vertical Geometry

Vertical Geometry

Map Series:  
 Prime Data Vector  
 ITM Centre Point Co-ordinate:  
 X,Y = 712059.52,856852.44  
 Ordnance Survey Ireland Licence No.  
 CYAL50261649  
 Copyright:  
 © Talite Eireann, 2023



**PROJECT**

**Magheralin Solar  
 Interconnection**

**CLIENT**



**CONSULTANTS**

**NOTES: -**

**LEGEND: -**

- Riverine feature shown thus
- Underground Cable Route
- Temporary Compound Drilling Area
- Planning Boundary denoted as

**ISSUE/REVISION**

NO	DATE	DESCRIPTION
P2	19.10.23	Issued for Planning
P1	10.10.23	Issued for Planning
I/R	DATE	DESCRIPTION

**PROJECT NUMBER**

05-1024

**SHEET TITLE**

River Lagan HDD Crossing

**SHEET NUMBER**

051024-DR-100