

# Construction Environmental Management Plan

PF10-PR10-43-F001

Project: Brexit Operational Readiness Larne POE Site Code: DN20



GRAHAM are committed to supporting the UN Sustainable Development Goals, a blueprint to achieve a more sustainable future for all.

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<b>*Accepted By</b>			

\*Optional acceptance by client representative

<b>Version History:</b>			
<p>The Environmental Manager and Project Manager will work collaboratively to conduct periodic reviews of this document to ensure that the information contained within it, is suitable and sufficient for site operations. It is anticipated that this will be carried out at least every six months.</p>			
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## SECTION 1.0 Organisational Arrangements

### **Guidance Notes:**

The information contained in this section describes the Environmental Management processes adopted on site.

## 1.1. Introduction

This document has been prepared by GRAHAM. In preparing this document GRAHAM is demonstrating their commitment to being an environmentally responsible company. This Construction Environmental Management Plan (CEMP) forms part of an overall environmental management system and is to be read in conjunction with the Construction Phase Plan and the Quality Plan for the Project.

This CEMP is intended to satisfy the requirements of the principles set down in the International Environmental Management System Standard ISO 14001:2015. Our policies and procedures described within this document are in compliance with relevant legislation and best practice guidance including PPG6: Pollution Prevention Guidelines, Working at construction and demolition sites.

In preparing this document GRAHAM have drawn on information contained in the following documents:

- SPS Facilities Larne, Habitats Regulations Assessment Stages 1 & 2, Tetra Tech
- Larne Harbour POE, Updated Ecological Appraisal, Tetra Tech
- Larne Harbour Ground Investigation Report (GIR), White Young Green
- Larne Port – Ground Investigation, Causeway Geotech
- Larne Harbour PoE Generic Qualitative Risk Assessment, White Young Green
- SPS Facilities Larne, EIA Screening Report, Tetra Tech
- Larne Harbour POE, Piling Risk Assessment, White Young Green

## 1.2. Scope of the Project

This project is for the design and building of the following facilities at Larne Point of Entry (POE).

### **Product Inspection facility**

- HGV & Van Docking points & unloading bays to include
- Storage Rooms
- Inspection rooms
- Dedicated offices to include dedicated changing facilities for inspection staff
- External works to include:
  - HGV Parking & parking for detained consignments
  - Provision for 10No. Power outlets for refrigerated trailers.
  - Staff car parking
  - Weighbridge
  - Street lighting
  - Drainage

### **L2 - Livestock Inspection Facility**

- Unloading bays
- Inspection area
- Separate Covered Midden and Feed Stores
- Dedicated offices
- External Works in include:
  - HGV Parking area
  - Staff parking area
  - Inspection gantry for double & triple deck trailers
  - Underground collection tanks for drainage
  - HGV Wash down area

### **L1 – LIF (Phase 2)**

#### **Livestock Inspection Facility**

Unloading bays

- High and low level bays to accommodate various trailers

- Surface suitably designed to ensure animals have adequate grip

#### Inspection area

- Handling facilities including the race & crush to be suitable for pigs and sheep
- Building to have adequate natural ventilation via space boarding & protected open ridge system.
- Roof to facilitate natural lighting in line with animal welfare best practice.
- Normal floor drainage to external tank
- Drainage from diseased or fallen stock pens to separate drainage collection chamber.
- Internal wash down system with hose connection points at various locations
- All walls and pens to be suitable for easy disinfection
- Separate Covered Midden and Feed Stores

#### External Works include:

- HGV Parking area

### **Equine and Other Commercial Animals (OCTA) Inspection Facility**

#### Handling facilities (Equine)

- Facilities designed with animal welfare in mind
- Stall for inspection
- All walls and pens to be suitable for easy disinfection
- Area to achieve adequate lighting and ventilation in line with animal welfare best practice.

### 1.3. Site Location and Context

Dept. Agriculture, Environment and Rural Affairs Veterinary Service Portal Branch,  
Redlands Road,  
Larne Harbour,  
BT40 1AX



### 1.4. Purpose and benefits of the plan

- The plan defines the Environmental Management procedures, work practices and management responsibilities relating to the construction of the project.
- The plan demonstrates how GRAHAM intends to satisfy the requirements of the client
- The plan demonstrates how GRAHAM intends to produce environmental performance indicators
- The Plan defines the scope of environmental issues, together with the requirements for action by GRAHAM that shall be set out to avoid, minimise and mitigate construction effects on the environment, existing surrounding communities and new residents of the local area
- The plan sets out the individual responsibilities of Directors, Managers, Supervisors and Operatives, with their respective roles defined in a clear system of managerial control.
- The plan establishes the structure and content for the procedures to monitor compliance, including specific auditing by GRAHAM.
- The plan establishes a regular procedure for reporting environmental information and ensures that environmental issues are firmly on the agenda of progress review meetings.
- The plan ensures that complete documented records are kept for easy, accessible reference.
- The plan provides a statement of Intent to statutory, regulatory and local authorities to take effective action to work in compliance with all statutory provisions and protect the environment.

The CEMP is a live document which must be updated and developed throughout the course of the project. An update to the CEMP will be carried out every six months as a minimum.

## 1.5. GRAHAM Environmental Strategy and Climate Action Strategy

As part of the GRAHAM Environmental Sustainability Strategy, this project will seek to adopt solutions and opportunities which will positively impact upon our four key areas of Environmental Sustainability focus (as follows):

- **Protecting the Environment**
- **Environmental Management and Improvement**
- **Conserving Resources**
- **Climate Action**

The GRAHAM overarching commitment to working in support of the UN Sustainable Development goals will also underpin the Project ethos toward "Sustainable Development" and opportunities will be sought to positively influence the SDG's.



Figure 1: Key Focus Areas

## **1.6. GRAHAM Environmental Management System**

GRAHAM operate an ISO 14001:2015 accredited Environmental Management System. We use this in conjunction with all relevant legal and other requirements for the environmental management of this project.

The environmental performance of the site will be regularly checked by site inspections carried out by our SHE Managers and Advisors and Environmental Audits carried out by the Environmental Sustainability Managers and Advisors. The implementation of our EMS will be audited both internally by our Systems Audit Manager and externally by NQA Ltd.

## **1.7. GRAHAM Environmental Policy Statements**

The work carried out on the Project will be in compliance with:

- **GRAHAM Environmental Policy Statement**
- **GRAHAM Biodiversity Policy Statement**
- **GRAHAM Climate Action Policy Statement**
- **GRAHAM Green Travel Policy Statement**
- **GRAHAM Waste Management Policy Statement**

## 1.8. Objectives and Targets

As part of our commitment to continually improve our environmental performance, specific targets and objectives relating to the Project have been set. These include:

- Site carbon emissions to remain within the targeted boundary (See Cora KPIs for more information on specific requirements for each financial year)
- Site waste to remain within the targeted boundary (See Cora KPIs for more information on specific requirements for each financial year)
- Site mains water consumption to remain within the targeted boundary (See Cora KPIs for more information on specific requirements for each financial year)
- Undertake at least two biodiversity actions per annum
- Submit at least **one environmental observation per month**

### GRAHAM KEY TARGETS FOR ENVIRONMENTAL SUSTAINABILITY



Figure 2: GRAHAM key Environmental Sustainability Targets

FOCUS AREA	AMBITION	ORGANISATIONAL TARGET
CLIMATE ACTION	To eliminate carbon from our business and to measure and manage our progress towards a decarbonised economy	Net-zero carbon emissions by 2030 (direct emissions) Net-zero carbon emissions by 2040 (Full value chain)
ENVIRONMENTAL MANAGEMENT AND IMPROVEMENT	To manage our business in such a way as to aid improvement in environmental performance in the workplace	Ensure that the GRAHAM Environmental Frequency Rate is maintained at less than 0.02.
CONSERVING RESOURCES	To have a net positive impact on resources and ensure the implementation of the principles of the circular economy by keeping products and materials at their highest utilisation throughout their lifecycle	To: a) Achieve zero avoidable construction waste by 2040 b) Maintain zero construction waste to landfill c) Reduce mains water consumption by 50% by 2030
PROTECTING THE ENVIRONMENT	To proactively manage ecological issues and contribute towards the protection and enhancement of natural assets in order to support wellbeing and help climate proof our communities	Increase the number of biodiversity actions by 50% (against a 2019/20 normalised baseline) by 2030

## 1.9. Environmental Roles and Responsibilities

- An organisational chart is shown within the Construction Phase Plan.
- The table below details the environmental duties and responsibilities for positions identified in the organisation chart.
- The environmental qualifications for positions identified are detailed within the relevant CV's included within the Construction Phase Plan.

Name	Responsibilities
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Assign specific environmental duties to competent members of the Project Team</li> <li>• Identify the environmental training needs of personnel under their control and arrange appropriate training programmes and ensure records are being maintained</li> <li>• Ensure that significant environmental aspects identified for the project are managed</li> <li>• Promote the continual improvement of environmental performance</li> </ul>
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Ensure that the CEMP is produced, maintained and implemented on the project and distributed to all relevant parties</li> <li>• Ensure that all personnel for whom they are responsible are aware of the CEMP and implement the relevant requirements</li> <li>• Identify the competence of all subcontractors and suppliers and ensure that they are made aware of, and comply with, the Project Plans and any documentation requirements</li> <li>• Establish a consultation and communication system with all relevant interested parties associated with the project, including employees, partners, contractors, clients, designers and third parties, etc., where relevant</li> </ul>
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Ensure that all personnel undergo suitable and sufficient environmental induction before starting work on the project</li> <li>• Ensure that staff are attending the appropriate environmental courses that are organised by the Environmental Manager. Ensure the Environmental Manager is maintaining records</li> <li>• Monitor the performance of personnel and activities under their control and ensure that arrangements are in place so that all personnel can work in a manner which minimises risks to themselves and to the environment</li> <li>• Undertake a programme of regular project environmental inspections in accordance with procedures</li> <li>• Implement the environmental performance measurement, review and reporting requirements</li> <li>• Assist and support the Environmental Manager when pollution investigations are required</li> <li>• Co-operate with auditors during environmental audits and action any non-conformances</li> </ul>

Name	Responsibilities
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Ensure all environmental issues within their designated work area are identified and noted in the method statements if applicable</li> <li>• Liaise with Environmental Manager to ensure any environmental issues are dealt with swiftly and correctly</li> <li>• Issue daily task talks when environmental best practice is not utilised</li> <li>• Liaise with Environmental Manager when approaching subcontractors regarding environmental issues</li> <li>• Ensure environmental mitigation drawings are reviewed prior to works commencing</li> <li>• Ensure any environmental incidents are recorded and the associated procedure is followed</li> <li>• Read the CEMP prior to works commencing</li> </ul>
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage does not create unnecessary waste</li> </ul>
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Implementation of the CEMP Procedures</li> <li>• Liaise with the Engineering Manager to ensure all environmental aspects and requirements are included in the design</li> <li>• Draw up the CEMP to ensure all aspects, impacts, statutory requirements and Client commitments are reflected in the plan</li> <li>• Maintain and audit the CEMP and the documents which underpin it</li> <li>• Undertake a programme of regular project environmental inspections, monitoring, recording and reporting in accordance with procedures</li> <li>• Liaise with the Project Manager to ensure that the works are constructed in line with the CEMP</li> <li>• Liaise with the employer's environmental advisors, statutory bodies and the local community as required</li> <li>• Attend regular construction meeting to ensure environmental issues are discussed with the appropriate management</li> <li>• Comply with GRAHAM environmental incident investigation and reporting procedures</li> <li>• Chair Review Meetings involving relevant stakeholders and the Project Team</li> <li>• Support and provide training to the workforce with regard to understanding environmental aspects, impacts, regulatory requirements, best practice, constraints and methods of working</li> </ul>
<p>[REDACTED]</p>	<ul style="list-style-type: none"> <li>• Be fully aware of the project environmental aspects in general and of their specialty in particular</li> <li>• Ensure the works are carried out to agreed working methods and procedures and to the required standard of quality</li> <li>• Train and educate the workforce with regard to best practice, constraints and methods of working</li> <li>• Liaise with Environmental Manager to ensure any environmental issues are dealt with swiftly and correctly</li> </ul>

Name	Responsibilities
[REDACTED]	<ul style="list-style-type: none"> <li>Monitoring site works</li> <li>Provision of status reports and updates</li> <li>Provision of advice to and liaison with workers on site</li> <li>Identify environmental risks and develop environmental controls</li> <li>Delivery of environmental training for site personnel and sub-contractors</li> <li>Liaison with the Site Team</li> </ul>
[REDACTED]	<ul style="list-style-type: none"> <li>Provide evidence during procurement process to demonstrate commitment to the environment</li> <li>Ensure all staff read the CEMP</li> <li>Provide environmental mitigation required during their works</li> <li>Appoint a member of staff responsible for coordinating environmental impacts and aspects</li> <li>Ensure risk assessments address environmental issues associated with their works</li> </ul>

*Note - GRAHAM will notify the Employers Representative of any intended changes in personnel with core environmental responsibilities.*

### 1.10. Competence, Training and Awareness

- The table below details the Environmental Competency and Training Plan for those personnel that will be employed on the Project
- Records of competency requirements and training will be maintained by the GRAHAM SHE Training department using an advanced training software tool which prompts in advance of refresher training requirements.
- A description of the training that will be delivered is outlined below

#### Description of training

Environmental Training	Description	Delivered by
Company SHE Induction	All members of staff receive a company induction which includes an introduction to the key aspects of the Environmental Management Systems within GRAHAM	HR Team
Site Specific SHE Induction	All site operatives are given site specific environmental information through the induction process	Designated member of the site team
Initial Environmental advisory/ communication training	Appropriate members of the site team receive an initial environmental advisory briefing. Key environmental aspects of the project are communicated at this stage	Environmental Team
SHE Briefing	Members of the site team attend an annual briefing which highlights areas of good practice, legislation changes and any new company initiatives	SHE Team
Spill Kit Training	Site teams are given practical training on the legal requirements regarding fuel storage, potential damage caused by such a spill, GRAHAM's spill procedure, measures to prevent spills occurring and practical training in the use of spill kits	Designated member of the site team / Environmental team
Carbon Literacy Training	Provision of training to staff on climate science and carbon in construction. The training outlines the necessity for both individuals and business to take action to reduce GHG emissions.	External body + Designated members of SHE Team

Environmental Training	Description	Delivered by
Environmental Champion Training	Specific member(s) of the site team are assigned the environmental champion role. Training is provided to highlight their roles and responsibilities in managing environmental aspects onsite	Environmental Team
Environmental TBTs / Advice Notes	Environmental tool box talks and advice notes are given on a regular basis to reinforce and further emphasize site environmental issues	Designated member of the site team
CIRIA / NEBOSH Award / SEATS - one day environmental awareness training	Environmental Champions attend a one day externally delivered environmental awareness course. This course provides an introduction to environmental issues and outlines mechanisms to improve site environmental performance.	External body
NEBOSH Certificate in Environmental Management (or equivalent)	Relevant SHE team members attain environmental management qualifications which are professionally certified in order to deliver a high level of environmental expertise	External body
Leading with Environmental Sustainability	Senior Management attend training which challenges leaders to formulate a strategic understanding of the risks and opportunities presented by a changing environment on their ability to do business	External body
Graduate Environmental Management Training Session	Graduates attend classroom based training to provide them with an overview of the GRAHAM Environmental Management System	Environmental Team
Supply Chain Briefing	Key suppliers attend a briefing delivered in order to communicate environmental information relevant to their operations	SHE Team
Fuel Efficient Driver Training	High mileage drivers attend a practical driver training course in order to improve fuel efficiency through driving style	External body

### **Additional E-Learning Training courses**

Environmental Training	Description	Delivered by
Introduction to Biodiversity	This training explains the principles and benefits of Biodiversity, and explains the opportunities of enhancing wildlife in the built environment	SCSS e-learning
The Circular Economy	This training introduces the concept of circular rather than linear economies	SCSS e-learning
Introduction to Environmental Management	This training provides an overview of Environmental Management	SCSS e-learning
Introduction to Sustainable Construction	This training introduces the principles of sustainability, sustainable development and sustainable construction	SCSS e-learning
Introduction to Climate Change and Carbon	This training provides an overview of Climate and Carbon	SCSS e-learning

### **1.11. Internal Communication**

All staff and contractors will be informed of the content and location of this CEMP and associated controls. The induction of all new employees and contractors will include the contents of this plan and the Environmental Incident Response Procedure. Method Statements will be used to communicate specific environmental requirements as appropriate.

The Environmental Manager will have responsibility for communicating any changes in policy, procedure or legislation.

The Site Manager will have responsibility for maintaining internal communication, including changes to material on display.

The GRAHAM Environmental Policy (Section 1.7) and other appropriate environmental information will be displayed on all notice boards.

### **1.12. External Communication and Managing Neighbours**

GRAHAM will organise regular progress meetings with the Employer's Representative at agreed frequencies. The meetings will include an update on risk mitigation, progress against targets and a review of any audit/ assurance monitoring findings.

GRAHAM will maintain a record of discussions held with statutory authorities.

The GRAHAM Site Team will agree with the Employer's Representative how those affected by the works will be consulted, informed and mitigated of the consequences of the work. This is likely to include informing local residents and stakeholders (both verbally and in writing) of activities that may cause an impact or nuisance.

### **1.13. Records and Documents**

- Copies of all licences, consents, permits or permissions granted to GRAHAM (as shown in section 1.14) will be retained on site.
- Upon completion of the contract, final versions of the CEMP, operational controls and all other documents that record the environmental risks, best practice examples, mitigation measures, commitments, incidents and other relevant information for inclusion in the Health and Safety File/ O&M manuals will be provided to the Employers Representative.

## 1.14. Permissions, Consents and Licences

Consents have been sought from the following agencies in relation to the works:

Type of Consent	Governing Body	Consent Required	Responsibility and Timescale For Obtaining	Details of Conditions	Responsibility for Discharging Requirements
<b>Environmental Permit: Discharge to surface water or groundwater</b>	NIEA	Yes	SMT prior to discharging works commencing	See Consent to Discharge in Appendix 1.9	GRAHAM SMT
<b>Schedule 6 Consent</b>	DFI Rivers	Not required	N/A	N/A	N/A
<b>Environmental Permit: For mobile plant (MPP) for treatment of waste and land improvement</b>	NIEA	Not required	N/A	N/A	N/A
<b>Environmental Permit or Waste Exemption: For using, treating, disposing or storing waste</b>	NIEA	Not required	N/A	N/A	N/A
<b>WI Act temporary discharge consent</b>	NI Water	N/A	N/A	N/A	N/A
<b>Planning permission for site compound</b>	LPA (local planning authority)	Not required	N/A	N/A	N/A
<b>European Protected Species Licence e.g. bats/ badgers/ great crested newts</b>	NIEA	Not required	N/A	N/A	N/A
<b>Scheduled Monument Consent</b>	NIEA	Not required	N/A	N/A	N/A
<b>Marine Licence</b>	MMO (Marine Management Organisation)	Yes	Prior to relevant works	TBC	GRAHAM SMT
<b>Consent to work in SSI, SAC, SPA, RAMSAR</b>	NIEA	Yes	DEARA	See HRA in Appendix 1.9	N/A

Type of Consent	Governing Body	Consent Required	Responsibility and Timescale For Obtaining	Details of Conditions	Responsibility for Discharging Requirements
<b>Tree Preservation Order Consent</b>	LPA (Local Planning Authority)	Yes	SMT prior to works commencing	See Appendix 1.8	GRAHAM SMT
<b>Listed Building consent</b>	LPA (Local Planning Authority)	Not required	N/A	N/A	N/A
<b>Section 61 of the Control of Pollution Act (Noise and Vibration from Construction)</b>	LPA (Local Planning Authority)	Not required	N/A	N/A	N/A

*Note: Specific controls as a result of these consents will be implemented by detailing the requirements in the associated Method Statements, together with any specific records to be generated as necessary to show compliance. Regular toolbox talks will be held on these specific controls throughout the execution of the works*

### 1.15. Monitoring of Construction Activities

Environmental performance is monitored through the following activities:

1. Completion of the Weekly Site Supervisors Environmental Report - (IMS Ref: PF10-PR10-43-F016)
2. Inspections carried out by the SHE Team
3. Environmental Audits carried out by the Environmental Manager – (IMS Refs: PF10-PR10-40-F002 Environmental Audit/ PF10-PR10-40-F020 Environmental Advisory Audit Report/ PF10-PR10-44-F013 Waste and Resources Audit Report/ PF10-PR10-43-F034 Nuisance Audit Report/ PF10-PR10-43-F033 Energy Audit Report)
4. Review of Site Waste data, Carbon Impacts, Water Consumption and Biodiversity Actions (on Cora)
5. Noise and vibration monitoring (as necessary) – (IMS Refs:PF10-PR10-43-F026 Noise Monitoring Plan/ PF10-PR10-43-F027 Site Noise Forecasting Calculator/ PF10-PR10-43-F030 Noise Monitoring Report Form)
6. Water Quality Monitoring (as necessary) (IMS Refs: PF10-PR10-43-F028 – Water Quality - Sampling Record/ PF10-PR10-43-F019 Water Quality – Visual Inspection Record)
7. Dust and Air Quality Monitoring (as necessary) (PF10-PR10-43-F021 NRMM Inventory)

*Environmental performance will also be a regular item included on the agenda for Progress meetings*

### 1.16. Auditing of Construction Activities

The methodology for auditing of construction activities includes but is not limited to:

- ❖ A review of documentation including the CEMP, environmental risk assessments, method statements, permits and licences
- ❖ A review of site progress and results toward achieving GRAHAM corporate targets of Net Zero emissions by 2030 and aspirations toward achieving diesel free construction sites
- ❖ A site visit which includes inspection of on-site waste skips, stockpiles, fuel storage arrangements and any nearby watercourses
- ❖ Discussions with the site team
- ❖ A report which includes findings and prioritised recommendations is then drafted by the auditor for actioning by the Site Manager

Details of the nominated personnel to conduct audits, report back and action mechanisms are as follows:

- [REDACTED]
- [REDACTED]
- [REDACTED]

The nominated auditors will ensure any areas of improvement are identified to the Site Manager and will undertake a follow up to ensure that this improvement has taken place. Results of the audits will be made available to the Contracts Manager for information.

### **1.17. Identification of Aspects and Impacts (Project Environmental Risk and Opportunities Register)**

Prior to actual commencement on site, the Environmental Manager in consultation with the Project Manager will complete a site-specific Project Environmental Risk and Opportunities Register in order to identify the relevant environmental aspects and impacts associated with the works. This risk register will outline the controls that must be put in place to manage any significant adverse environmental impacts to acceptable levels. (IMS Ref: PF10-PR10-43-F003)

### **1.18. Environmental Risk Assessment**

As well as including Health, Safety, Welfare and Quality requirements, Work Package Plans shall include environmental risk assessments (IMS Ref: PF10-PR10-01-F003) and give consideration of the following environmental requirements:

- List of significant impacts relevant to the activity
- Identification of receptors/ resources likely to be affected by the works
- On-site monitoring arrangements
- Environmental controls for statutory nuisance aspects – noise/ dust/ fumes/ lighting
- Refuelling, repair and servicing of mobile plant
- Waste management controls
- Selected mitigation methods to minimise impacts
- A list of relevant consents
- Training and briefing requirements

Work Package Plans must be completed and filed for inspection by stakeholders, regulators and other interested parties.

Environmental Risk Assessment is an ongoing process within GRAHAM to ensure that new hazards with changing consequences and likelihoods can be identified.

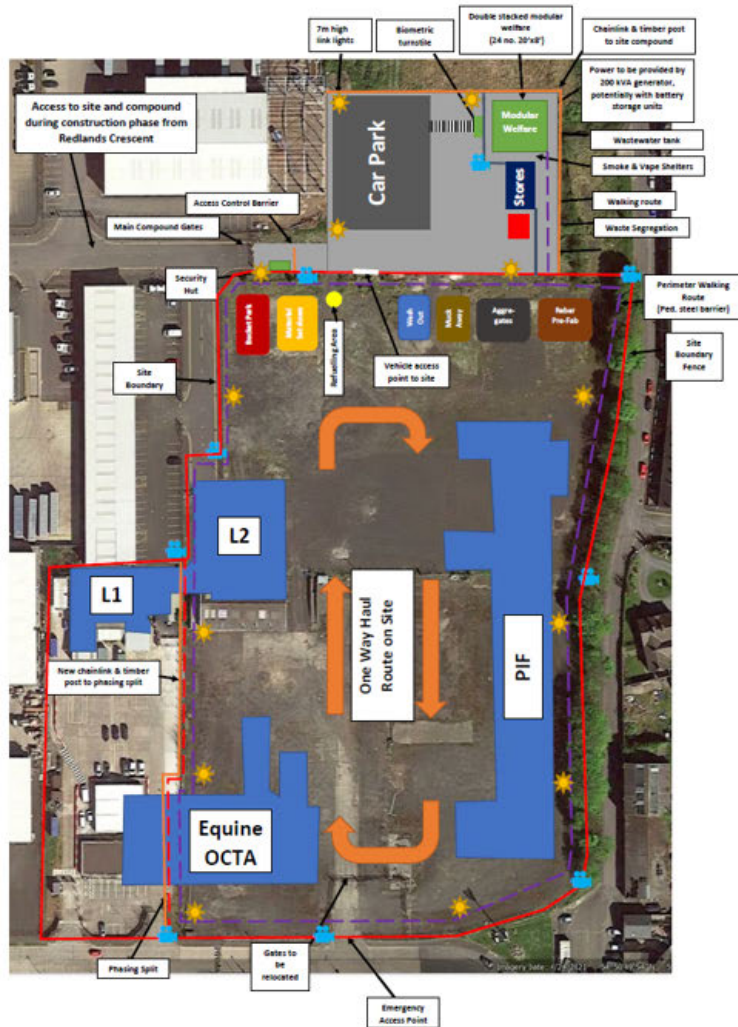
## SECTION 2.0 Site Compound Layout

### Guidance Notes:

Site compound and site layout drawings are included in this section. These drawings include information on:

- ❖ Provision and location of bunded refuelling areas
- ❖ Provision and location of fuel and COSHH storage areas
- ❖ Materials storage area
- ❖ Stockpile locations
- ❖ Tree protection areas
- ❖ Concrete washout provision and location
- ❖ Location of skip segregation area and details of waste segregation strategy
- ❖ Surface water and foul drainage locations
- ❖ Wheel wash measures and location
- ❖ Locations of monitoring for nuisance noise (sensitive receptors)
- ❖ Location, configuration and direction of temporary site lighting
- ❖ Details of enclosure of working areas (hoarding provision)
- ❖ Construction traffic management proposals
  - Parking
  - Delivery routes
  - Plant movements
  - Site access

Larne PoE Proposed Site Layout Rev 1



SITE CONDITIONS			
Restricted site area	N	Insufficient room for turning area	N
Obstacles	Y	Noisy environment	N
Insufficient light	Y	Several openings at ground level	Y
Uneven ground conditions	Y	Several egress points from Building/ Structure	Y
Busy movement at site entrance	Y	Large numbers of people on site	Y
More than one item of mobile plant on site	Y		
RISK ASSESSMENT(based on site conditions)			
The Severity of any incident were mobile plant comes in contact with a person is Fatal or severely disabling.			
Likelihood of incident	Risk status of incident	Tick	
Will occur	High risk of serious injury		
Likely to occur	High risk of serious injury	✓	
Unlikely to occur	Medium risk of serious incident		
CONTROL MEASURES		Tick	
Segregated site entrance for people and plant			
One way traffic route to be used on site		✓	
Physical barriers to separate people/plant throughout site		✓	
Barriers and warning signage to prevent direct egress from building/ structure/ welfare onto plant movement route		✓	
Turning circles to be used			
Barriered reversing zones			
Daily inspection of vision aids, flashing beacons & reversing warning on mobile plant		✓	
Banksman to be used for reversing operations		✓	
Additional lighting		✓	
Erection of information and warning signage		✓	
Fencing around openings in the ground		✓	
Speed limits imposed on site		✓	
Inspection and maintain traffic routes		✓	
Instruct all site operatives to "KEEP CLEAR FROM MOVING PLANT"		✓	
Site	Larne PoE Brexit Readiness		
Completed by	James Scott		
Date Completed	25/07/2023		

## SECTION 3.0 Ecology and Biodiversity Management Plan

### **Guidance Notes:**

This section contains details of ecological considerations (such as nesting seasons, protected species etc.) and steps required to safeguard ecology during construction.

- 3.1 Ecological Issues**
- 3.2 Existing Site Ecological Features**
- 3.3 Species Management Plans**
- 3.4 Habitat Management Plan**

### 3.1 Ecological issues

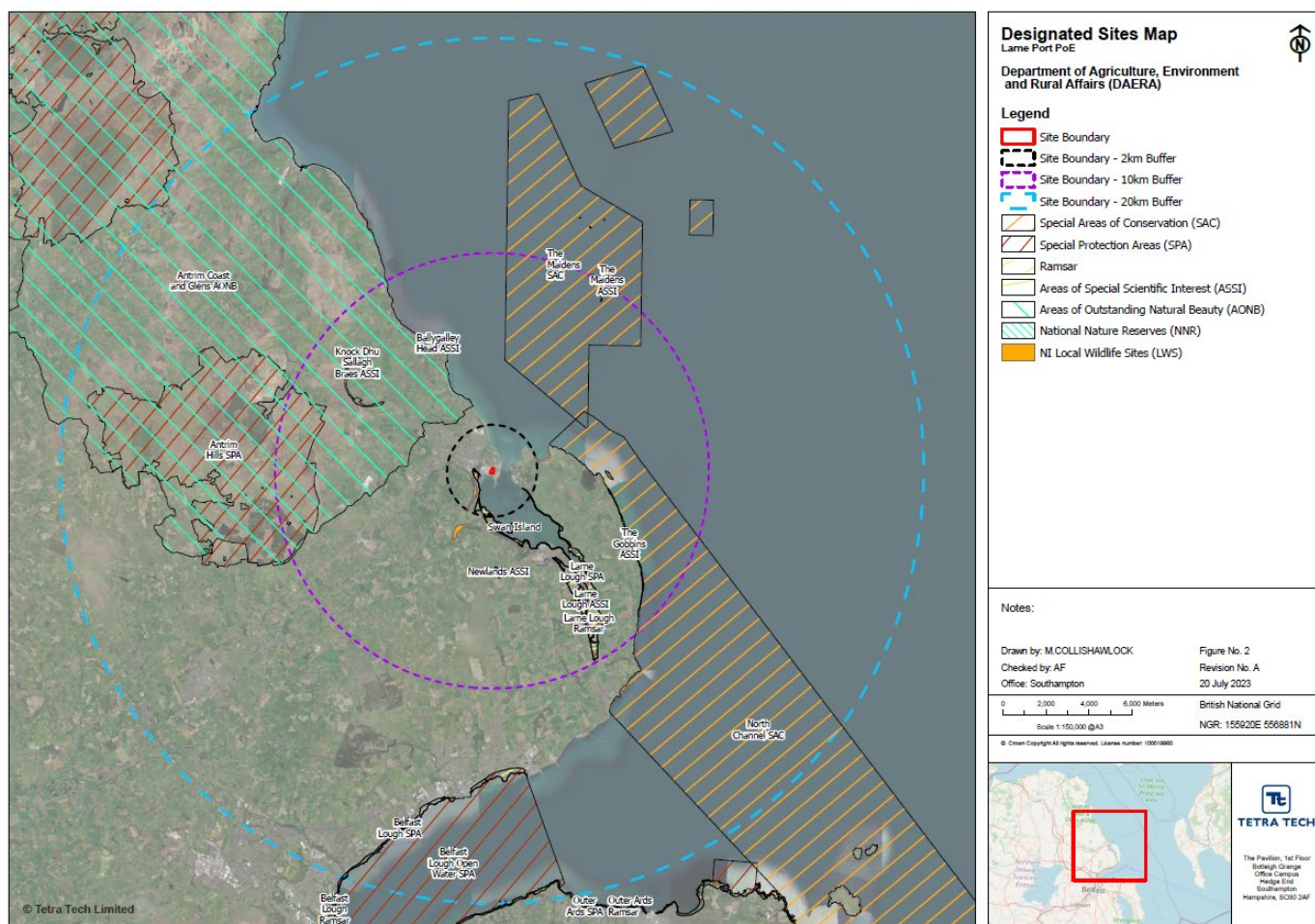
This section prescribes the mitigation measures which are necessary to be implemented in order to prevent or reduce adverse impacts upon ecological receptors. It also considers the legal requirements associated with statutory protected species and sites. Details of our aspirations and methodologies for the achievement of biodiversity net gain are also included.

### 3.2 Existing Site Ecological Features

#### Existing Site Ecological Features, designations and potential impacts

#### Designated sites

European designated sites identified within 20 km and National designated sites within 10 km of the site are shown below. Details of local non-statutory sites within 2 km are also included.



Site Name	Designation	Distance and direction from Site	Reasons for designation
Larne Lough	Special Protection Area (SPA)	0.45 km West Southwest	Designated for supporting internationally important numbers of overwintering light-bellied brent geese Branta.
Larne Lough Ramsar Site	Ramsar	0.45 km West Southwest	Designated for supporting internationally important numbers of overwintering light-bellied brent geese. Also designated for supporting nationally important numbers of breeding roseate tern and common tern.
Larne Lough	Area of Special Scientific Interest (ASSI)	0.45 km West Southwest	Designated for supporting internationally important numbers of overwintering light-bellied brent geese.

Site Name	Designation	Distance and direction from Site	Reasons for designation
Glynn Wood N	ASSI	0.83 km West Southwest	Glynn Woods North ASSI represents the best example of calcicolous scarp woodland in this vicinity and displays high diversity, with a well-developed transitional sequence from wet to dry woodland types.
Glynn Wood N	Local Wildlife Site	0.83 km West Southwest	Glynn Wood North LWS shares much of the same boundaries as Glynn Woods North ASSI and Glynn Woods LWS.
Glynn Woods	Local Wildlife Site	0.83 km West Southwest	Glynn Woods LWS shares much of the same boundaries as Glynn Wood North LWS and Glynn Wood North ASSI.
Brown's Bay	Local Wildlife Site	1.97 km East Northeast	Brown's Bay bathing water is located on Islandmagee peninsula, at the most northerly point of Larne Lough. The bathing beach is approximately 0.6 km in length. It is comprised mainly of sand with large rocks and boulders at each end. There is a small sand dune system to the back of the beach, and this runs the entire length.
Swan Island	National Nature Reserve (NNR)	2.65 km South Southeast	The Swan Island National Nature Reserve (NNR) boundary coincides with the Swan Island Special Protection Area (SPA). The island is formed by stabilising shingle, gravel and stones overlain by a thin layer of soil. Swan Island qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by supporting, in summer, nationally important breeding populations of the Annex 1 species: roseate tern and common tern and small numbers of both sandwich and Arctic terns also breed at this site.
Antrim Coast and Glens	AONB	2.66 km Northwest	Antrim Coast and Glens AONB was designated in 1988 and, along with an interesting geological formation, has a rich cultural, natural and built heritage.
The Maidens	Special Area of Conservation (SAC)	4.19 km Northeast	The Maidens, islands off the eastern coast of Co. Antrim, have been declared as an ASSI because of its breeding colony of European shag, grey and common seal populations and the range of intertidal rock communities.
Newlands	ASSI	4.34 km South	This area is of special scientific interest because of its species-rich dry grassland.
The Gobbins	ASSI	5.34 km East	The Gobbins cliffs are of importance for their geological interest, breeding seabird colony and a range of maritime plant communities and notable species.
Knock Dhu Sallagh Braes	ASSI	5.88 km West Northwest	This acid grassland is dominated by grasses such as matt-grass <i>Nardus stricta</i> and sweet vernal-grass, with herbs such as tormentil and heath bedstraw. The extensive grasslands at Knock Dhu and Sallagh Braes also support a substantial population of the grayling butterfly, which has a limited distribution within Northern Ireland.
Ballygalley Head	ASSI	6.14 km North Northwest	Ballygalley Head has been declared as an ASSI because of its species-rich dry grassland and important grassland fungi. The vegetation at Ballygalley Head is typically grass-dominated, by species such as sheep's-fescue, red fescue, common bent and crested dog's-tail and with abundant sweet vernal-grass, heath grass and silver hair-grass.
Antrim Hills	SPA	8.01 km West Northwest	Designated as an SPA for its breeding populations of hen harrier and merlin.
The Maidens	ASSI	9.19 km North Northeast	The Maidens, islands off the eastern coast of Co. Antrim, have been declared as an ASSI because of its breeding colony of European shag, grey and common seal populations and the range of intertidal rock communities.
Belfast Lough	Ramsar	13.74 km West	Designated as an SPA for its overwintering populations of redshank, breeding populations of common tern and

Site Name	Designation	Distance and direction from Site	Reasons for designation
Belfast Lough	SPA	13.74 km West	arctic tern, and non-breeding populations of bar-tailed godwit and black-tailed godwit. Designated as a Ramsar for regularly supporting internationally important numbers of redshank in winter. The site also supports nationally important numbers of shelduck, oystercatcher, purple sandpiper, dunlin, black-tailed godwit, bar-tailed godwit, curlew and turnstone.
Belfast Lough Open Water	Ramsar	13.96 km West	Designated as an SPA for its overwintering population of great crested grebe.
Outer Ards	Ramsar	19.54 km West Northwest	Designated as an SPA for its breeding population of arctic tern. Also designated for overwintering golden plover, light-bellied brent goose, and turnstone.
Outer Ards	SPA	19.54 km West Northwest	Designated as a Ramsar for its wintering populations of light-bellied brent goose, golden plover, turnstone and ringed plover.

## Protected and Notable Species

### Badger

CEDaR returned one record of badger within 2 km of the site from the past 10 years, recorded in 2017. The original PEA (Tetra Tech, 2020) identified a badger latrine onsite.

No evidence of badger was noted during the 2023 survey, including setts, latrines, footprints or signs of foraging, and the site does not offer suitable habitat for sett creation.

### Otter

CEDaR did not return any records of otter within 2 km of the site from the past 10 years.

No signs of otter were noted on-site during the survey, such as holts, couches, spraints, footprints or feeding remains. Although there may be suitable habitat for holt creation along the shores of Larne Lough approximately 95 m south of the site, the habitat on-site is considered suboptimal as it is predominantly hardstanding. Additionally, the site's location within an active harbour and industrial estate also creates barriers to movement for otter, along with high levels of disturbance.

### Bats

NIBG returned two bat records within 2 km of the site from the past 30 years (records are not localised and therefore locations are approximate). The most recent record was of an unidentified bat species in 2008, in an area of woodland approximately 1.9 km to the north-west. A Leisler's roost containing 50 bats was also recorded at a house in 2007, approximately 1.8 km to the north-west.

The sycamore trees (part of the broadleaved woodland) which border part of the east boundary were all considered to have low bat roost suitability as they were semimature in stature with no potential roost features noted, although these could have been obscured by dense common ivy growth.

None of the five buildings on-site (B1, B2, B3, B4 and B5) during the survey were considered suitable for roosting bats, as they did not contain features such as lifted roof tiles, gaps in brick and stonework, partially collapsed roofs or rotting wooden soffits and fascias, which may provide access points or potential roost features. As they were also predominantly single-storey buildings of concrete block or metal construction, they did not contain loft space or other features that could potentially provide a thermostatically stable temperature for hibernating/roosting bats.

Habitat suitability for bats was considered to be low, as the broadleaved woodland strip which bounded the east of the site would likely be suitable for foraging and commuting.

## Birds

CEDaR returned 44 bird records within 2 km of the site from the past 10 years, most of which were waterbirds (likely due to the close proximity of Larne Lough approximately 95 m to the south and 300 m to the east). Species of note, either due to the number of records or their current conservation status, included pale-bellied brent goose, Mediterranean gull, whooper swan, kingfisher, Slavonian grebe, bar-tailed godwit, dunlin, black-tailed godwit, roseate tern, Greenland white-fronted goose, kestrel and twite.

Bird species noted during the survey included black-headed gull and herring gull. The broadleaved woodland strip along the east boundary and the buildings on-site were considered suitable for nesting birds, although no nests were observed during the survey. The site may also provide functionally linked land for qualifying bird species of Larne Lough SPA/Ramsar, particularly for roosting, and the semi-improved grassland may provide some areas for ground-nesting species.

## Marine Mammals

CEDaR returned two records of bottlenose dolphin within 2 km of the site within the past 10 years, the most recent in 2019, and one record of greyseal in 2014.

No marine mammals were observed during the survey, and a dedicated marine mammal survey was not undertaken as part of the scope of this assessment. Larne Lough SPA and Ramsar are likely to offer suitable foraging and hauling-out sites for seals present in the wider Lough and surrounding area. If seal populations are present nearby, it is likely that increased human disturbance, noise, visual, vibration and construction and operational traffic may cause stress to these species and ultimately cause them to avoid these locations. This could thereby lead to a reduction in the availability of suitable habitat for these species.

No signs of Hedgehog, Lizard or Invertebrates were noted during the survey.

### 3.3 Species Management Plans

## BATS

### LEGISLATION

Bats and their roosts are protected under the Wildlife (NI) Order 1985 (as amended) and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended).. Taken together, this legislation makes it an offence to:

- Deliberately capture, injure or kill a bat
- Deliberately disturb a bat in such a way as to be likely:
  - To impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
  - To impair its ability to hibernate or migrate; or
  - To affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of a bat
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead bat or any part of, or anything derived from a bat.

In addition, bats are also a priority species in Northern Ireland. Consultation with the relevant authority is therefore required before any work is undertaken that might affect bats.

### MITIGATION

#### General

- It will be ensured that prior to commencement of construction, a site bat survey has been undertaken in order to determine the presence of bats
- Demolition of buildings, built structures and trees with bat roost potential will only proceed once a suitably qualified bat specialist has confirmed that bats are not resident in such buildings
- All site operatives will be made aware of the possibility of finding bats during demolition of buildings, during works at built structures and during tree felling. If bats are found in properties or trees, operatives will stop work immediately and contact the Site Management Team

### ENHANCEMENT

The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Provision of additional bat boxes and artificial roosts
- Planting of trees and hedgerows in order to create corridors for bats to safely forage and travel

# BADGERS

## LEGISLATION

Badgers and their setts are protected under the Wildlife (NI) Order 1985 (as amended), this legislation makes it an offence to:

- Intentionally or recklessly, capture, injure or kill a badger
- Intentionally or recklessly, damage or destroy, obstruct access to, any structure or place (normally a sett) that badgers use for shelter or protection
- Intentionally or recklessly, damage or destroy anything which conceals or protects any structure
- Intentionally or recklessly, disturb a badger while it is occupying a structure or place which it uses for shelter or protection

## MITIGATION

### General

- A pre-commencement check of the site and 50 m buffer is recommended. This must be undertaken no more than 2 months prior to works commencing, to allow sufficient time for monitoring to be carried out, if required.
- During the course of the works if the presence of badgers is suspected, then appropriate surveys will be undertaken.
- Construction work and associated activities will be carried out at agreed minimum distances from sensitive habitats. If works are necessary in this area further consultation will be carried out and the need for a licence assessed.
- An ecological toolbox talk pack will be delivered to the site team containing information on individual species, including badgers. The TBT will include photographs of them, their habitat and any evidence that would indicate their presence.
- Deep excavations will be covered overnight during works.
- Shallow excavations will have a scaffold board or similar placed in them overnight to allow any badgers to escape should they fall in.
- Excavations will be checked each morning for trapped animals.
- All lighting will be task orientated and be kept to the minimum amount required for security/health and safety. Lights will be switched off when not in use, where practicable and safe to do so. Light spill will be minimised using adjustable column heights and/or cowls/hoods.

## ENHANCEMENT

The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Provision of artificial badger setts

# OTTER

## LEGISLATION

Otter are protected under the Wildlife (NI) Order 1985 (as amended) and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). Taken together, this legislation makes it an offence to:

- Deliberately capture, injure or kill an otter
- Deliberately disturb an otter in such a way as to be likely:
  - To impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
  - To impair its ability to hibernate or migrate; or
  - To affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of an otter
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead otter, or any part of, or anything derived from an otter

In addition, Otters are also a priority species in Northern Ireland. Consultation with the relevant authority is therefore required before any work is undertaken that might affect Otters.

## MITIGATION

### General

- It will be ensured that prior to commencement of construction, an Otter survey has been undertaken in order to determine the presence of otter. The survey will determine whether otters have established hots (active or inactive) on or near the site, if they are used for breeding and/or if otters forage within the development area.
- Works will only proceed where it can be demonstrated that Otters will be protected during the construction process and that disturbance will be kept to an acceptable minimum
- All site operatives will be made aware of the possibility of Otter presence on and around the construction site. If an Otter holt or couch is found, operatives will stop work immediately and contact the Site Management Team
- 

## ENHANCEMENT

The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Restoring or improving suitable habitat for otter (creation of waterbodies and reedbeds; planting of trees along river banks)
- Provision of artificial holts
- Provision of ledges on bridges, culverts etc to enable safe otter passag

# BIRDS

## LEGISLATION

Wild Birds, their nests and eggs are protected under the Wildlife (Northern Ireland) Order 1985 (as amended) such that it is an offence to:

- Deliberately capture, injure or kill any wild bird
- Take damage or destroy the nest of any wild bird while that nest is in use or being built
- Obstruct or prevent any wild bird from using its nest
- Take or destroy an egg or any wild bird

## MITIGATION

Any necessary clearance of trees, scrub and tall herbaceous vegetation will occur outside the bird-breeding/nesting season (i.e. vegetation clearance works to be carried out between September and the following February. For reference, the breeding bird season is generally taken as the 1st March until 31<sup>st</sup> August inclusive. If this is not possible, an Ecological Clerk of Works (ECoW) will conduct a check for nesting birds across the site 48 hours in advance of any clearance or demolition works commencing. If a nesting bird is identified, the ECoW will advise on suitable working methods and an appropriate buffer zone.

However, it is also noted that birds can nest at any time of the year and are therefore protected when they do.

## ENHANCEMENT

The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Provision of additional bird boxes
- Creation of new habitat for birds via tree planting to ensure suitable connectivity for breeding and wintering birds

# FISH

## LEGISLATION

It is an offence to knowingly permit the flow of poisonous matter and polluting effluents into river courses. In addition, the Salmon and Freshwater Fisheries Act 1975 (and 2003) protects fish against water pollution, alteration of stream channels and capture, translocation and release.

## MITIGATION

- Works which will directly affect or are in close proximity to a watercourse will be subject to a Method Statement which will specify measures to protect fish
- Pollution prevention measures will be implemented when working on or in close vicinity to water environments.
- Best Practicable Means (BPM) will be adopted to ensure that noise emissions and vibration is reduced whenever practicable.
- All lighting will be task orientated and be kept to the minimum amount required for security/health and safety
- Lights will be switched off when not in use, where practicable and safe to do so.
- Light spill will be minimised using adjustable column heights and/or cowls/hoods.

## ENHANCEMENT

The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Restoring or improving suitable habitat for fish

# MARINE MAMMALS

## LEGISLATION

Marine mammals are protected under the Wildlife (NI) Order 1985 (as amended) and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). Taken together, this legislation protects marine species from intentional or deliberate disturbance, taking, harm and killing, and in some cases possession or sale.

In addition, many Marine Mammals are also a priority species Northern Ireland. Consultation with the relevant authority is therefore required before any work is undertaken that might affect marine mammals.

## MITIGATION

- As per section 5 of this CEMP no waste concrete slurry or wash water from concrete or cement works will be discharged into the marine environment
- Plant, vehicles and machinery will not be refuelled on the foreshore.
- As per section 5 of this CEMP bunding and storage facilities will be installed to contain and prevent the release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment.

## ENHANCEMENT

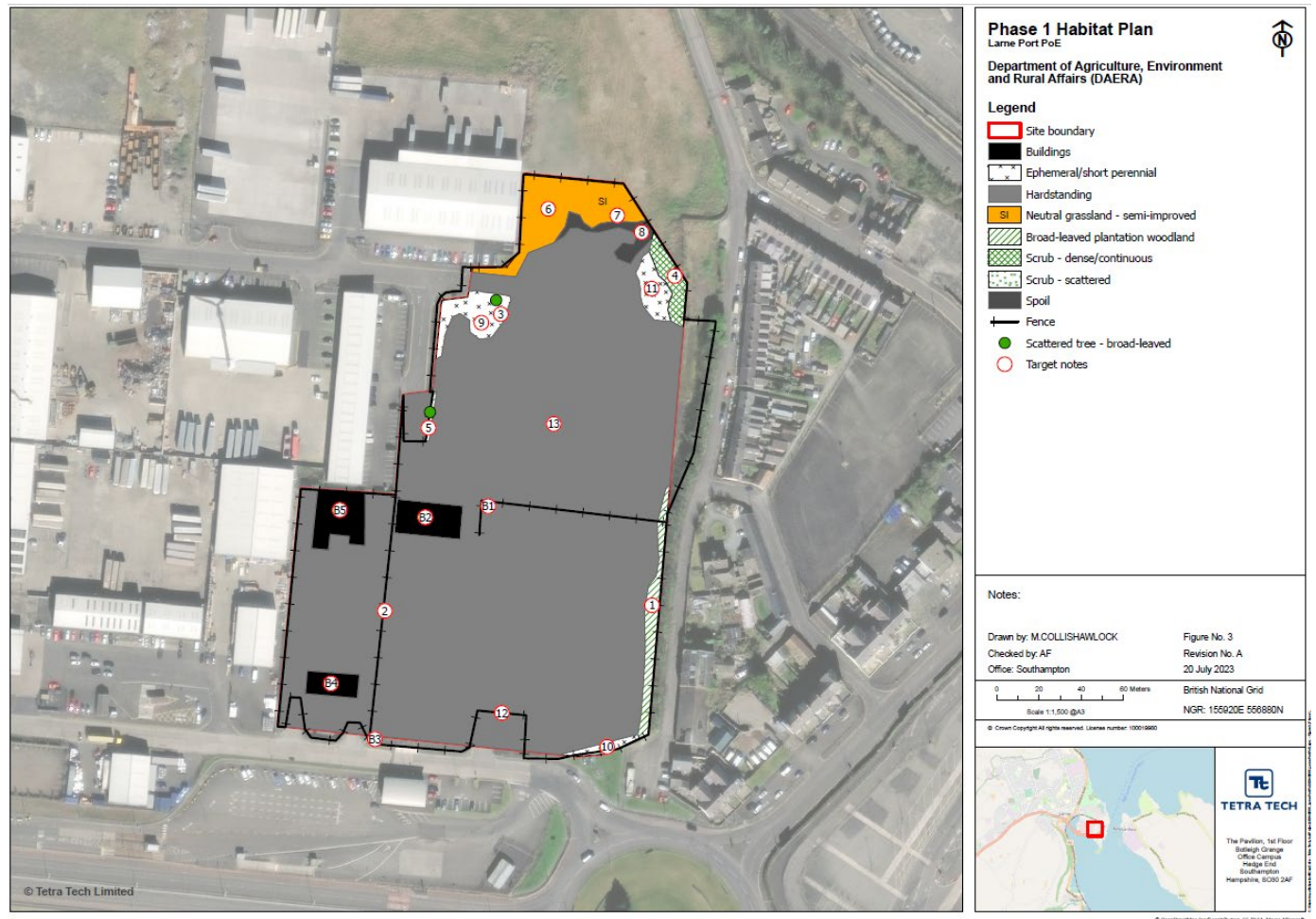
The following provisions, although not exhaustive will be considered for implementation (either on or off site) where practicable:

- Restoring or improving suitable habitat for marine mammals

### 3.4 Habitat Management Plan

## HABITAT MANAGEMENT PLAN

### EXISTING FEATURES



Habitat	Result	Importance assessment
Broadleaved plantation woodland	A line of semi-mature trees dominated by sycamore bordered the east boundary (TN1), with rare ash and an understorey of frequent wild privet and rare common ivy.	Local
Broadleaved scattered trees	Immature trees were scattered along the west (TN2) and north (TN3) boundaries of the site, consisting of willow. and sycamore.	Local
Dense/continuous scrub	Gorse and common whitebeam scrub was present along the north-east boundary (TN4).	Local
Scattered scrub	Patches of elder and willow scrub were scattered along the west of the site (TN5), with ground flora consisting of abundant red valerian and rare butterfly bush	Local
Semi-improved neutral grassland	A strip of grassland (TN6) dominated by red fescue, false oat-grass and red valerian, with occasional fleabane bordered the north boundary of the site. Small patches of scrub and introduced shrub were interspersed throughout, dominated by bramble. and butterfly-bush. Species composition varied along the edge of the grassland (TN7). Abundant species included cleavers, hogweed, meadow foxtail, nipplewort and spear thistle, with frequent field horsetail and occasional common nettle. Sycamore saplings were also abundant in this area.	Local
Spoil	A pile of debris consisting of gravel and stones was present along the north boundary of the site (TN8).	Negligible

Ephemeral/short perennial	Short perennial vegetation interspersed with tall ruderal and scrub species had encroached the west boundary (TN9). Abundant species included common ragwort, meadow foxtail, nipplewort, rosebay willowherb, shining cranesbill and silverweed interspersed with bramble, as well as rare marsh thistle and common whitebeam saplings. Hardstanding in the centre of the site had become overgrown with similar species, as well as great mullein. Red valerian dominated the north-west of the site, with other species encroaching onto hardstanding along the boundary, bordered the south of the site (TN10). Abundant species included hop trefoil, nipplewort, red valerian, common ragwort, rosebay willowherb and spear thistle, along with bramble and common ivy. Rare occurrences of common poppy were also present along the west boundary.	Negligible
Introduced shrub	Butterfly-bush was scattered throughout the site but most abundant along the east boundary (TN11), along with field bindweed. Rare occurrences of native species were also present in this area, including sycamore saplings and cow parsley.	Negligible
Fence	Metal palisade and chain-link fencing bounded the entire site (TN12).	Negligible
Buildings	Five buildings existed on-site (B1-B5). B1 was a concrete block, single-storey building with pitched roof consisting of corrugated asbestos. B2 was a single-storey building constructed from concrete block and brick with corrugated steel cladding and metal shutter doors and a corrugated asbestos pitched roof. B3 was a small, single-storey building constructed from brick with concrete roof and wooden doors. B4 and B5 were located within the inaccessible section of the site. B4 (DAERA security building) was single-storey, constructed from corrugated metal with a flat roof. B5 was a single-storey warehouse of similar construction to B2, consisting of concrete block and corrugated asbestos roofing.	Negligible
Hardstanding	The majority of the site consisted of hardstanding (TN13) which had become encroached by ephemeral/short perennial and tall ruderal vegetation.	Negligible

## POTENTIAL IMPACTS

### Land

- Loss or damage to local habitats.
- Damage or destruction of unrecoverable habitats/landscapes.
- Reduction/loss of both flora and fauna species.
- Impacts on the natural ecology of local species such as bird nesting grounds, badger setts/wildlife corridors.

### Water

- Changes in water chemistry /biochemistry and water flow
- Introduction of silt into water body
- Reduction in water oxygen levels
- Damage, destruction or accelerated erosion of riverbanks contributing to a change in flow, routes and alteration of the riverbed impacting both flora and fauna species

## MITIGATION

### Land

- On completion of construction works any areas that were unavoidably impacted will where practicable be replaced and or improved.
- Planting works will be undertaken on completion of works to ensure native species are replaced. Wildlife-friendly planting will be incorporated into fencing as vegetative screening or green walls (with climbing plants and creepers), as well as planters with a range of native plant species to provide ecological value and enhance the site.

- Care will be taken to minimise the impact to existing vegetation and heavy plant will be confined to the site and working areas to avoid damaging soils outside the area. The removal of trees will be avoided where possible.
- A stout fence will be erected around any trees to be retained. As most damage usually occurs to the roots, the fence will enclose at least the area covered by the spread of the branches.

### **Water**

- At all times we will implement pollution prevention measures when working on or in close vicinity to water environments.
- Temporary diversion channels will be implemented where dewatering activities are required. We will endeavour to duplicate the size and flow conditions of the original channel. The removal of fish from areas requiring dewatering will be undertaken where necessary.
- Where realignment works are required these will be designed and executed to ensure minimal sedimentation and erosion.
- If culverts are required these will be kept to a minimum and will be constructed to ensure minimal disturbance to existing environment.

## SECTION 4.0 Land Management Plan

### Guidance Notes:

This section contains details of the steps required to safeguard the site from negative impacts in respect of Geology/ Ground Conditions/ contaminated land

- 4.1 Geology and Contaminated Land Issues**
- 4.2 Site Geology and Ground Conditions**
- 4.3 Potential sources of contamination not previously identified**
- 4.4 Potential Pathways**
- 4.5 Potential Receptors**
- 4.6 Mitigation Measures**
- 4.7 Discovery of Contaminated Land Emergency Procedure**

## 4.1 Geology and Contaminated Land Issues

Ground contamination may be present on-site as a result of the current and historical land use(s) that have occurred. In order for ground contamination to present a risk to human health or the environment there must be pollution pathway present comprising a source, pathway and receptor.

The CLR-11 document defines the three essential elements to any risk as:

- A contaminant (or hazard) that is in, on or under the land and has the potential to cause harm
- A receptor which in general terms is something that could be adversely affected by a contaminant or hazard, for example human health
- A pathway which is a means by which a receptor can be exposed to, or affected by a contaminant or hazard

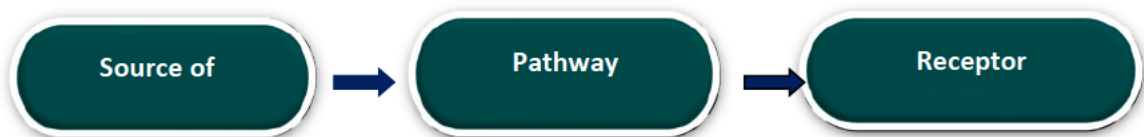


Figure 3: Pollution Pathway

## 4.2 Site Geology and Ground Conditions

### **SITE GEOLOGY**

Published geological mapping indicate the superficial deposits underlying the site comprise raised beach deposits superimposed on glacial till. These deposits are underlain by mudstone of the Mercia Mudstone Formation.

Ground types in stratigraphic order encountered during site investigations are Paved Surface, Made ground (fill), Raised beach deposits, Glacial till and bedrock (Mudstone)

### **HYDROGEOLOGY**

According to the British Geological Society Geindex site, the site has a bedrock aquifer classification of Bp(f). The bedrock is classed as of poor potential productivity through fracture flow. Small supplies may be possible, but strata are rarely exploited. Negligible regional flow and limited local flows are likely.

Superficial aquifers may be present in the east of the site, close to the eastern boundary associated with the raised beach deposits

### **GROUND WATER**

Ground water has been encountered at depths of between 1.20 – 4.85m. It is however noted that season fluctuations will affect these levels.

### **CONTAMINATION**

Following site investigation and analysis of soil samples it was concluded that concentrations of analysed contaminants including heavy metals, organic compounds (TPH, PAH, BTEX), asbestos in soils and inorganic parameters did not exceed the relevant generic assessment criteria (GAC3) and are therefore not considered to present a significant risk to the health of future site users on the basis of the assumed end use.

Groundwater sampled is not considered to be of a significantly reduced quality and is not considered to present a significant risk to controlled waters. The contaminants in groundwater are not considered to present a risk to health following comparison with appropriate GAC4

The site's ground gas regime was classified as CS2 (characteristic situation 2, 'low risk'). The risk associated with the worst-case scenario Characteristic Situation 2 can be mitigated by the installation of appropriate ground gas protection measures within future development.

A Piling Risk Assessment was completed by WYG in October 2020 (reference A112794-68) to assess the risk from potential piling techniques potentially to be adopted as part of the site development. The report concluded that as the ground conditions beneath the site contain no significant contamination, and therefore deemed low risk. It is unlikely that any of the recommended piling methods would introduce reduced quality made ground to further depths.

### **4.3 Potential sources of contamination not previously identified**

Primary Sources of contaminants include tanks, site processes/operations (including combustion processes), site spillages/leaks, waste storage areas, and drainage lines.

Secondary Sources of contaminants result from the release of substances or deposition of materials from the Primary Sources, including atmospheric deposition and waste disposal.

Made ground/fill deposits and soils containing naturally occurring substances are also considered as a potential source of contaminants.

Site activities have the potential to mobilise any contaminants that exist in the ground by creating pathways or simply by providing environmental conditions that assist their development to a more toxic form.

Contaminants of concern may include a range of organic and/or inorganic substances namely heavy metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, volatile and semi-volatile organic compounds, polychlorinated biphenyls (PCB's), asbestos and other harmful or toxic materials not mentioned above.

### **4.4 Potential Pathways**

- Soils leaching to groundwater
- Groundwater advection
- Surface water run-off
- Migration via services and service ducts
- Migration through strata of a permeable nature
- Dermal, inhalation or ingestion
- Increased dusting levels as a result of weather conditions or construction activities

### **4.5 Potential Receptors**

- Ecological Receptors namely; flora, fauna and the water ecosystem
- Groundwater including Minor and Major Aquifers underlying the site
- Surface Waters (controlled water)
- Buildings, building materials and services (BBMS)
- Human receptors including demolition and construction workers.

### **4.6 Mitigation Measures**

- Works will be completed in line with planning and site investigation mitigation measures
- Measures for storage of chemicals, fuels and hazardous materials will be implemented on site (as per section 5 of this CEMP)
- A watching brief will be provided to identify and segregate potential contaminated soil

- Where any unexpected contamination is discovered, we will liaise with the local authority and experienced consultants and agree a remediation strategy for dealing with contamination

#### **4.7 Discovery of Contaminated Land Emergency Procedure**

All site personnel will be vigilant during excavating for signs of unexpected contamination. Where contamination is suspected during the works the following action will be taken:

- All work must be stopped immediately.
- The Site Manager must notify the discovery to the Environmental Manager
- The area must be sealed off in order to contain the spread of contaminants.
- The site must be cleared to ensure there is nothing that could cause fire or explosion.
- The Site team must seek expert advice to identify, if appropriate and possible, the extent and cause of contamination (e.g. prior land use, spillage on site).
- If asbestos is uncovered, it should be re-covered temporarily to prevent release to atmosphere.
- A specialist contaminated land survey should be undertaken in order to determine the level of contamination and whether disposal or remediation methods are required.
- The Site Manager must complete an Environmental Incident Report on CORA.
- Good practice must be followed to remediate the land.

## SECTION 5.0 Water Management Plan

### Guidance Notes:

This section contains details of the steps required in order to ensure best practice with regard to the protection of water quality and water efficiency

- 5.1 Water Management Issues**
- 5.2 Existing Site Conditions**
- 5.3 General Water Management Controls**
- 5.4 Control Measures for Hazardous Substances**
- 5.5 Control Measures for Plant and Equipment**
- 5.6 Control Measures for Concrete, Cement and Grout**
- 5.7 Control Measures for Oil Storage**
- 5.8 Control Measures for Refuelling**
- 5.9 Appointed Persons for Refuelling**
- 5.10 Control Measures for Discharging Water**
- 5.11 Control Measures for Abstracting Water from Excavations**
- 5.12 Control Measures for Drainage**
- 5.13 Control Measures for Flood Protection**
- 5.14 Water Efficiency**

## 5.1. Water Management Issues

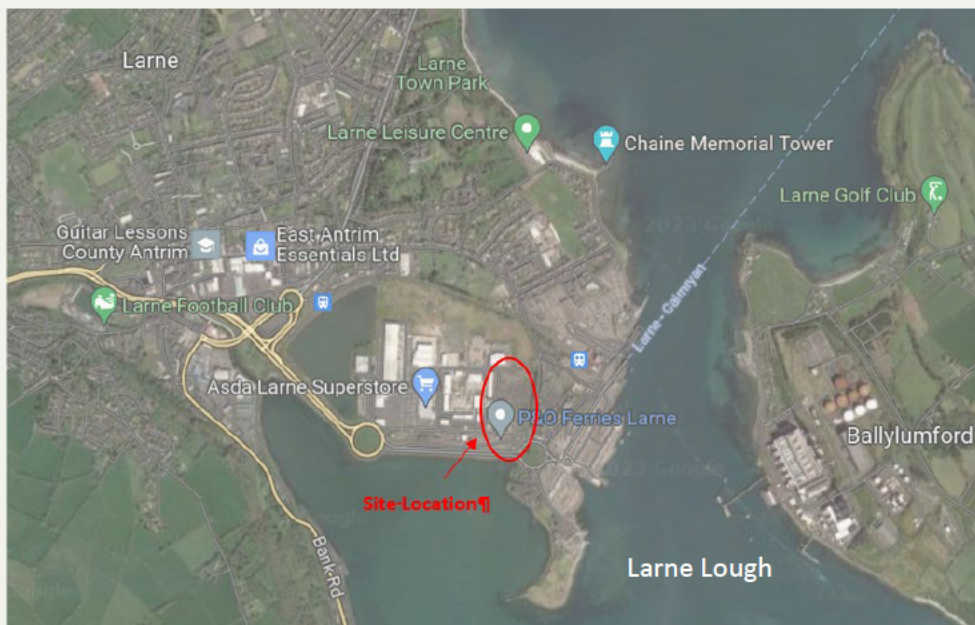
The construction industry presents a major pollution threat to the water environment. Where harm has occurred or deemed likely to occur the regulator can either carry out works to clean up the pollution and recover costs from the Contractor, or can serve a works notice requiring the polluter to clean up the discharge at their own expense. If watercourses are polluted, or unacceptable wastes are disposed of to the sewer system, the regulatory authorities have the powers to prosecute.

GRAHAM will at all times implement working methods to protect the water environment from pollution and other adverse impacts. Our objective is to protect water quality and the ecosystems the water resources support.

## 5.2. Existing Site Conditions

### Water Bodies

The nearest observable surface waterbody is Larne Lough North situated approximately 110m to the south of the site at its closest point and c.280m to the east.



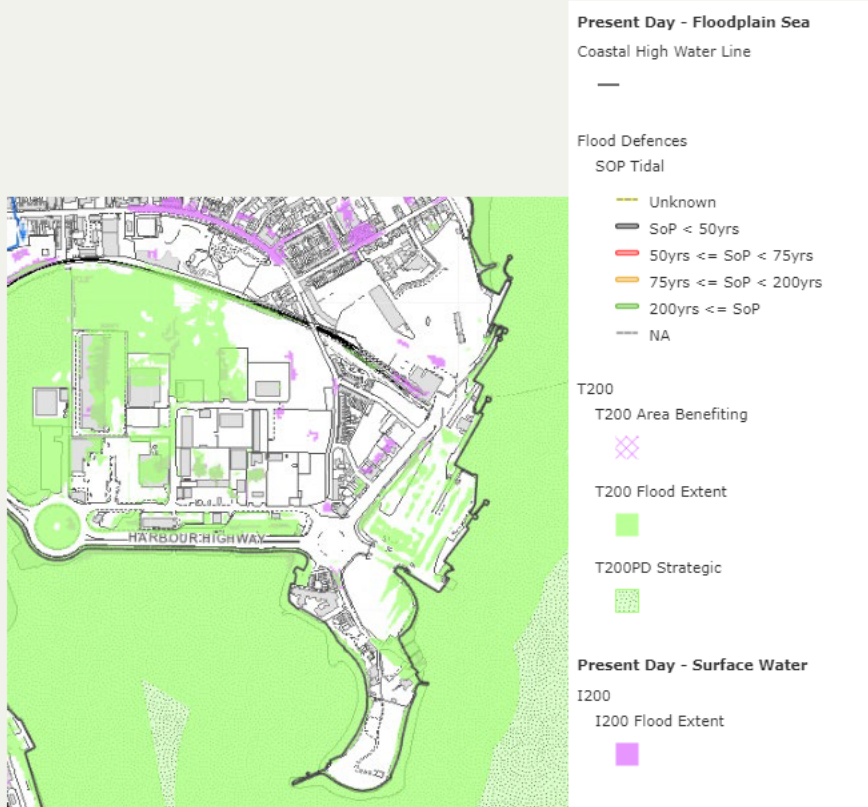
### Surface Water Drainage

Surface water currently drains to the existing sewer network.

### Flooding

Consultation with Flood Maps NI's: Flood Hazard and Risk Map NI, shows no river water (fluvial) or sea (tidal) flooding to be present at the site. Present day surface water flooding extent mapping shows small minor areas to be present in the west (DAERA site) and close to the northern boundary of the site with a flood risk of 3.33% AEP (1 in 30 chance or greater in any given year) with no damage value recorded.

No historical flooding events have been recorded at the site or in the vicinity of the site.



### 5.3. General Water Management Controls

All work will be carried out in line with relevant Pollution Prevention Guidelines [Guidance for Pollution Prevention \(GPP\) documents | NetRegs | Environmental guidance for your business in Northern Ireland & Scotland](#)

Specifically GPP5 "Works and Maintenance in or near water" and GPP6 "Working at construction and Demolition Sites" are relevant in order to ensure best practice with regard to the protection of water quality.

The handling, use and storage of hazardous materials will be undertaken in line with Guidance for Pollution Prevention (e.g., GPP2 Above Ground Oil Storage Tanks).

Task specific Risk Assessment and Method Statements (RAMS) will detail all environmental risk and mitigations associated with relevant work activities

#### 5.4. Control Measures for Hazardous Substances

Hazardous substances are common pollutants of waterbodies and groundwater supplies which can be used for drinking water. The following control measures will be put in place on site in order to avoid the potential for contaminants from hazardous substances migrating to surface and groundwater.

All containers for hazardous substances (solid and liquid) will be leak-proof. Storage of such substances will be within impermeable, bunded, secure areas, with impervious walls and floor to remove the risk of migration to groundwater or a nearby watercourse. Such storage areas will be located away from sensitive areas of the site and will be covered to prevent ingress of water. Hazardous substance stores will be clearly marked with appropriate warning signs.

Storage areas for hazardous substances will be kept tidy and we will plan deliveries to keep the amount of hazardous materials on site to a minimum

We will ensure that any water that has come into contact with hazardous materials, or is believed to be contaminated, will be stored, tested, classified and appropriately disposed of in accordance with relevant legislation.

The quantity and type of all environmentally hazardous materials will be recorded and updated weekly on the Materials Storage Inventory Form (IMS Ref: PF10-PR10-43-F006)



Figure 4: Examples of bunded and covered COSHH areas and containers

## 5.5. Control Measures for Plant and Equipment

Daily plant checks will be completed for all mobile plant and equipment. Particular attention will be made to checking engine fluids and hydraulic hoses. Any leaks or damage to the plant will be recorded and notified to the plant department/ hire company immediately so that the appropriate servicing can be arranged. Any items of plant/ equipment found to have any leaks will be removed from service until the fault is rectified.

Mobile Work Equipment - Pre-Use and Daily Inspection Checklist						
PF10-PR10-38-F001						
PROJECT & CODE:			WEEK COMMENCING:			
MACHINE OPERATORS NAME:			VEHICLE TYPE & FLEET NUMBER:			
Hours Run / Mileage End Week				<b>ALL FAULTS AND DEFECTS MUST BE REPORTED IMMEDIATELY TO YOUR SUPERVISOR DO NOT USE IF UNSAFE</b>		
Hours Run / Mileage Start Week						
Total Hours Run For Week						
<small>All checks should be conducted in accordance with the manufacturer's manual ✓ If in order ✗ If requires attention NA - If not applicable</small>						
SAFETY CHECKS	1. Horn	/Working				
	2. Tracks/ wheels and nuts	Free from splits, cracks, nails				
	3. Running gear (where applicable)	Working				
	4. Steps and handholds	Free from defects				
	5. Lights/ Rear/ stop/ start indicators	Working				
	6. Winders	Clean and free from cracks				
	7. Moving aids (mirrors, cameras, radio)	Operating - clean & free from cracks				
	8. Reversing alarm	Working				
	9. Flashing beacon(s)	Working				
	10. Brakes - foot	Working				
	11. Brakes - hand brake parking	Working				
	12. Emergency stop (if applicable)	Working				
	13. Cab/rear	Free and secure free from objects				
	14. Roll over protection/ securing pins	Working/ free from defects				
	15. Seat belts	Working - clean, free from cuts				
	16. Seat weight adjustment	Adjustable/ good condition				
	17. Guard	Suitable for carrying loads during lift				
18. Star indicators	Working					
19. Passive warning systems	Working					
20. Safe load indicator/ anemometer	Working					
21. Water levels	Within limits					
22. Engine oil levels	Within limits					
23. Fuel level	Adequate					
24. Radiator level	Within limits					
25. Hydraulic oil levels	Within limits					
26. Hydraulic hoses	Free from cracks/ splits/ leaks					
27. Windscreen water bottles levels	Within limits					
28. Instrument gauges/ operation controls	Working					
29. Transmission	Working					
30. Steering	Free from loose movement					
31. Brakes	Air pressure/ level within limits					
32. Greasing	(see per operators handbook)					
33. Wire rope and chain systems	Free from defects					
34. Check valves	Free from defects					
35. Stick flexibility/ attachments	Working					
36. Boom	Free from obvious defects					
37. CUMMINS' parts	Free from obvious defects					
Operator completing the inspection must initial here at end of each day						
Defect details		Date/ time contacted		Date defect(s) fixed		
Defect details		Date/ time contacted		Date defect(s) fixed		
Machine Operators Sign:			Only persons who are trained and authorised by their employer should operate this equipment.			
Site Managers Sign: (at end of week)						

Figure 5 - GRAHAM Mobile Plant Daily Inspection Sheet



Figure 6 - Example of GRAHAM Enviropad in use

- Enviropads will be used under diesel pumps and standing plant.
- Effluent from wheels washers and plant washing facilities will be contained for proper treatment and disposal.

## 5.6. Control Measures for Concrete, Cement and Grout

Concrete, cement and grouts are highly alkaline and corrosive and can have a detrimental impact on watercourses. To minimise any impact:

### CONCRETE WASHOUT FROM CONCRETE LORRIES

- Concrete wash water control measures will be planned and implemented before starting the project. A concrete washout risk assessment will be completed to assess the risk to receptors based upon site location and volume of concrete washout generated.
- The amount of wash water produced will be minimised and where possible and practicable, it will be returned to the batching plant
- For washwaters that cannot be returned to the batching plant, the concrete washout system utilised will (as a minimum) securely capture, contain and store the concrete solids and wash water in an impervious container/ bund.
- Washout arrangements will be located 10m away from drainage gullies, surface water drains and watercourses
- The washout area will be conveniently located for washing out equipment and adequately signposted.
- To minimise the amount of washout water generated, excess concrete will be scraped off the equipment before it is washed. These excess solids will be placed in a designated storage container.
- A high pressure, low volume water spray nozzle will be used to reduce water use
- The area will be monitored and maintained to ensure proper use and have adequate storage capacity
- Temporary concrete washouts will be designed with enough volume to contain all liquid and concrete waste.
- Plastic lining material will be a minimum of 10 mm polyethylene sheeting and will be free of holes, tears, or other defects that compromise the integrity of the material

### CONCRETE WASHOUT SYSTEMS (EXAMPLES IN ORDER OF PREFERENCE)

- A. Wash into geotextile bag, collect the filtered wash out water in separate tank and arrange with concrete supplier to extract tank contents following the last pour of the day. Concrete washout water can be reused at the batching plant making more concrete. **Note: Requires submersible pump, geotextile bags and agreement with concrete supplier**
- B. Use integrated pump and waterhose to clean chute into the specific geotextile bag. This segregates the solids, and the collected high pH wash out water is stored for re-use to rinse out the next wagon's chute. **Note: Requires power connection to pump the water, geotextile bags and has capacity for 50 wagons**
- C. Combined Concrete Washout and pH adjustment System - separates and dewateres the waste concrete solids and then its on-board automatic carbon dioxide pH adjustment system neutralises the high pH washwater down to (circa pH 6 to 9) limits set by the Environment Agency for discharge. **Requires: Power, consent to discharge, CO<sub>2</sub> gas, and water quality testing**
- D. Washout into a holding tank / skip lined with an impermeable sheet to prevent ground contamination. Mixture is allowed to cure / water evaporate **Requires: dry weather / potentially a sacrificial bag of cement**



**Figure 7 - Examples of Concrete Washout systems that may be utilised on site**

### ON-SITE BATCHING

- Batching and mixing activities will be located well away from watercourses and drains
- Material storage areas for all cementitious materials will be protected and covered.
- Surface drainage in the area around the batching plant will be controlled as we are aware that it may be polluted.
- Spills of concrete, cement, grout and similar materials will be contained and ensured that they cannot reach surface water or drains.
- Concrete washout from mixing plant will be carried out in a designated contained impermeable area.

### CONCRETE PLACEMENT

- We will discuss arrangements for deliveries to site with suppliers before work starts, agreeing routes, designated washout areas and emergency procedures.
- Bulk and bagged cement and concrete additives will be stored at least 10m away from watercourses, gullies and drains.
- A contingency plan will be put in place for uncontrolled releases.

## 5.7. Control Measures for Oil Storage

Oil is one of the most common pollutants in the UK and spilt oil can pollute waterbodies and groundwater supplies which can be used for drinking water.

### TYPES OF OIL EXPECTED TO BE FOUND ON SITE

- Petrol
- Diesel
- Heating oils
- Biofuels
- Lubricating and hydraulic oils
- Synthetic and mineral oils
- Biodegradable
- Shattering and cutting
- Waste oils

### OIL STORAGE LOCATIONS

In all cases we will avoid storing oil in high risk locations such as:

- Where there is risk of damage by impact or collision e.g. from site traffic
- Within 50M of a spring, well or borehole
- Within 10M of a watercourse, ditch or drainage channel
- Where spilt oil could enter open drains or soak into unmade ground where it could pollute groundwater

### OIL STORAGE TANKS AND CONTAINMENT SYSTEMS

When storing more than 200litres of oil, a secondary containment system will be provided. The capacity of the secondary containment system will be either 110% of the largest drum or 25% of the total volume stored (whichever is greater). Additionally all ancillary equipment will be kept contained within the bund.



Figure 8 - Illustration of oil storage with a secondary containment system

### INSPECTION AND MAINTENANCE

All oil storage areas, containers and secondary containers will be frequently inspected and checked for signs of damage, corrosion, bulging, leaks or unauthorised use and interference. Any required maintenance, defects or faults will be repaired immediately.

## 5.8. Control Measures for Refuelling

A **designated refuelling** area will be established for the project. This area will consist of an impermeable surface, situated well away from watercourses. Signage (such as that illustrated below) will be erected to indicate the location of the refuelling area and an oil spillage kit will also be at hand at this area. All fuel deliveries to site will be supervised by a designated individual.



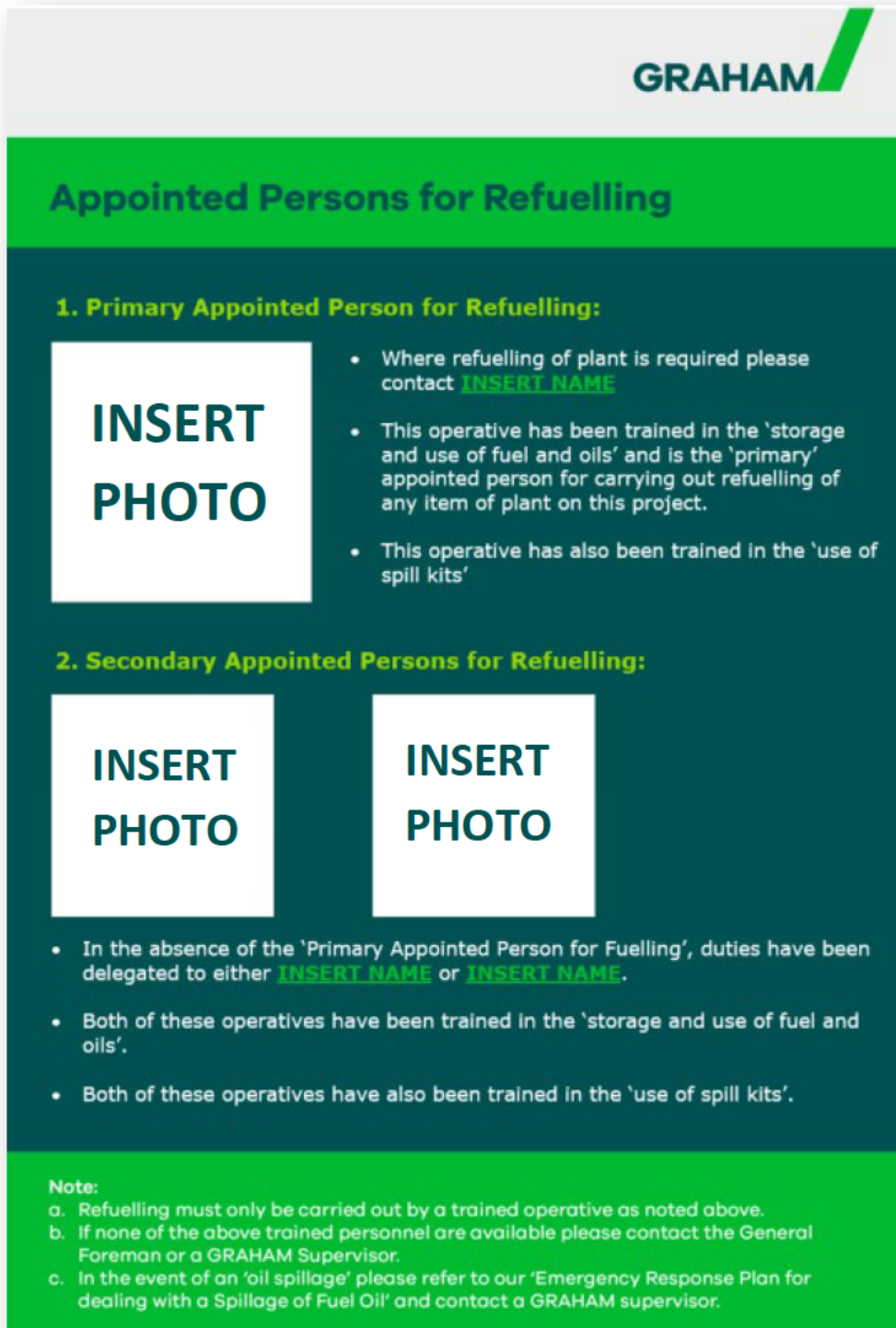
Figure 9 - Example of a protected refuelling area on handstand with spill kit

When refuelling has to be carried out away from the designated area, it will be carried out by using a drip tray or other secondary containment solution to prevent oil from spilling onto the ground. Where mobile refuelling is necessary, all bowsers will carry an emergency spill kit. All oil containers (including mobile bowsers) will be returned to the designated storage area after use.

## 5.9. Appointed Persons for Refuelling

A dedicated person(s) will be appointed and trained for the purpose of refuelling on site.

An “appointed persons” poster such as that shown below will be completed and displayed on site.



The poster template features a white header with the GRAHAM logo. Below is a green title bar with the text 'Appointed Persons for Refuelling'. The main content area has a dark green background. It is divided into sections: '1. Primary Appointed Person for Refuelling:' with a large white box for 'INSERT PHOTO' and a bulleted list of three points; '2. Secondary Appointed Persons for Refuelling:' with two white boxes for 'INSERT PHOTO' and a bulleted list of three points. A 'Note:' section at the bottom contains three sub-points (a, b, c) on a light green background.

**GRAHAM**

### Appointed Persons for Refuelling

#### 1. Primary Appointed Person for Refuelling:

**INSERT PHOTO**

- Where refuelling of plant is required please contact **INSERT NAME**
- This operative has been trained in the 'storage and use of fuel and oils' and is the 'primary' appointed person for carrying out refuelling of any item of plant on this project.
- This operative has also been trained in the 'use of spill kits'

#### 2. Secondary Appointed Persons for Refuelling:

**INSERT PHOTO**      **INSERT PHOTO**

- In the absence of the 'Primary Appointed Person for Fuelling', duties have been delegated to either **INSERT NAME** or **INSERT NAME**.
- Both of these operatives have been trained in the 'storage and use of fuel and oils'.
- Both of these operatives have also been trained in the 'use of spill kits'.

**Note:**

- a. Refuelling must only be carried out by a trained operative as noted above.
- b. If none of the above trained personnel are available please contact the General Foreman or a GRAHAM Supervisor.
- c. In the event of an 'oil spillage' please refer to our 'Emergency Response Plan for dealing with a Spillage of Fuel Oil' and contact a GRAHAM supervisor.

Figure 10 - Poster template (Appointed persons for refuelling)

## 5.10. Control measures for Discharging Water

- We will minimise the amount of waste water which needs to be discharged and find alternative means of disposal where possible.
- Any temporary stockpiling of materials will be prevented from eroding by rain water or surface water runoff.
- Water containing silt, or any other contaminating material will not be released directly to a watercourse or surface water drain. Treatment facilities, such as sediment traps will be used as appropriate, before water is discharged. These facilities will be regularly inspected and maintained. A full record will be kept of inspection, maintenance and measures employed to sustain performance.
- All site discharges will be of a quality, by a method and at a location acceptable to the regulator. This will be agreed (via written consent) in advance of works commencing on site.
- Prior to any discharge into a sewer, a Trade Effluent Consent will be obtained from the local Water Company
- A "permit to pump/ discharge" (See Appendix 5.1 - Ref: PF10-PR10-43-F012) will be used to ensure that personnel discharging water are fully aware of the requirements.
- Where applicable, a Water Quality Monitoring Plan will be drawn up prior to construction commencing. This will detail the requirements and frequency of water quality sampling as a result of construction activities and will specify the parameters to be achieved relevant to the water quality objectives at the receiving site.

## 5.11. Control measures for Abstracting Water from Excavations

- The removal of water from an excavation is a high risk activity.
- Prior to excavation below the water table, including site de-watering, we will inform the regulator and Water Company of the works to be conducted. Any de-watering, groundwater lowering and disposal measures will be agreed in advance with the regulator and if necessary an Abstraction Licence obtained.
- A "permit to pump/ discharge" (See Appendix 5.1- Ref: PF10-PR10-43-F012) will be used for any abstraction activities
- A small sump will be dug in the excavation for the head of the pump. This will be surrounded by a perforate pipe and a suitable grade of clean stone.

## 5.12. Control measures for Drainage

Drainage systems can act as a pathway to spread pollutants. Drains can also make pollution invisible, so it is important to know where drains are located and where they lead in order to prevent polluting materials entering drains.

- All existing drainage on site (e.g. surface water, foul sewer) will be identified and a "drainage plan" will be made available
- All drain covers and gullies will be clearly marked to identify them (Recommendation is red for foul, blue for surface water)
- If any pollution enters a drain, the site spill response team will immediately stop the pollution with a physical block, stop the activity causing the pollution, then notify the Environmental Manager.

## 5.13. Control measures for Flood Protection

- A member of the site team will be designated with the responsibility for monitoring weather warnings and flood warnings.
- In the event of a storm being detected (and where it is likely to impact during the construction period), the designated site team member will inform management staff and procedures will be put in place to secure the site and evacuate the area.

## 5.14. Water Efficiency

A practical system will be put in place to minimise use of mains water during the construction process. Mains water consumption from the site offices and operations will be measured and monitored monthly with action for reduction of consumption implemented.

Water efficiency techniques employed on site will include the following actions (where relevant and feasible):

- **Daily Visual Inspection for leaking pipes / taps / valves.**  
An unfixed leak can be the most significant water use on site. Leaks can come from damaged washers in taps, worn valves and corroded or damaged pipework.
- **Fit Trigger Guns to Hoses**  
Hoses left running when not in use waste a lot of water in a short time. Fit robust trigger guns to hoses so that flow can be controlled at the point of use.
- **Closed Loop Wheel Wash**  
A closed loop wheel wash reuses the water for the process. Waterless systems are another innovative option that use angled steel grids to clean debris from tyres.
- **Dust Suppression**  
Most suppression techniques are very water inefficient. A fan misting system is a mains fed electrically powered efficient alternative
- **Washing Out Concrete Wagon Chutes**  
Mains pressure hoses with basic spray patterns are water inefficient. Use a high pressure low volume efficient spray pattern to reduce water use. Wash out water can be re-used at concrete batching plants
- **Commissioning Water Use**  
High volumes of water are used during building services commissioning and testing. Plan for these activities considering water recirculating and minimisation.
- **Rainwater Harvesting**  
Where possible, rainwater will be harvested from the roofs of the site accommodation, to feed boot wash; or used to fill the water bottle of power saws and other similar power tools for dust suppression.
- **Low flush toilets**  
Utilising a low flush toilet uses significantly less water than a full-flush toilet. Single or dual flush models are available.
- **Taps of the aerated mixer type with flow restrictors**  
Tap aerators are water saving devices that control the amount of water that flows through the tap without affecting the water pressure as they mix the water with air.

## SECTION 6.0 Dust and Air Quality Management Plan

### Guidance Notes:

This section contains details of the steps required in order to ensure best practice with regard to the protection of air quality and dust prevention

- 6.1 Dust and Air Quality Issues**
- 6.2 Site Conditions**
- 6.3 Monitoring Protocols**
- 6.4 Records of details and action taken in response to exceptional incidents or dust-causing episodes**
- 6.5 Dust and Air Pollution Mitigation Measures**

## 6.1. Dust and Air Quality Issues

Dust and air pollution, including odours, can cause nuisance affecting properties. In addition, there are statutory objectives in relation to nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub>) which have known health impacts.

Section 79 of the Environmental Protection Act 1990 defines a number of factors relating to dust and air pollution which constitute a statutory nuisance. This includes:

- Smoke emitted from premises so as to be prejudicial to health or a nuisance
- Fumes or gases emitted from premises so as to be prejudicial to health or a nuisance
- Any dust, steam, smell or other effluvia arising on industrial, trade or business premise and being prejudicial to health or a nuisance
- Any accumulation or deposit which is prejudicial to health or a nuisance

Our objective is to carry out the works in such a way that emissions of dust and other air pollutants including odour are limited and to use best practicable means to avoid the creation of nuisance.

## 6.2. Site Conditions

### Work activities that may give rise to dust and air pollution

- Construction plant and vehicles
- Transportation and storage of materials
- Excavations and earthworks
- Operation of the construction site or undertaking construction activities which results in odours being generated from, for example, smoke, fumes or gases

### Receptors relevant to the works

- The public adjacent to the construction site
- Site workers
- Waterbodies
- Ecological receptors

## 6.3. Monitoring Protocols

The inspection and monitoring procedures to be implemented to monitor the effectiveness of measures to prevent dust and air pollutant emissions and to avoid detrimental effects on the health of workers or nuisance to sensitive receptors due to exposure to dust and air pollution are as follows:

- Daily inspection of areas adjacent to the construction site to monitor any dust and air pollution which may be generated despite the use of best practicable means to prevent dust and air quality emissions.
- Daily inspection of construction vehicles, plant and machinery.
- Daily inspection of the level of trafficking, use and condition of access routes to site.

Should inspections show a nuisance arising, work will be stopped until prevention and remediation measures are implemented.

#### **6.4. Records of details and action taken in response to exceptional incidents or dust-causing episodes**

Records will be made within the site diary where action was taken in response to exceptional incidents or dust-causing episodes.

Full details of any complaints in relation to dust will be recorded by the Site Management Team on Cora.

#### **6.5. Dust and Air Pollution Mitigation Measures**

##### GENERAL

- The GRAHAM Site Management Team will use best practicable means to prevent nuisance as a result of dust through design and different work methods
- Site operatives will receive training as part of site induction, toolbox talks and through communication of relevant environmental risk assessments and method statements
- The site will be laid out such that machinery and dust-causing activities will be located away from sensitive receptors, where reasonably practicable
- Hoardings and other barriers will be erected along the site boundary, to mitigate the spread of dust to any sensitive buildings or other environmental receptors

##### CONSTRUCTION PLANT AND VEHICLES

- Construction plant will be operated in accordance with the manufacturer's written recommendations
- All vehicles and plant will be switched off when not in use – NO IDLING
- Vehicle and construction plant exhausts will be directed away from the ground where possible and be positioned at a height to facilitate appropriate dispersal of exhaust emissions
- Enclosing, shielding or provision of filters on plant likely to generate excessive quantities of dust beyond the site boundaries will be employed
- The movement of construction traffic around the site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the Project
- Construction plant will be located away from site boundaries which are close to sensitive receptors where reasonable and practicable
- We will avoid use of diesel or petrol powered generators by using mains electricity or battery powered equipment where reasonable and practicable
- We will keep vehicle, plant and equipment maintenance records on site and these will be made available to the Employer's Representative upon request

##### TRAFFIC/ ACCESS ROUTES

- On-site parking will be designated for staff and visitors
- Inspection of vehicle movement area site conditions will be undertaken by the Site Manager
- Delivery drivers will be made aware of site restrictions
- Vehicle speeds will be restricted to 10m/h to prevent high levels of dust being released
- Vehicles either delivering or removing material from Site, which have a dust potential, will be covered with tarpaulin or the like to minimise the release of dust

## TRAFFIC IMPACTS ON PUBLIC ROADS

- Vehicle wheel washing facilities will be provided and there will be a road sweeper on hand at the site to clear up any material deposited on the public highway by vehicles accessing/egressing the site and site compounds.
- Public roads outside of the site will be regularly inspected for cleanliness and cleaned as necessary
- Site Management will liaise with relevant authorities regarding any road or lane closures
- Delivery drivers to adhere to public road restrictions.
- Neighbours will be advised of unusual traffic movements (e.g., concrete wagons for continuous large concrete pours/ abnormal loads etc.)

## SECTION 7.0 Noise and Vibration Management Plan

### Guidance Notes:

Details of control measures in respect of noise and vibration are contained within this section.

- 7.1 Noise and Vibration Issues**
- 7.2 Site Conditions**
- 7.3 Noise Control Measures (General)**
- 7.4 Operating Hours**
- 7.5 Establishment of Baseline Conditions**
- 7.6 Noise Monitoring Plan**
- 7.7 Liaison with the Local Community during the Contract**
- 7.8 Establishment of Working Relationship with the Local Authority**
- 7.9 Section 61 of the Control of Pollution Act (COPA), 1974**
- 7.10 Programming of Works**
- 7.11 Distancing from Sensitive Receptors**
- 7.12 Plant and Equipment**
- 7.13 Traffic Noise during Construction**
- 7.14 Noise Screening**
- 7.15 Vibration**

## 7.1. Noise and Vibration Issues

Excessive noise and vibration on site not only represents a major hazard to site workers but it can also annoy neighbours and in some cases disturb adjacent wildlife. Best practice will therefore be implemented in order to minimise noise and vibration and comply with the contents and recommendations of the "Code of Practice for Noise Control on Construction and Open sites" (BS5228-1: 2009+A1:2014).

## 7.2. Site Conditions

### Baseline Noise Survey

Baseline noise surveys were undertaken between 24<sup>th</sup> and 30<sup>th</sup> July 2023

The typical ambient noise levels during the day are circa 47-50 dB LAeq,16hr and the background levels during the day are circa 42 dB LA90.

The typical ambient noise levels during the night are circa 43-46 dB LAeq,16hr and the background levels during the night are circa 35 dB LA90.

Start Date	Time	LAeq	LA90
24/07/2023	10:45-23:00	47.3	42
	23:00-07:00	42.7	35
27/07/2023	12:45-23:00	46.8	42
	23:00-07:00	45.8	35
28/07/2023	07:00-23:00	49.8	42
	23:00-07:00	45.5	35
29/07/2023	07:00-23:00	48.3	42
	23:00-07:00	41.8	35
30/07/2023	07:00-09:00	48.4	42

Maximum noise levels (the highest noise levels recorded from one off events such as bangs/horns etc.) are up to 90 dB L<sub>Amax</sub>.

### Noise and vibration receptors

The closest noise and vibration sensitive receptors (NSR's) are residential properties on Coastguard Road adjacent to the eastern boundary of the site.



NSR's at  
Coastguard Road

### Construction noise impact criteria

Based on BS5228 and the existing noise levels, the following targets (presented in Category A) would be appropriate for the area during construction:

Assessment Category and Threshold Value Period <small>L<sub>den</sub></small>	Threshold Value, in Decibels (dB)		
	Category A	Category B	Category C
Night-time (23:00-07:00)	45	50	55
Evenings and weekends	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75

The daytime target during the construction period would be 65 dB LAeq at the nearest properties.

The vibration limit of 2.5mm/s ppv will be set for piling operations as per BS5228 and the piling will be further limited to the hours of 08.00 to 19.00 Monday to Friday and 08.00 to 13.00 on Saturdays, with no piling carried out on Sundays. The vibration limits will either dictate the type of plant that must be employed by the piling sub-contractors, or it may necessitate the changing of pile type from precast driven piles to CFA piles. The above limits will however not be exceeded.

### Noise and vibration impacts and assessment

Activity	$L_{Aeq}$ at 10m
HGV movement, for removing spoil and bringing necessary fill and other sundry materials to the site	70 dB
Tracked or wheel excavators to remove existing topsoil, rubble and subsoil in preparation for foundations of units	to 87 dB
Piling operations (typical non-displacement system – if necessary)	80-88 dB
General construction, including delivery of building materials and plant	70-84 dB
Dewatering pumps (if required)	to 80 dB
JCBs for services, drainage and landscaping	to 84 dB
Vibrating rollers and other road surfacing plant	76-86 dB

There is the potential of noise impact from the following sources:

- Vehicular impact from HGV movements and employee cars,
- Internal noise impact from the machinery, and
- External plant noise.

The Noise Impact Assessment for Larne POE, completed by F.R Mark & Associates concludes that, with reference to the Noise Policy Statement for Northern Ireland, it is noted that the cumulative operational impact is below the LOAEL and therefore the development would not be considered as having an adverse impact on the surrounding noise environment.

### 7.3. Noise Control Measures (General)

No part of the works will be carried out in such a manner as to cause unnecessary noise except in cases of an emergency when the work is absolutely necessary for the saving of life or property or the safety of the works.

All operatives will receive training and advice on noise minimisation and general good site practice through site-specific training and briefings.

### 7.4. Operating Hours

The working hours on this project are restricted to:

**08.00-18.00 Mon- Fri**

These hours are set out within planning requirements and will be strictly adhered to.

Prior agreement will be sought from both the Local Authority and the client if occasions arise where it is necessary to work beyond these times.

Working hours and contact details will be displayed on external site hoarding using the environmental noise information poster.

### 7.5. Establishment of Baseline Conditions

Prior to work commencing the site team will ensure that baseline noise measurements have been taken in order to understand the dominant noise sources and extent in the vicinity of the site area. The location of key noise and vibration sensitive residential receptors will also be identified.

### 7.6. Noise Monitoring Plan

A Noise Monitoring Plan will be drawn up prior to construction commencing. This will detail the predicted noise levels as a result of construction activities and will specify the typical noise levels of construction plant intended for use. This will be set against appropriate construction noise impact criteria. Anticipated noise monitoring positions will also be set out.

Mitigation measures will be undertaken if the results of noise monitoring indicate that excessive noise impacts are arising from the activities associated with the works.

### 7.7. Liaison with the Local Community during the Contract

The effect of noise and vibration on nearby sensitive receptors will be minimised through a good communication strategy. Prior to works being undertaken, consultation with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration will be undertaken. We will provide information of construction works and notice of when high noise and/or vibration generating activities are taking place. It is intended that this will increase the tolerance of receptors and thus minimising adverse effects. All communications will contain contact details to direct any questions or complaints to.

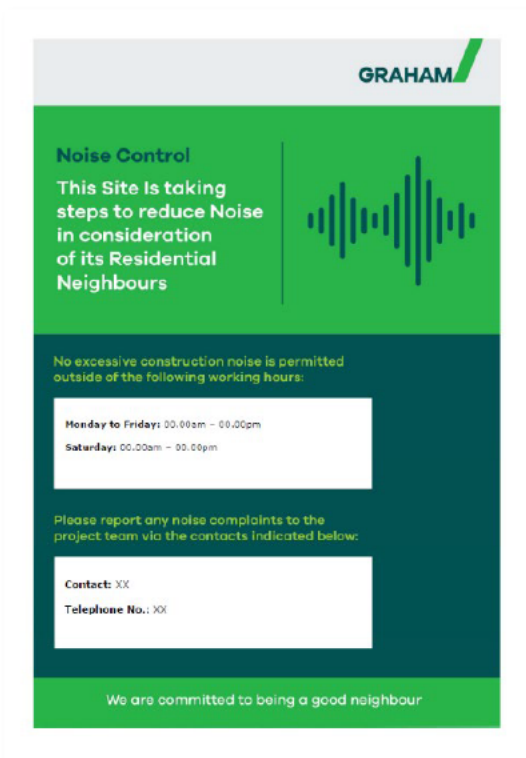


Figure 11 - Noise Control Poster

## **7.8. Establishment of working relationship with the Local Authority**

The site team will make contact with the local authority at the earliest opportunity. Agreement with the local authority will be sought on appropriate controls for undertaking significantly noisy works close to receptors.

## **7.9. Section 61 of the Control of Pollution Act (COPA), 1974**

Consideration will be given to the merit in applying to the local authority for a section 61 prior consent. Section 61 is in effect an agreement between the developer and the local authority which allows a reasonable level of noise to occur. This offers protection from any subsequent action by the local authority under section 60 or 66 of COPA or under the Environmental Protection Act to impose further controls on noise from the site. It also allows the local authority to (a) Attach any conditions (b) Limit or qualify a consent to allow for any change in circumstances (c) Limit the duration of a consent. Any person who knowingly carries out the works, or permits the works to be carried out, in contravention of any conditions attached to the Prior Consent will be guilty of an offence.

## **7.10. Programming of Works**

Information will be sought from the community concerning sensitive periods so works can be planned to occur outside these times.

## **7.11. Distancing from Sensitive Receptors**

- Noisy work activities will be planned in order to maximise the distance from the noise source to sensitive receptors
- Work compounds will be laid out so that access and loading areas are located as far away from sensitive neighbours as practicably possible
- Shouting and raised voices will be kept to a minimum. The use of tannoy and radios will be prohibited within close proximity of sensitive residential receptors.

## **7.12. Plant and Equipment**

- Modern installation techniques will be adopted that utilise high frequency pile drivers which significantly limit noise and vibration. Pile dampers will also be utilised.
- Selection of equipment will be carried out with the objective of reducing noise and vibration wherever possible. Only equipment conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used
- Plant and equipment will be maintained and operated following manufacturer's instructions to run efficiently generating minimal noise
- Where possible plant producing less noise will be used
- Pneumatic tools will be fitted with silencers or mufflers
- Plant will be switched off when not in use
- Mobile compressors and generators will be fitted with appropriate silencers and/ or proprietary acoustic enclosures
- Plant and equipment supplied with acoustic enclosures will be operated with all panels closed
- Site staff will enforce a policy whereby all plant is shut down when not in use
- All stationary equipment with significant noise outfall will be sited to minimise noise nuisance to local residents
- As far as possible generation of power will be via a permanent power supply as opposed to generators
- Using electrically powered equipment run from the mains supply where available is preferred to using generators to power plant and equipment

- Care will be taken when erecting or striking scaffolds to avoid impact noise from banging steel. Scaffold deliveries will be programmed to arrive during normal working hours only.
- Crane spindles, pulley wheels, telescopic sections and moving parts of mobile working platforms will be adequately lubricated in order to prevent undue screeching.

### **7.13. Traffic Noise during Construction**

- Delivery vehicles will, where reasonably practicable, be fitted with effective exhaust silencers and will be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable
- Time slots will be adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and to avoid unnecessary idling on-site
- Strict controls will be implemented to prevent temporary parking on kerbside in the vicinity of noise sensitive receptors near the site
- Sufficient clear signage will be utilised to ensure that demolition and construction vehicles use only designated routes.
- Care will be taken when unloading vehicles to minimise noise

### **7.14. Noise Screening**

Where appropriate, screenings will be utilised in order to reduce noise levels between the source and the receiver. Materials used for screening may include earth bunds, existing buildings, site security hoarding or purpose-built noise screens. Holes/ openings in the screen material will be kept to a strict minimum and the density of the material will also be given due consideration in order to be as effective as possible.

### **7.15. Vibration**

A vibration risk assessment will then be undertaken to ensure that underground utilities, buildings and other protected structures surrounding the works are protected from damage.

Controls will be put in place to avoid risk of physical damage from vibration.

## SECTION 8.0 Energy and Carbon: Management and Reduction Plan

### Guidance Notes:

This section contains details of company policy on energy management and how energy efficiency is incorporated within site operations.

- 8.1 Energy and Carbon Issues**
- 8.2 Site Conditions**
- 8.3 Purpose of the Energy and Carbon Management and Reduction Plan**
- 8.4 Climate Action Targets**
- 8.5 Site Energy and Carbon Roles and Responsibilities**
- 8.6 Scope**
- 8.7 Energy Efficiency and Carbon Emission Reduction Activities**
- 8.8 Communication, Campaigning and Training**
- 8.9 Measurement and Reporting**
- 8.10 Nature Based Solutions and Carbon Offsetting**

## 8.1 Energy and Carbon Issues

GRAHAM are at the forefront of action on the climate emergency and to demonstrate our commitment we are signatories to “Contractors Declare”, the “pledge to net zero” and the BITC “Climate Action Pledge”. We are also a “Business champion” within the Construct Zero framework and have committed to set science-based targets through the Science Based Targets Initiative. We recognise that climate change is emerging as one of the most serious environmental challenges currently threatening the global community. We understand that there is a need to minimise Greenhouse gas emissions produced as a result of fossil fuel consumption and we acknowledge that we have a role to play in tackling these issues.

## 8.2 Site Conditions

We are committed to reducing our energy and carbon impacts and we will ensure that the Project adopts a number of low carbon initiatives from procurement of our materials, plant and equipment through to implementing efficient waste management on site and educating our workforce.

Aligned to GRAHAM’s commitment to operating via processes which align with PAS 2080 we will advocate that carbon is assessed and reduced on this project, across all lifecycle stages where we have influence. Typical emissions and removal sources include site preparation, planning, design and construction or substantial retrofit/ refurbishment as well as mission sources generated in use such as energy related emissions and the energy and materials involved in maintenance and upkeep.

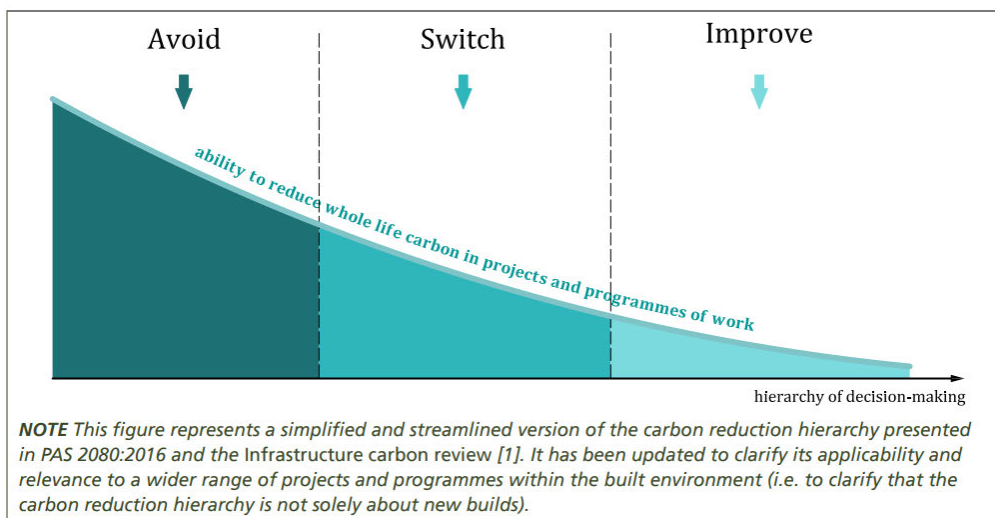
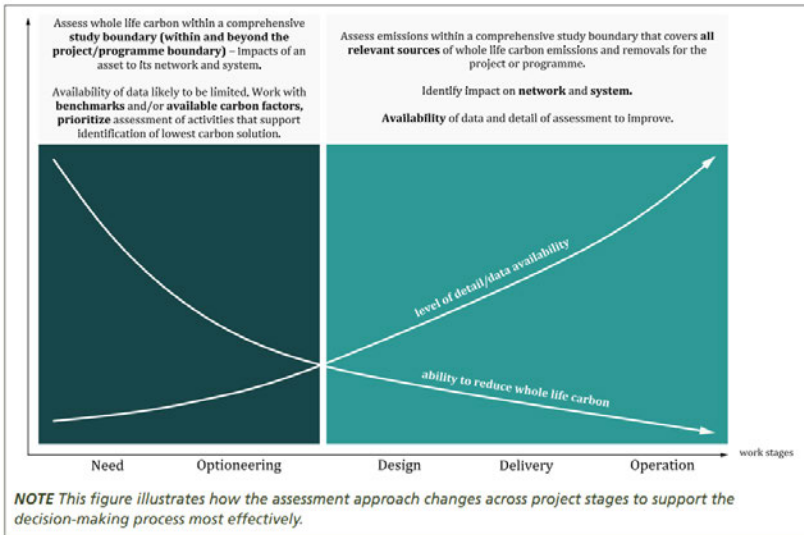


Figure 12: PAS 2080 – Carbon Reduction Hierarchy

We are committed to ensuring that our integrated project team will evaluate the energy and carbon impact of our activities and identify solutions aimed at reducing these impacts.

It is acknowledged that the stage within which GRAHAM have been engaged/ involved in the project will impact on the effectiveness of LCA data and our ability to influence carbon reduction.



**Figure 13: PAS 2080 – Degree of accuracy and data availability in whole life carbon assessments across work stages**

### 8.3 Purpose of the Energy and Carbon Management and Reduction Plan

This Energy and Carbon Management and Reduction Plan (ECMRP) outlines the GRAHAM targets and strategy for energy and carbon reduction and defines the steps that the Project will take to contribute to these outcomes by specifying key actions. These actions include specific technical interventions leading directly to emissions reduction as well as management, policy and enabling actions. The ECMRP is intended to provide a practical and formal basis for implementing carbon emission reduction throughout the project activities.

The objectives of the ECMRP on a site-specific basis are to:

- Implement practices so that, over the short to medium-term, carbon emissions become one of the issues that are automatically considered in regular decision making across the full scope of site works.
- To undertake a series of interventions that will lead directly to measurable emissions reductions.

Implementing low-carbon initiatives on site is expected to achieve social, economic and environmental benefits.

### 8.4 Climate Action Targets

The key Climate Action target that GRAHAM have set is as follows:

**Achieve Net Zero by 2030 (direct emissions) &  
Achieve Net zero by 2040 (full value chain)**

- The GRAHAM Project Specific carbon reduction target (A5) is measured on Cora in TCO<sub>2e</sub>/£1M
- The GRAHAM whole life or embodied carbon target is agreed following an initial embodied carbon workshop and detailed within the project carbon tracker

Through implementing the ECMRP on the Project we intend to:

- Reduce carbon emissions
- Improve energy efficiency in work practices
- Reduce water consumption
- Reduce waste, increase recycling and reduce the volume of waste sent to landfill
- Promote and enable environmentally sound transport and travel practices

- Maximise fuel efficiency and minimise as far as practicable carbon emissions from all plant and ancillary equipment
- Run an energy efficiency programme
- Identify opportunities for using energy derived from renewable resources where practicable
- Promote energy awareness amongst staff, encouraging and enabling good environmental practice

## 8.5 Site Energy and Carbon Roles and Responsibilities

In order to achieve the targets and objectives of the project, we will instil the idea that carbon and energy management is the responsibility of every individual and not just that of an interested few. We will ensure site staff and operatives are fully aware of how to facilitate the success of the plan, as well as to dispel any carbon/ energy related myths.

Stakeholder	Responsibility
GRAHAM Bid Team	Initiate discussion with Client representative in order to determine if alternative solutions can be provided.
GRAHAM Design	Responsible for coordinating the development of designs that minimise carbon emissions and ensure that all potential carbon reduction opportunities are identified, captured and optimised.
GRAHAM Environmental Sustainability Team	Collaborate with project team, design team, supply chain and other stakeholders to determine low carbon solutions, to share experience and lessons learned with regards to materials and energy. The environmental sustainability team are also responsible for co-ordinating carbon assessments, setting targets and advising site teams of the carbon data capture requirements.
GRAHAM Commercial & Estimation	Ensure that appropriate allowances are made for carbon mitigation measures within pricing and contract management. Support the production of the carbon assessment by providing relevant data to inform low carbon opportunities. Collaborate with GRAHAM project team, supply chain & designers to ensure proposed solutions are costed appropriately and communicated to client.
GRAHAM Building Service Engineering	Collaborate with GRAHAM internal team and external (Supply chain & designers) to review energy strategies and propose alternatives which offer operational energy savings.
Site Environmental Champion	<p>The Site Environmental Champion will ensure that information regarding the ECMRP, its aims and successes are regularly communicated to all personnel involved in the project</p> <p>The Site Environmental Champion will gather relevant data for measuring and monitoring the carbon impacts of the project. This will include:</p> <p><b>Embodied Carbon:</b> Material delivery notes (as per specification), details of material quantities and photographic evidence of installation on site.</p> <p><b>A4-A5 Site Carbon:</b> GRAHAM fuel delivery notes and Subcontractor fuel delivery notes to be captured and data uploaded to cora. GRAHAM waste and Subcontractor waste data to be uploaded to cora. Transport Mileage data will be obtained either digitally via biometric systems or via manual recording of data.</p> <p>The Site Environmental Champion will record and display monthly measurements of site energy usage and display graphical analysis of carbon emissions on site noticeboards of how consumption over the project duration compares to the targets</p>
External Design Teams & Consultants	Collaborate with GRAHAM internal team providing technical advice on proposed solutions

Stakeholder	Responsibility
Supply Chain	Collaborate with GRAHAM internal team providing technical advice, costings, availability and experience.

## 8.6 Scope

The scope of the ECMRP to determine emissions will cover the areas detailed below.

- One-click LCA (or a client specific carbon tool) will be used to measure the whole life carbon impacts of the project
- Utility data covering fuel, electricity and water will be collected for the site compound and all on-site mobile units and recorded on Cora.
- Waste quantities and data will be uploaded to Cora detailing waste streams generated and resultant carbon impacts will be quantified
- Transport emissions relating to round trip material deliveries from factory to site gate will be measured and data collected. Data can be obtained via digital sources such as biometric site accesses or via paper based/ manual data collection

## 8.7 Energy Efficiency and Carbon Emission Reduction Activities

### 8.7.1 Design

- We will work closely with our designers and where appropriate, a whole life Carbon Assessment will be undertaken in order to assist in driving down carbon reductions
- We will prioritise the specification of low carbon or net zero products for use where viable

### 8.7.2 Low Carbon Plant and Equipment

- Telematics will be utilised in order to monitor the performance of machinery and plant in order to ensure that it is effective and efficient in order to maximise productivity and reduce carbon.
- Due consideration will be given to energy efficiency and emissions when plant and vehicles are researched for potential use on site. We will continue to work with plant manufacturers to ensure that we will be at the forefront of trials on the use of available electric, hybrid and hydrogen plant as the technology begins to mature.
- We will explore the viability of alternative sources of energy including fuel cell modules and HVO biofuels which are compatible with existing diesel engines and equipment
- All plant and vehicles will be serviced at designated intervals, so they run efficiently, thereby reducing carbon emissions. Where subcontracted or hired plant or vehicles are utilised on our sites, evidence of testing, inspection and regular maintenance will be sought prior to any permitted usage on the site.
- Idling of plant will be minimised

### 8.7.3 Low Carbon Site Compound

- Welfare accommodation will be required to meet the GRAHAM eco specification standard to include energy saving devices and technologies.
- On site renewable energy solutions for site accommodation will be implemented where feasible.
- GRAHAM have partnered with energy management broker Planet First to assist sites in procuring electricity/ gas. By operating through a broker we can ensure that sites/ offices utilise green tariffs where all energy is renewable.
- Where feasible we will look to install Electric Vehicle charging infrastructure within site compound areas

## 8.7.4 Green Transport

We recognise that the travel associated with our business has a direct impact on the environment, particularly through vehicle emissions, fuel consumption and our impact on local congestion. For this reason, we are committed to reducing the need for unnecessary business travel and encouraging the use of more sustainable forms of transport across our operations.

The specific Green Travel practices which will be implemented on site are as follows:

- The Carbon Trusts eco driving training will be mandatory training for high mileage drivers.
- Promote the Green travel policy initiatives - Raise awareness on site of the need to reduce transport emissions
- Consider the location of meetings to minimise travel distances and promote the use of video conferencing and tele-conferencing to replace some work trips
- Encourage car sharing and the use of work vans & minibuses to minimise collective distances travelled
- Encourage sub-contractors to use work vans & minibuses to travel to site to minimise collective distances travelled

## 8.7.5 Managing Behaviours

- Energy awareness will be encouraged amongst employees through energy saving posters and training
- Energy usage will be monitored against agreed targets
- Energy Audits will be regularly conducted by the SHE team, with opportunities for improvement implemented
- Subcontractors and suppliers will be encouraged to adopt energy efficient systems of work in their operations
- All staff and subcontractors will be reminded that appliances must be switched off when not in use

## 8.8 Communication, Campaigning and Training

In order to ensure the success of the ECMRP it is essential that all relevant parties are kept informed as to how they can assist in reaching the emissions reduction targets as well as communicating success stories on what has already been achieved. The table below outlines the proposed communication strategy.

The objective of the Communication Strategy is to promote energy awareness, to encourage a low carbon culture and to disseminate information on the ECMRP and performance against emission targets.

Method	Description	Target	Involvement
<b>Site Induction</b>	Verbal instruction given at Site Induction	Site Operatives, Site Visitors	Site Manager
<b>Posters, Resource Management Summary, Advice Notes</b>	Printed material for distribution on site and displayed on notice boards in site compound and offices.	Site Operatives, Site Visitors	Site/ Project Manager, Environmental Manager/ Advisor and SHE Team members

## 8.9 Measurement and Reporting

### 8.9.1 Life Cycle Emissions

The Lifecycle assessment process for the project will be assessed in line with BS 15978:2011 and the RICS Professional Statement: Whole Life Carbon assessment for the built environment.

In all instances the lifecycle assessment scope and system boundaries will be defined and set out within the project carbon tracker.

Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary		
Raw material supply	Transport	Manufacturing	Transport to building site	Installation into building	Use/application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demoliti	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D

At the earliest stage possible, the integrated project team will hold and embodied carbon workshop and review any existing Whole Life Carbon or Embodied Carbon project data and targets/ requirements set by the client.

A decision will be made on how carbon and energy assessment data will be measured and monitored throughout construction. It is acknowledged that the stage within which GRAHAM have been engaged/ involved in the project will impact on the effectiveness of LCA data and our ability to influence carbon reduction.

### 8.9.2 Construction Emissions (A5)

We have invested in and improved the mechanism for monitoring energy and carbon in order to streamline and improve the visibility of the information for sites and all other interested parties.

Emissions data relating to construction impacts (A5) will uploaded to Cora on a monthly basis. The software will be used to convert the data into TCO2e by applying an appropriate emission factor as determined by UK Government conversion factors.

### 8.10 Nature Based Solutions and Carbon Offsetting

Carbon offsetting in general is a controversial area of carbon management both because of the risk that it distracts from the pressing need to reduce emissions at source, and because the claimed savings can be difficult to monitor and verify. However it is acknowledged that as part of the GRAHAM overarching target to achieve "Net Zero Carbon", we are likely to need offsetting.

Sites have the option to offset their carbon and may do so using GRAHAM supply chain partner "Natural Capital Partners" or another provider. However, offsetting is only permitted when the following criteria (aligned to the Oxford Offsetting Principles) have been met:

- Reduction of emissions must be prioritised first – Minimise the need for offsets in the first place
- Ensure Environmental Integrity – Only use offsets that are verifiable and correctly accounted for and have a low risk of non-additionality, reversal, and creating negative unintended consequences for people and the environment

- Maintain transparency – disclosure current emissions, targets and the type of offsets employed

In addition, carbon removal offsetting (rather than emissions reductions) should be prioritised and long lived storage sought (rather than short lived) should be prioritised where practicable.

Site teams should consult with their Environmental Sustainability Manager prior to the purchase of all carbon credits.

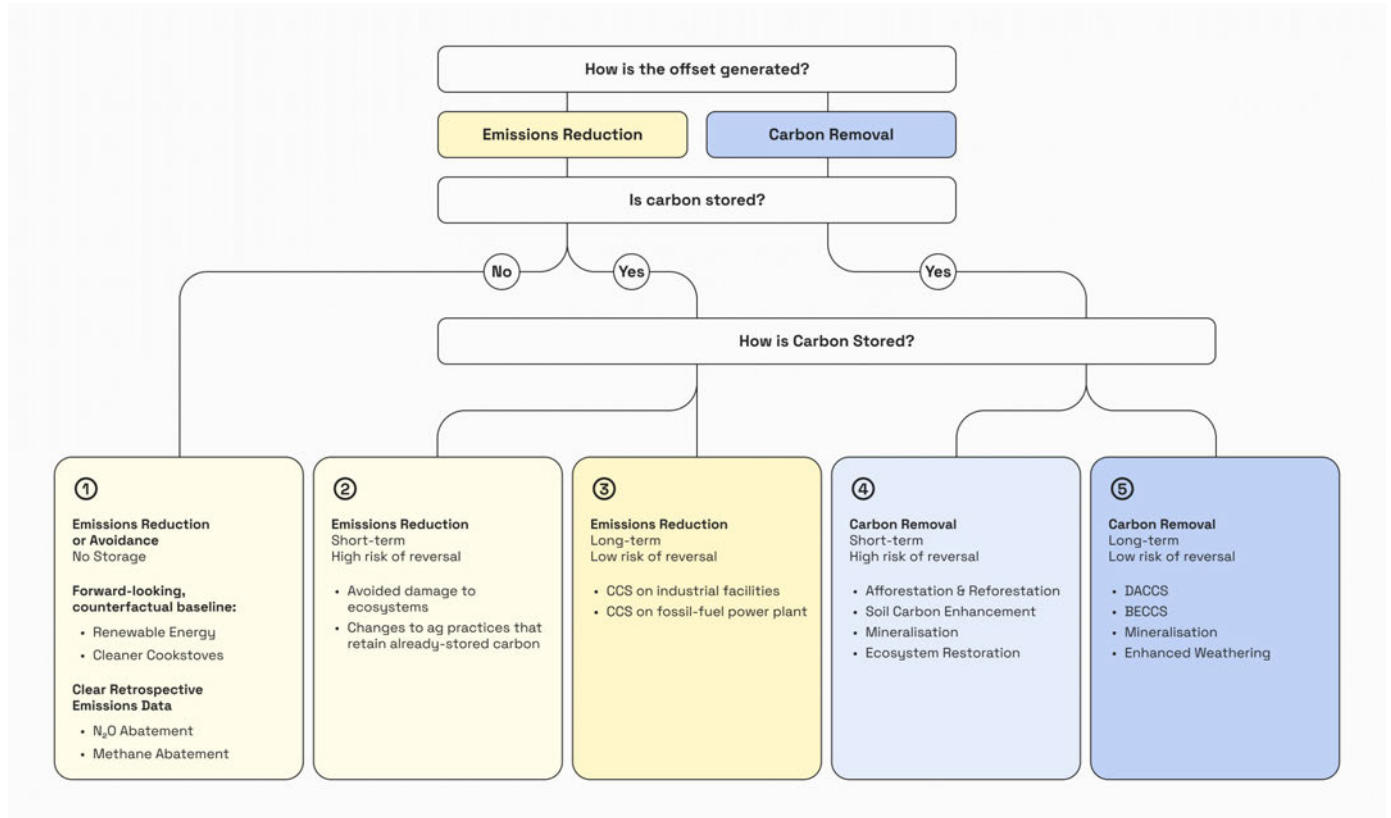


Figure 14: Carbon Offsetting Principles

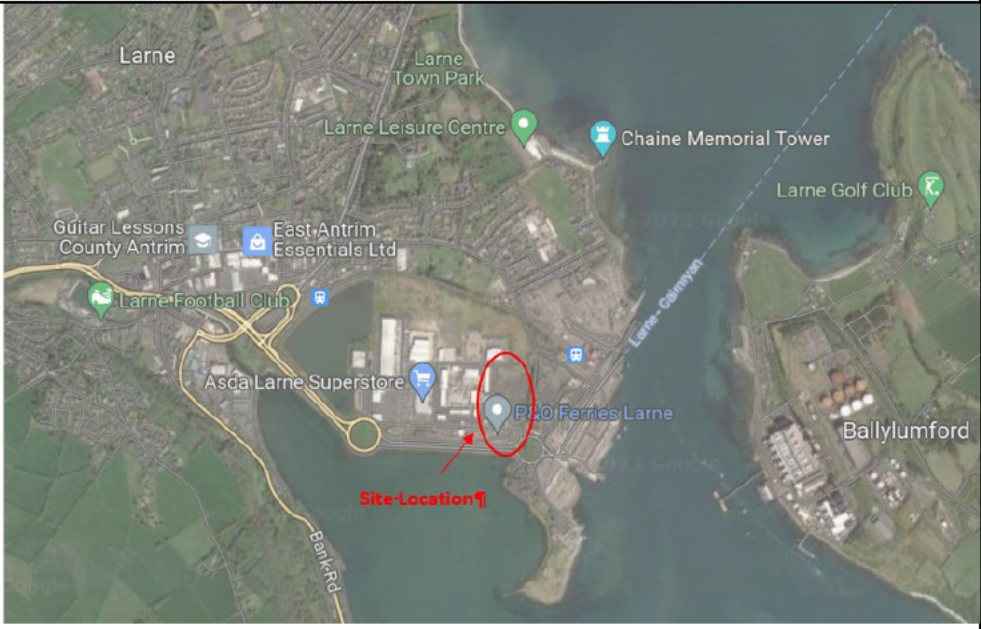
## SECTION 9.0 Site Waste and Resource Management Plan

### Guidance Notes:

This section contains details of the processes and opportunities to reduce waste, reuse or recycle products, components and buildings, and for materials to move up the waste hierarchy so that material resources can flow around a circular economy.

- 9.1 Purpose and Description of the Project**
- 9.2 Responsibilities and Declarations**
- 9.3 Description of Waste Management Roles**
- 9.4 Waste Management Policy**
- 9.5 Benchmarks for Conserving Resources**
- 9.6 Proposals for Waste Minimisation**
- 9.7 Identification of Waste and Proposals for Waste Reuse and Recycling**
- 9.8 Organisations which may be used to facilitate reuse**
- 9.9 Waste Storage Arrangements**
- 9.10 Office Waste Arrangements**
- 9.11 Duty of Care and Waste Transfer Procedures**
- 9.12 Waste Transfer Note Detail**
- 9.13 UK SIC CODES - Excerpts from UK Standard Industrial Classification of Economic Activities**
- 9.14 Minimisation of Hazardous Waste**
- 9.15 Typical Hazardous Outputs**
- 9.16 Management of Hazardous Waste**
- 9.17 Hazardous Waste Consignment Note Detail**
- 9.18 Training**
- 9.19 Subcontractor Requirements**
- 9.20 Management of Subcontractors**
- 9.21 Waste Management Supplier Requirements**
- 9.22 Waste Monitoring and Reporting**

## 9.1 Purpose and Description of the Project

<b>Project Name</b>	Larne Port Point of Entry		
<b>Project Location</b>			
<b>Project Cost (estimated)*</b>			
<b>Project Start Date</b>	<b>Date</b>	<b>Month</b>	<b>Year</b>
	14th	September	2023
<b>Project End Date</b>	<b>Date</b>	<b>Month</b>	<b>Year</b>
	27th	March	2026
<b>Description of the Project</b>	<p>This project is for the design and building of the following facilities at Larne Point of Entry (POE).</p> <ul style="list-style-type: none"> <li>• Product Inspection facility</li> <li>• Livestock Inspection Facility</li> <li>• Equine and Other Commercial Animals (OCTA) Inspection Facility</li> </ul>		
<b>Project Footprint (Sq/M)</b>	n/a		
<b>Client</b>	DAERA		
<b>Principal Contractor</b>	GRAHAM		
<b>Version Number and Date</b>	001 04.08.23		

## 9.2 Responsibilities and Declarations

	Name	Contact details
Who is responsible for drafting the SWMP?	██████████	████████████████████
Who is responsible for implementing the SWMP on site?	██████████	████████████████████
Who is the waste champion?	██████████	████████████████████
Who is the person in charge of the project?	██████████	████████████████████
Where will this SWMP be kept?	On file in the site office and on SharePoint	

<p><b>Declaration statement:</b></p> <p>We the 'Client' and the 'Principal contractor' will take reasonable steps to ensure that all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations. All reasonable steps will also be taken to ensure that the waste materials are handled efficiently, and waste managed appropriately.</p>
<p><b>Client signature:</b></p>
<p><b>Signature of Principal Contractor Representative:</b></p>
<p><b>Signature of S/C Representative(s):</b></p>

### 9.3 Description of Waste Management Roles

<b>Project Manager/ Site Manager:</b>	<ul style="list-style-type: none"> <li>• Ensure plan meets client’s approval and is signed off accordingly</li> <li>• Implementing and managing the plan on site</li> <li>• Arranging for full details of all arising’s, movements and treatment of waste to be accurately recorded and reported in a timely manner</li> <li>• Distinguish reusable materials from materials suitable for recycling</li> <li>• Ensure maximum segregation at the source and separate materials for recovery</li> <li>• Appointment of a suitable “Waste Champion” for the site</li> </ul>
<b>Environmental Manager:</b>	<ul style="list-style-type: none"> <li>• Implementing the plan within GRAHAM</li> <li>• Providing training</li> <li>• Providing advice and guidance to the Site Manager and ensure that best practice is transferred across the organisation</li> <li>• Conducting waste audits</li> </ul>
<b>Procurement Manager:</b>	<ul style="list-style-type: none"> <li>• Ensure that materials are ordered so that the quantity delivered, the timing of the delivery and storage of materials does not generate unnecessary waste</li> <li>• Ensure that the waste management requirements within the GRAHAM procurement documents are communicated to our supply chain</li> <li>• To undertake early engagement with our Waste Management Contractor in order to discuss our waste forecasts and to ensure an optimal skip strategy which maximises recycling</li> </ul>
<b>Environmental Champion:</b>	<ul style="list-style-type: none"> <li>• Overseeing management of waste records</li> <li>• Periodic reviews of SWMP</li> <li>• Regular inspection of waste recycling areas on site</li> <li>• Ensuring that regular toolbox talks on waste management and minimisation are carried out</li> <li>• Encourage and motivate site personnel to implement best practices</li> </ul>
<b>Appointed Operatives:</b>	<ul style="list-style-type: none"> <li>• Ensure that discrete operations stated in the SWMP are performed on an on-going basis</li> </ul>

## 9.4 Waste Management Policy

GRAHAM operate an Environmental Management System which is certified by National Quality Assurance (NQA) against the requirements of BS EN ISO 14001:2015. Our EMS will be utilised to assist in the employment of waste reduction techniques on the project

This Site Waste Management Plan has been prepared in accordance with the GRAHAM Environmental Policy, Waste Management Policy and Waste Management Procedure **PF10-PR10-44**

GRAHAM are committed to the Circular Economy, where products and materials are kept in high value use for as long as possible. This includes minimising waste, reducing consumption, and designing for reuse, repair and recycling. This commitment has driven the adoption of an approach which prioritises the reuse of all materials and products.

## 9.5 Benchmarks for Conserving Resources

### GRAHAM WASTE TARGETS

	KPI/Metric	Target
A	Tonnes of Construction waste generated per £1M construction value	Refer to SHIELD
B	Diversion of Construction waste from landfill	Refer to SHIELD

### SECONDARY WASTE TARGETS

	KPI/Metric	Target
C	Tonnes of Construction and Demolition waste generated per £1M construction value	Project Specific
D	Tonnes of Construction waste per 100m2 GIFA	Project Specific

- The site construction waste reduction target has been derived using GRAHAM data relating to construction waste generated on all construction sites during our baseline accounting year (2014/15). This waste reduction target aligns with the GRAHAM Company Target to reduce the quantity of avoidable Construction Waste generated by 65% by 2030 and 100% by 2040\*
- Projects within the building division also benchmark against BREEAM KPIs for construction and waste demolition and waste diversion (Target D).

\* Avoidable construction waste is interpreted as materials, products or components that can be prevented from becoming waste. At every stage of a project lifecycle, from the manufacture of materials and products, the design, specification and assembly of buildings through to deconstruction there are opportunities to avoid waste and reuse or recycle products.

## 9.6 Proposals for Waste Minimisation

REF	INFORMATION REQUIRED	YES/NO/NA	RESPONSE / COMMENTS
1.	Have opportunities been identified to reduce waste through the design process e.g., no-dig techniques, pre-fabrication of materials?	Yes	Selection appraisal for formation level for pile mat
2.	Can structures be raised out of the ground to reduce excavation volume?	No	Restricted by existing tie in levels
3.	Is excavation material suitable for re-use following suitable testing?	Yes	Potentially some reuse of upper gravel layers
4.	Can excavated materials be re-used at another GRAHAM Site (Note - waste exemption required)	No	Material expected to be unsuitable for this purpose
5.	Can it be arranged for excavated material to be used at a landfill site for capping or engineering works?	Yes	TBC but most likely
6.	Can contaminated material be treated using soil washing, bioremediation or other techniques to render it suitable for re-use?	N/A	No quantity of material identified.
7.	Is there scope to use a recycled product such as 6F2 or fine fill aggregates, reducing reliance on finite raw materials?	No	Gas membrane to be installed below buildings.
8.	Has the site team discussed and identified strategies for reducing waste with subcontractors?	N/A	Sub-contractors yet to be appointed
9.	Has a "Waste Management Suppliers pre-appointment Assessment" been completed?	N/A	Sub-contractors yet to be appointed
10.	Will Subcontractors and Site operatives who handle materials and waste receive waste awareness toolbox talks and other training?	Yes	To be arranged with Enviro team
11.	Is waste data going to be regularly reviewed (e.g. during progress meetings) in order to monitor waste targets for the project?	Yes	
12.	Will the Environmental Champion be briefed on their duties to help facilitate waste prevention during the project?	Yes	
13.	Can redundant equipment be sold for reuse?	No	No significant equipment present
14.	Can unsuitable material be conditioned to make it useable by following the relevant Waste and Resources Action Programme (WRAP) quality protocol?	Yes	Demolition material to be crushed on site and used for temporary works
15.	Are there any other ways in which the project will minimise waste to landfill?	Yes	Segregated skips

## 9.7 Identification of Waste and Proposals for Waste Reuse and Recycling

With reference to the Drawings and Specification, the following materials have been identified as wastes which could potentially arise on the Project. Quantities of forecast construction wastes have been derived by multiplying the total material quantity by standard wastage rate data provided by the Waste and Resources Action Programme (WRAP).

Waste Type	Waste Stream	Material Type	Suggested LOW Code	Destination	Forecast Quantities
					(tonnes)
Excavation	Soil and Stones	Soil and stones other than those mentioned in 17 05 03	17 05 04	Off-site reuse	34,500T
Excavation	Bituminous material	Bituminous mixtures other than those mentioned in 17 03 01	17 03 01	Choose an item.	110T
Demolition	Gypsum (plasterboard)	Gypsum-based construction materials other than those mentioned in 17 08 01	17 08 02	Choose an item.	0T
Demolition	Inert	Concrete, bricks, tiles and ceramics	17 01 07	Choose an item.	3,400T
Demolition	Wood	Timber materials – demolished roof/doors/window frames	17 02 01	Choose an item.	0T
Demolition	Metals	Mixed metals – building cladding/pipework/cables	17 04 07	Choose an item.	100T
Demolition	Insulation	Floor/Wall/Roof Insulation	17 06 04	Choose an item.	0T
Demolition	Plastics	DPC/ Pipework / Coverings	17 02 03	Choose an item.	0T
Demolition	Glass	Glass/ Windows	17 02 02	Choose an item.	0T
Construction	Gypsum (Plasterboard)	Gypsum-based construction materials other than those mentioned in 17 08 01	17 08 02	Choose an item.	
Construction	Wood	Timber materials – offcuts/shuttering/wooden packaging	17 02 01	Choose an item.	
Construction	Metals	Mixed metals – electrical and plumbing waste/pipe offcuts/stud wall cuttings	17 04 07	Choose an item.	
Construction	Plastics	Hard Plastics/Pipe offcuts/ wrapping protection materials	17 02 03	Choose an item.	
Construction	Packaging	Mixed Packaging – Cardboard/Paper/Plastic	15 01 06	Choose an item.	
Construction	Segregated Hazardous Waste	Used Engine Oil/ Batteries/ Waste paints/ Aerosol cans/ Paint thinners	Various	Choose an item.	

Construction	Office waste	Mixed Municipal Waste from site offices/canteen	20 03 01	Choose an item.	
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## 9.8 Organisations which may be used to facilitate reuse

- **The National Community Wood Recycling Project**

[www.communitywoodrecycling.org.uk](http://www.communitywoodrecycling.org.uk)

The National Community Wood Recycling Project (NCWRP) is a network of wood recycling social enterprises. The aim of the enterprise is to

- Save resources by rescuing and re-using waste timber that would otherwise be landfilled
- Create sustainable jobs, as well as training and volunteering opportunities, for local people – especially those who might find it difficult to get into or back to employment.

- **Recipro**

[www.recipro-uk.com](http://www.recipro-uk.com)

Suppliers and contractors donate unwanted, surplus building materials to the Recipro social enterprise. The products are then sold on at hugely discounted rates. Customers range from charities to schools, churches to shops as well as the local community

- **Community Repaint**

[www.communityrepaint.org.uk](http://www.communityrepaint.org.uk)

Community Repaint is a network of paint reuse schemes across England, Scotland, Wales and Northern Ireland. The purpose of the scheme is to collect leftover reusable paint and redistribute it to those who need paint but cannot afford it.

- **International Synergies**

[www.international-synergies.com](http://www.international-synergies.com)

International Synergies can be utilised to identify any wastes which may have a value to other member companies with a view to third party re-use of these materials.

- **Reuse Network**

[www.reuse-network.org.uk](http://www.reuse-network.org.uk)

Surplus furniture and household items can be donated for reuse through the Reuse Network. This is a national coordinating body for 300 furniture and appliance re-use and recycling organisations which exist across the UK.

*Note - this list is non-exhaustive and may be added to as new opportunities are sought and implemented.*

## 9.9 Waste Storage Arrangements

In line with best practice for the recycling of waste, we will segregate waste on site and to facilitate this, an appropriate number of waste handling and segregation areas will be set up. At these areas, waste streams will be segregated into separate skips and then removed to an approved material recycling facility. Each skip will be clearly labelled indicating type of waste contained within.



**Figure 15: Waste Storage Arrangements**

The segregation of skip wastes will be of the following types:

- Metal
- Packaging
- Timber
- Gypsum
- Inert
- Mixed (for all other wastes)

Additional skips and bins will also be provided for office derived waste including:

- Paper & Cardboard
- Plastic
- Cardboard
- Food waste

All skips utilised on site will:

- Prevent spillages or leakages
- Be corrosive resistant (to the weather elements)
- Will prevent scavenging from animals
- Prevent materials from being blown away

## 9.10 Office Waste Arrangements

Site offices and canteens often generate a significant quantity of wastes, many of which are recyclable. Opportunities should be sought to recycle as many of these items as possible and separate waste bins should be available in the site offices to facilitate collection of recyclables such as paper, cardboard, aluminium cans and plastic bottles. Site Operatives should be regularly reminded of the office/ canteen waste recycling procedures and bins should be labelled to assist in their correct usage.



Figure 16 - Office Waste Segregation

## 9.11 Duty of Care and Waste Transfer Procedures

Throughout construction of the Project, it will be ensured that all site staff, subcontractors and waste management contractors will act in accordance with all environmental legislation in relation to waste management. All movements of waste will be accompanied by waste transfer notes. GRAHAM site staff will ensure that the waste is described as accurately as possible and that the waste transfer note is signed by both the waste producer and the waste carrier. The waste carrier will hand over a copy of the note to a member of GRAHAM site staff prior to leaving the site.

- Waste Transfer Notes will be stored in [Appendix 4.1](#) of this plan
- A log of each waste movement will be completed. This can be done via Cora or by using the GRAHAM waste log (REF:PF10-PR10-44-F009) and storing the log in [appendix 4.4](#) of this plan

Only registered carriers of waste will be employed for transport purposes and copies of all waste management permits, licences and exemptions will also be obtained and held on site prior to any movement of waste taking place. For all waste transfers, GRAHAM will obtain a copy of the receipt, or a copy of the invoice, from the authorised disposal site as proof that the waste reached the proposed destination.

- Details of Waste Management Carriers for Transporting Waste (REF:PF10-PR10-44-F012) will be stored in [Appendix 4.3](#) of this plan
- Details of Permitted, Licenced or Exempt Sites (REF:PF10-PR10-44-F011) will be stored in [Appendix 4.2](#) of this plan

GRAHAM will retain all controlled waste transfer notes for a minimum of two years and hazardous waste transfer notes for a minimum of three years. Waste transfer notes will initially be retained on site and upon project completion will be transferred to a document store in head office. Each consignment of waste taken from the site will be subject to documentation, which will conform to the table below to ensure full traceability of the material to its final destination.

### Waste Transfer Note Detail

1. State the name of the waste producer.
2. Signature of the waste producer.
3. Signature of the waste carrier.
4. A combination of:
  - (i) a description of the waste (inert, non-hazardous or hazardous) and
  - (ii) the relevant the European Waste Catalogue (EWC) code classification.
5. State the quantity of waste in cubic metres (m<sup>3</sup>).
6. How the waste is stored and any processes the waste has been through
7. State the name of the site where the waste is being created.
8. State the date and time that the waste was taken off site by the waste carrier.
9. State the name and address of the waste carrier.
10. Waste carrier licence number
11. State the name and address of where the waste is being taken to and the site licence/ permit or exemption number
12. State whether the waste carrier is the producer or carrier of the waste (in most cases it will be the latter).
13. Highlight on the waste transfer note the certificate number
14. Standard Industry code (SIC) of your business
15. Include a statement that you have applied the waste hierarchy

## 9.12 Waste Transfer Note Detail

### Duty of Care – Waste Transfer Note

PF10-PR10-44-F008

**Project:**

**Section A – Description of Waste**

1. Description of the waste being transferred: \_\_\_\_\_
2. European Waste Catalogue/ List of Waste Code [ ] [ ] [ ] e.g. 17 01 01
3. How is the waste contained?  
Loose  Sacks  Skip  Drum  Other  Please describe \_\_\_\_\_
4. How much waste? For example, number of sacks, weight etc: \_\_\_\_\_

**Section B – Current holder of the waste (Transferor)**

*By signing in section D below I confirm that I have fulfilled my duty to apply the waste hierarchy*

1. Full Name: Graham Construction
2. Company name and address: Ballygowan Road, Hillsborough, BT26 6HX
3. SIC code (2007): \_\_\_\_\_
4. Which of the following are you: (Please tick one or more boxes)  
 Producer of the Waste  Importer of the Waste  Registered Waste Carrier
5. Please state how has the waste been treated:  
 Segregation/ separate collection/ screening/ hand picking (Delete as appropriate)
6. If treatment has not been carried out please state why this is not considered necessary. (E.g. The waste is inert waste which cannot be treated because it is not technically feasible to do so): \_\_\_\_\_

**Section C – Person collecting the waste (Transferee)**

1. Full Name: \_\_\_\_\_
2. Company name and address: \_\_\_\_\_
3. Which of the following are you?

	Tick	Licence/ permit number	Expiry date
Holder of a valid exemption		N/A	N/A
A registered waste carrier/ broker/ dealer			

**Section D – The Transfer**

1. Address of transfer/collection point (SITE): \_\_\_\_\_
2. Date of transfer: \_\_\_\_\_  
(For multiple consignments/ "Season Tickets" give "between" dates)
3. Time(s) of transfer: \_\_\_\_\_
4. Destination of Waste, give address: \_\_\_\_\_
5. Destination of Waste, give licence/ permit number: \_\_\_\_\_
6. Name and address of broker who arranged this waste transfer (if applicable): \_\_\_\_\_

**Transferor's signature**

Print Name: \_\_\_\_\_  
Representing: \_\_\_\_\_

**Transferee's signature**

Print Name: \_\_\_\_\_  
Representing: \_\_\_\_\_

Details of the container and the quantity of waste Skip, size, Volume or weight and whether waste is in bags, drums etc

The Waste Hierarchy Declaration confirming that the waste producer has considered prevention, reuse, recycle, recover and disposal in that order.

Details of the person transferring the waste (transferor) this is usually the waste producer – GRAHAM. If subcontractors are arranging waste disposal it may be named.

Details of the person the waste is being transferred to (the transferee) this is the waste carrier e.g. skip company, haulage contractor, road sweeper.

Written Description of the Waste e.g. concrete, timber, mixed construction

European Waste Code (EWC) E.G. 17 09 04 Mixed Construction

The Standard Industry Classification (SIC) Code See list of common GRAHAM SIC Codes (section 9.13 of SWRMP)

Details of the place where the waste is transferred from the transferor (waste producer) to the transferee (carrier) this is the location the waste is being collected from

Date of the waste transfer (date or period the collection was made)

The Waste Carriers Registration Number

Destination details including permit or exemption reference for that facility GRAHAM requirement for waste destination to be on the waste transfer note

Signatures of the transferee (waste producer) and the transferor (waste Carrier) both signatures are needed on all WTN

Note: Legible copies of waste transfer notes must be available at all times and must be kept for two years from the date of the waste collection

## 9.13 UK SIC CODES - Excerpts from UK Standard Industrial Classification of Economic Activities

### Section F Construction

**41100** Development of building projects

#### Common SIC CODES for GRAHAM operations

<b>41201</b>	<b>Construction of commercial buildings</b>
<b>41202</b>	<b>Construction of domestic buildings</b>
<b>42110</b>	<b>Construction of roads and motorways</b>
<b>42120</b>	<b>Construction of railways and underground railways</b>
<b>42130</b>	<b>Construction of bridges and tunnels</b>
<b>42210</b>	<b>Construction of utility projects for fluids</b>
<b>42220</b>	Construction of utility projects for electricity and telecommunications
<b>42910</b>	Construction of water projects
<b>42990</b>	Construction of other civil engineering projects
<b>43110</b>	Demolition
<b>43120</b>	Site preparation
<b>43130</b>	Test drilling and boring
<b>43210</b>	Electrical installation
<b>43220</b>	Plumbing, heat and air-conditioning installation
<b>43290</b>	Other construction installation
<b>43310</b>	Plastering
<b>43320</b>	Joinery installation
<b>43330</b>	Floor and wall covering
<b>43341</b>	Painting
<b>43342</b>	Glazing
<b>43390</b>	Other building completion and finishing
<b>43910</b>	Roofing activities
<b>43991</b>	Scaffold erection
<b>43999</b>	Other specialised construction activities

### Short Enforcement Guide

- You will be committing an offence, if you give waste to an unregistered waste carrier
- You will be committing an offence, if you do not have valid waste transfer notes and or consignment notes for the movement of waste
- You will be committing an offence, if you transport waste and you are not registered to do so
- You will be committing an offence, if you transport waste and do not have a complete waste transfer note with you
- You will be committing an offence, if you accept waste without holding the relevant waste authorisation
- You will be committing an offence, if you keep, treat or dispose of waste without the relevant waste authorisation

## 9.14 Minimisation of Hazardous Waste

### Hazardous Waste Minimisation

Eliminating the use of hazardous materials will eliminate the generation of hazardous waste from these products. Therefore, it is important that designers and architects are involved in any plan to reduce hazardous waste as they may specify materials which we (as a contractor) are bound by. However, GRAHAM also have an element of choice in the products we purchase, and we also have further opportunities to reduce the amount of hazardous waste produced through better handling, segregation and identification of re-use and recycling options.

The following table is a list of potential opportunities that may be applied to the construction project in order to reduce the generation.

<b>Hazardous waste management/ minimisation measures</b>				
	<b>Material</b>	<b>Measure</b>	<b>Indicative Cost</b>	<b>Anticipated Benefits</b>
1.	Solvents	Purchase only low-VOC paints, solvents and adhesives	Low	Reduced VOC emissions to atmospheres, less residual solvent in containers, easier disposal
2.	Various	Brief all site workers on likely hazardous wastes. Identify and clearly mark recovery & disposal storage arrangements	Low	Less cross-contamination, increased hazardous waste segregation, raised levels of awareness, reduced disposal costs
3.	Paints & Solvent	Increase level of accountability for hazardous materials – single point of issue, with nominated person responsible	Low	Less hazardous raw materials used, greater accountability and control/understanding of material usage (benchmarking).
4.	Packaging	Clean and sort packaging to reduce hazardous component prior to disposal	Low - Medium	Reduced volume of packaging being consigned as hazardous (disposal costs reduced)
5.	Treated wood	Reduce disposal of treated waste wood to landfill – minimise off-cuts and increase re-use where applicable.	Low - Medium	Increased level of beneficial wood re-use (or energy recovery), reduced landfill, potential future revenue source
6.	Oils, fuels & lubricants	Ensure all materials are stored in bunded areas and allocate central accountancy for oil wastes	Low - Medium	Reduce the frequency of spills to ground, increase collection of waste oils/rags.

## 9.15 Typical Hazardous Outputs

### Storage of Hazardous Wastes

All Hazardous waste streams will be stored separately from other Hazardous wastes and will be stored separately from controlled waste in secure and labelled containers.

### Typical Hazardous Waste Streams

Typical hazardous waste streams occurring on site will include

Activities	Hazardous Inputs	Hazardous Outputs
Site clearance and demolition	N/A	Asbestos, treated wood, electrical and electronic items containing hazardous components (including cables and switches); refrigerants and foams; drums of hazardous materials, potentially fly-tipped hazardous materials
Excavation	N/A	Potentially contaminated soils, asphalt containing tar products from paving and driveways
General construction works (including cementing, grouting etc.)	Grout, cement, resins, hardeners, various COSHH materials	Spent resins and hardeners, concrete and grout wash-out, un-set cement/grout, contaminated shuttering, spent COSHH materials and contaminated packaging
Building installation (e.g. electrical wiring and fittings, insulation, plumbing)	Fluorescent tubes/bulbs, electrical and electronic equipment and cabling	Spent fluorescent tubes and bulbs, off-cuts of electrical wiring etc.
Floor and wall covering (including plastering)	Adhesives, solvents, coatings, polishes, varnishes, resins, treated wood, plasterboard	Spent coatings and adhesives, empty containers containing residue, contaminated packaging, spent solvents, asbestos, plasterboard off-cuts, plaster washout
Painting (including paint preparation)	Solvent-based paints, paint thinners, enamels, lacquers, epoxies, primers, acrylics, brush cleaners	Spent solvent-based paints, empty solvent-based paint tins containing residue, spent solvent cleaners
Asphalting (roofing, paving)	Asphalt	Unused asphalt containing tar products, contaminated containers and equipment
General maintenance and power generation	Oils, greases, degreasers, batteries	Oily rags, oil filters etc. from maintenance of plant and machinery; waste oil; spent batteries; greases and lubricants; spent COSHH materials; oil contaminated absorbent spill material; contaminated PPE; oil contaminated water from bunds etc.

## **9.16 Management of Hazardous Waste**

### **How to determine if waste is Hazardous**

To determine whether waste is hazardous or not, the European List of Wastes (LoW) should be consulted. Within the LoW, Hazardous Waste is classified as "Absolute, Mirror or Non-Hazardous". Absolute (A\*) is considered hazardous irrespective of the concentration of levels of dangerous substances present. A Mirror entry (\*) can be either hazardous or not, depending on whether it contains certain levels of "*dangerous substances*".

### **Unexpected discovery of Hazardous Waste**

Unexpected hazardous waste not previously anticipated will be identified as early as possible into the duration of the project. Appropriate facilities and remediation or disposal arrangements will be made at the earliest possible opportunity. Examples of unexpected hazardous wastes include discovery of contaminated land.

### **Moving and Transporting Hazardous Waste**

Hazardous wastes must be:

- Transported by a registered or exempt waste carrier
- Accompanied by a consignment note
- Transferred to a facility that holds a suitable environmental permit or pollution prevention and control (PPC) permit

### **Consignment Notes**

A consignment note should be completed every time hazardous waste is removed from the site. The consignment note will then accompany the hazardous waste whilst it is being moved or transferred. In line with our legal requirements copies of completed hazardous waste consignment notes should be kept for three years.

Consignment notes can be purchased/ obtained from the relevant statutory authority. The type of consignment note you need to complete depends on how and where the waste is transported. You can use single or multiple collection forms.

### **Pre-notification/ Premise Registration**

You must pre-notify the relevant regulatory authority at least three clear working days and not more than one month before any hazardous waste leaves your site. You do this by filling in the pre-notification form within the consignment note.



## 9.18 Training

**Everyone on site will receive training which will include the following waste and environmental issues:**

- The Site Waste and Resource Management Plan
- Roles and responsibilities
- Waste procedures on site – including segregation, recycling, reuse and return methods
- Hazardous waste
- Duty of care/ responsibilities
- Materials storage and handling

**Waste and environmental training on site will consist of:**

- Induction training will incorporate a section on waste management on site
- Toolbox talks will be carried out on waste issues and all site operatives and subcontractors will be expected to attend
- Various employees attend workshops and seminars delivered by External providers such as WRAP in order to further advance knowledge and best practice in relation to waste issues.
- A training course for the elected "Site Environmental Champion" is delivered in house to relevant operatives by the Environmental Manager.

**Communication:**

- Communication of the progress of the SWRMP is carried out during monthly progress meetings involving site staff, senior management, and the client
- Posters are displayed throughout the site to ensure that everyone is aware of the importance of the Site Waste and Resource Management Plan and adheres to the site waste management procedures



Figure 17 - Posters

## 9.19 Subcontractor Requirements

All Subcontractors are required to fulfil the following responsibilities in relation to waste management:

- Provide to the project team a forecast of the key waste streams that you will create and an identification of what actions you plan to take to reduce waste.
- Minimise the use of materials and the production of waste through, efficient design, handling, transportation, stock control, the use of prefabricated / pre-sized materials, minimise packaging and efficient construction techniques.
- Segregate waste, use specific waste containers and waste management areas.
- Fulfil all statutory waste handling requirements such as Duty of Care Regulations
- Manage the collection, storage, segregation and treatment/disposal of the different types of waste you produce

In addition, a small number of subcontract work packages may be **responsible for the disposal of their own waste**. Where this is the case, the Site Team will ensure that these Subcontractors undertake the following responsibilities:

- Complete the "Expectations for removal of Excavated Material from Site by a Sub-Contractor" form ([REF: PF10-PR10-44-F007](#))
- Provide the waste carriers licence (collection permit in ROI) for the haulier removing the waste
- Provide the waste management licence /permit/ exemption certificate or permit for the site receiving the waste
- Provide any other relevant licence / permit / exemption such as that required for reprocessing or waste storage
- Provide a monthly report (using the standard GRAHAM format) with the quantities of the different types of waste removed from site. This must be provided with the split of each different type of waste managed, according to waste management method – re-use, recycling, recovery, landfill and other, and, in the case of re-use, recycling and recovery, whether this has taken place on- or off- site; and the quantity of waste materials sent to landfill.

## 9.20 Management of Subcontractors

### Illustration of Type A and Type B Subcontractors

The nature of Subcontractor work activities will assist in determining whether a Subcontractor should be responsible for their own wastes (as illustrated below). This arrangement can only be finalised following receipt of relevant documentation illustrated below. Where relevant documentation has not been provided, GRAHAM will arrange the waste removal and contra-charge the Subcontractor as appropriate.

Site Activity/ Sub-contractor Work Package	Primary Waste Stream	Waste Management Responsibility
Demolition and site clearance	Hardcore, spoil, timber, plastics	<p><b><u>Type A Subcontractor</u></b> Subcontractor has full responsibility for their own waste and must collect, store, segregate and dispose of all waste materials in accordance with industry best practice and current legislation.</p> <p><b><u>MUST</u></b> provide the Site Team with copies of the following for all waste leaving the site:</p> <ul style="list-style-type: none"> <li>• Waste Carriers Licences</li> <li>• Waste Management Licences/ permits</li> <li>• Waste Exemption Certificates</li> <li>• Waste Transfer Notes</li> <li>• Hazardous/ Special Waste Consignment Notes</li> <li>• Monthly figures of all waste removed from site to include type of material, total quantity of waste, waste management option i.e. landfill, reuse, recycling and the percentage of each waste material recycled or reused.</li> </ul>
Groundworks	Spoil	
Foundations/piling	Spoil and hardcore	
Structure	Bulk concrete, miscellaneous hardcore & metal	
Drylining	Plasterboard, metal studwork and insulation off cuts	
Brick/ blockwork	Bricks (crushed and incorporated into works)	
Building envelope	Timber, plastic, cardboard, hardcore/ rubble, Metal, Hazardous Waste	<p><b><u>Type B Subcontractor</u></b> Waste Management Contractor has responsibility for overall waste management and removal of waste from site.</p> <p>Individual subcontractors have local responsibility for segregation and distribution of waste on site to the waste compound.</p>
Mechanical & Electrical	Cables, metal, timber, plastic, cardboard, plastic packaging, Hazardous waste	
Trades (Joinery, Painting, Timber, cardboard, plastic packaging, Plastering, etc.)	Timber, paint, renders, cardboard, plastic packaging, Hazardous waste	
Landscaping habitat restoration/creation	Green waste and Topsoil	
Site re-instatement, removal of site offices and final clear away	Timber, hardcore, metal, office waste	
Office activities	Paper, cardboard, plastic packaging, general office waste	

## 9.21 Waste Management Supplier Requirements

To actively help achieve the waste reduction, reuse and recycling targets that have been set out for the project, requirements for Waste Management Suppliers are as follows:

- Agreement to work in accordance with GRAHAM Waste Supplier KPIs
- Fulfil all statutory waste handling requirements.
- Work with the project team to plan and implement suitable on-site waste management processes
- Monthly waste analysis reports to be made available to the GRAHAM site team by the 3rd of each month
- The tonnage of each waste material must be recorded within the waste report and the percentage recovery rates for each material illustrated.
- Waste log to be made available to the GRAHAM site team by the 3rd of each month
- Facilitate site visits/ audits by GRAHAM where requested
- GRAHAM are to be informed immediately of any changes to the operator's conditions, licence suspensions or pending prosecutions
- Delivery of at least 99% diversion of non-hazardous waste from landfill
- Contribute to the development and implementation of the Site Waste and Resource Management Plan as required.

### GRAHAM Approved/ Preferred List of Waste Management Suppliers

The GRAHAM SHE team maintain a list of approved/ preferred Waste Management Contractors. Suppliers not on the "approved/ preferred and unapproved list" will be asked to complete the "Waste Management Supplier Pre-Appointment Assessment" ([Appendix 1.3 – REF: PF10-PR10-44-F0010](#)). The returned information will be forwarded to the SHE Team to review details and ensure that the supplier meets relevant GRAHAM environmental requirements.

### Reporting and Documentation

The Waste Management Contractor shall provide the following information:

- Waste Transfer Notes and Hazardous Waste Consignment Notes.
- Copies of the Carriers Licence for all carriers used.
- Copies of the Waste Management Licences / Permits (or exemptions) for all destinations of waste.
- A register of containers logged.


On a monthly basis the Waste Management Contractor will supply the following information:

- The quantity (weight) of waste produced for each waste type together with the destination of that waste (reused, recycled, land filled, etc.).
- Recommendations for improved waste management/minimisation.

## 9.22 Waste Monitoring and Reporting

Waste quantities and data should be recorded within the waste management section of Cora. Data should be uploaded each month by the 5<sup>th</sup> of the month.

Waste Management



**Navigating to Waste Management**

The Waste section can be accessed via the left navigation menu – listed under the 'Environmental' option

- Incidents
- Carbon
- Electricity
- Fuel
- Waste Mgmt
- Water
- Biodiversity Actions
- KPIs
- Upstream Transport
- Settings

**Adding Waste**

To add a new waste entry -

- Go to the 'Waste Data' page using the top navigation

GRAHAM / Environmental / Waste Mgmt. / Site Summary / Mth Summary / Waste Data / Destinations / Carriers / Docs

Waste Data - CORA Training Scheme (007)

- Use the 'Add Waste' button found above the table

View Guidance | Export | + Add Waste

RECOVERY RATE (%)	RECOVERED (T)	ACTIONS
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**Figure 18 - SHIELD (waste section)**

Use Cora to input project waste data. The software will automatically calculate the total waste and waste to landfill.

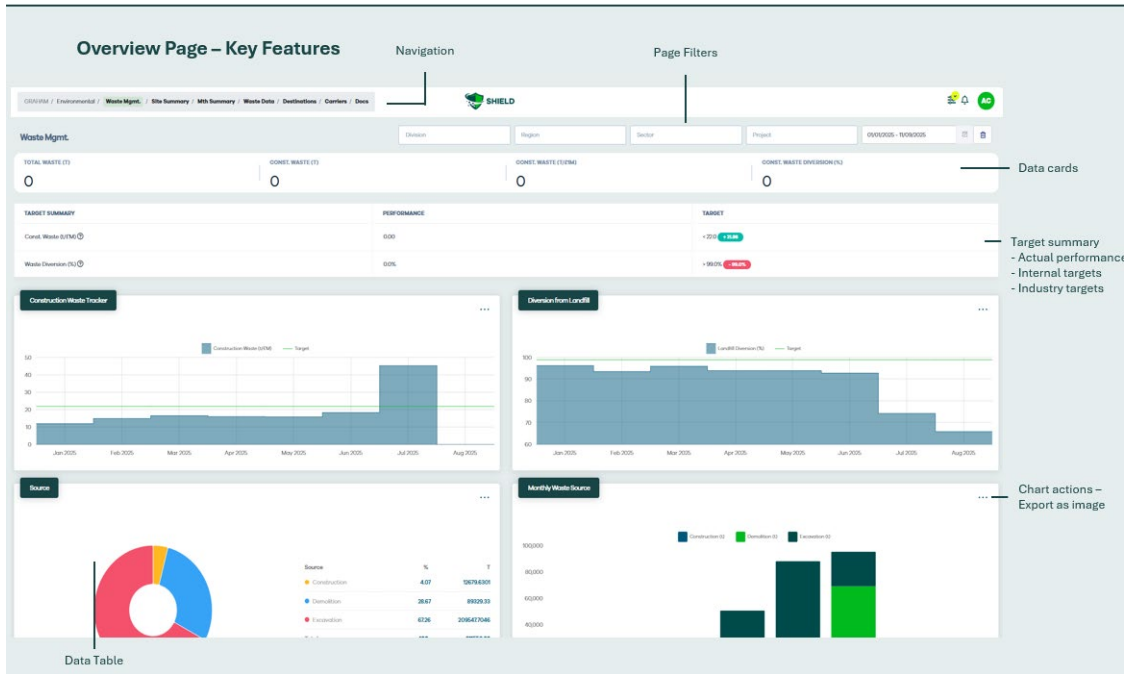


Figure 19: SHIELD (overview) CORA

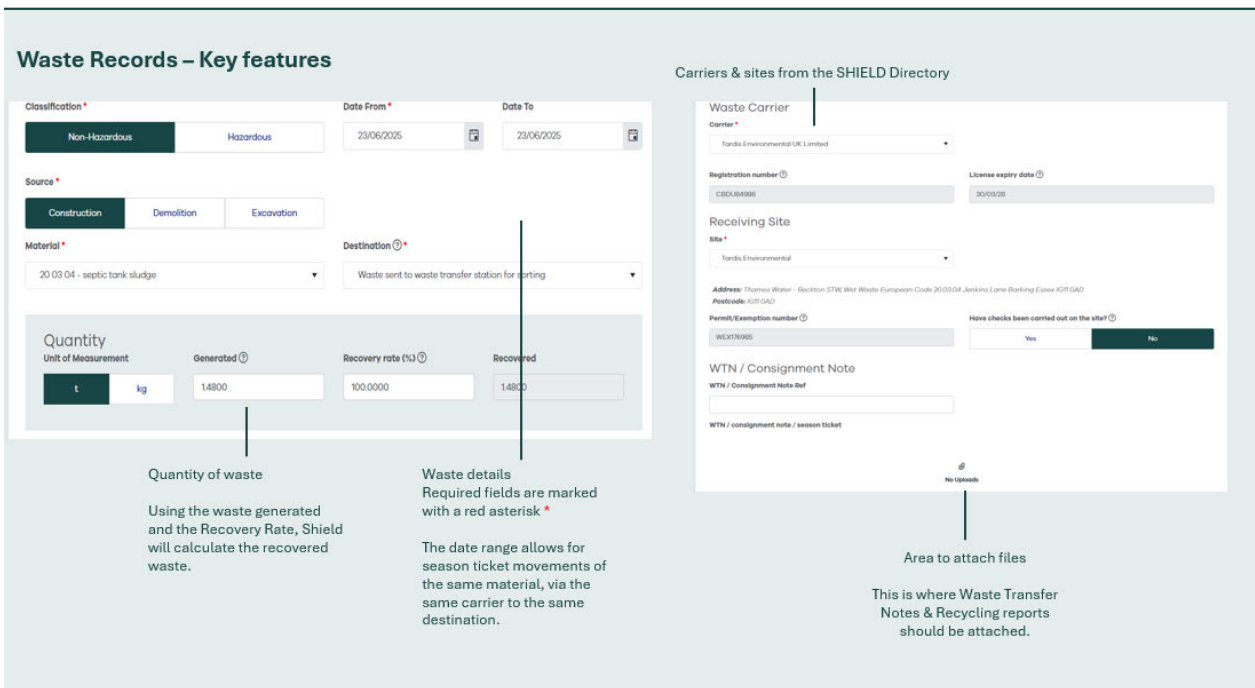


Figure 20: SHIELD (Waste Records)

**Waste Types Included in the Measurement**

- Record ALL construction, demolition and excavation wastes – including that generated by subcontractors (where this is part of the main contact of works)

- Record wastes in Tonnes only. Volumes of waste should be converted using standardised conversion factors
- For skip wastes – find out from your waste management contractor, the total tonnage of waste generated and the percentage that has been recycled and record this within the spreadsheet
- Record ALL reuse of wastes on site e.g. reuse of topsoil in landscaping

**Note:**

- Guidance from the Department of Communities and Local Government identified that List of Waste **17 05 04 (soil and stones not containing dangerous substances)** is non-exempt and when sent to landfill should be allocated a 50% recovery rate. All sites should therefore ensure that where excavation waste classified under European Waste Code 17 05 04 is taken to landfill, that it is allocated a 50% recovery rate.
- Where EWC 17 05 04 is “beneficially reused” e.g. used as capping as part of a landfill closure or restoration or sent to an “exempt” site, it should be allocated a 100% recovery rate.

## SECTION 10 Invasive Species

**Guidance Notes:**

This section contains details of the steps required to safeguard the site from negative impacts in respect of contaminated land and invasive plants.

- 10.1 Invasive Species Issues**
- 10.2 Identification and Survey**
- 10.3 Site Conditions**
- 10.4 Invasive Species Management**
- 10.5 Invasive Species Control and Eradication**

## 10.1 Invasive Species Issues

Non-native, or invasive, species are described as 'organisms introduced by man into places outside of their natural range of distribution, where they become established and disperse, generating a negative impact on the local ecosystem and species' (International Union for Conservation of Nature (IUCN), 2011). The ecological impacts of such 'biological invasions' are considered to be the second largest threat to biodiversity worldwide, after habitat loss and destruction.

The UK is bound by international agreements such as the Convention on Biological Diversity, the United Nations Convention on the Law of the Sea, the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979), the Convention on the Conservation of European Wildlife and Natural Habitat (Bern, 1979) and the Habitats and Birds Directives. All of these include provisions requiring measures to prevent the introduction of, or control of, non-native species, especially those that threaten native or protected species (JNCC, 2004). Additionally, Section 14 of the Wildlife and Countryside Act (WCA) (1981) makes it illegal to release, or allow to escape into the wild, certain plants or animals which may cause ecological, environmental or socio-economic harm. These commitments are expected to be subject to greater international enforcement over time.

Under The Wildlife (Northern Ireland) Order 198 it is an offence to;

- release or allow to escape into the wild any animal (or hybrid) which is not ordinarily resident or a regular visitor to Northern Ireland; or is included in Part I of Schedule 9,
- plant or otherwise cause to grow in the wild any plant (or hybrid) which is included in Part II of Schedule 9.

Those invasive plant species most commonly found in the UK are:

- Himalayan Balsam
- Japanese Knotweed
- Common Ragwort
- Giant Hogweed

Marine invasive species of concern in Northern Ireland include:

- Common Slipper Limpet (Schedule 9 spp)
- Leathery Sea Squirt (Schedule 9 spp)
- Japanese Wireweed (Schedule 9 spp)
- Carpet Sea Squirt
- Common Cordgrass (Schedule 9 spp)
- Wakame

## 10.2 Identification and Survey Terrestrial


















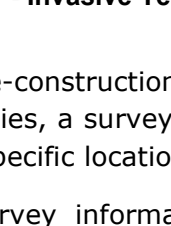
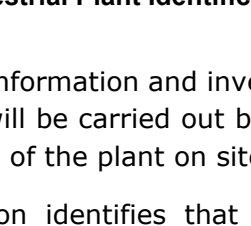
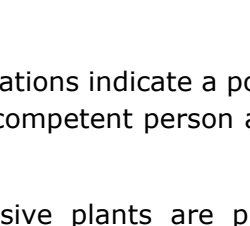
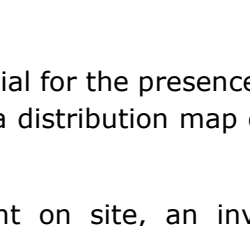
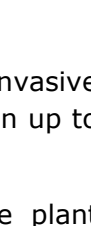
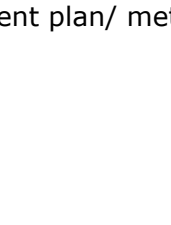
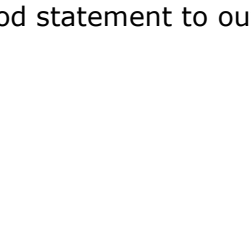










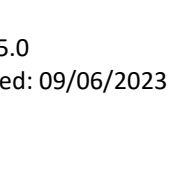

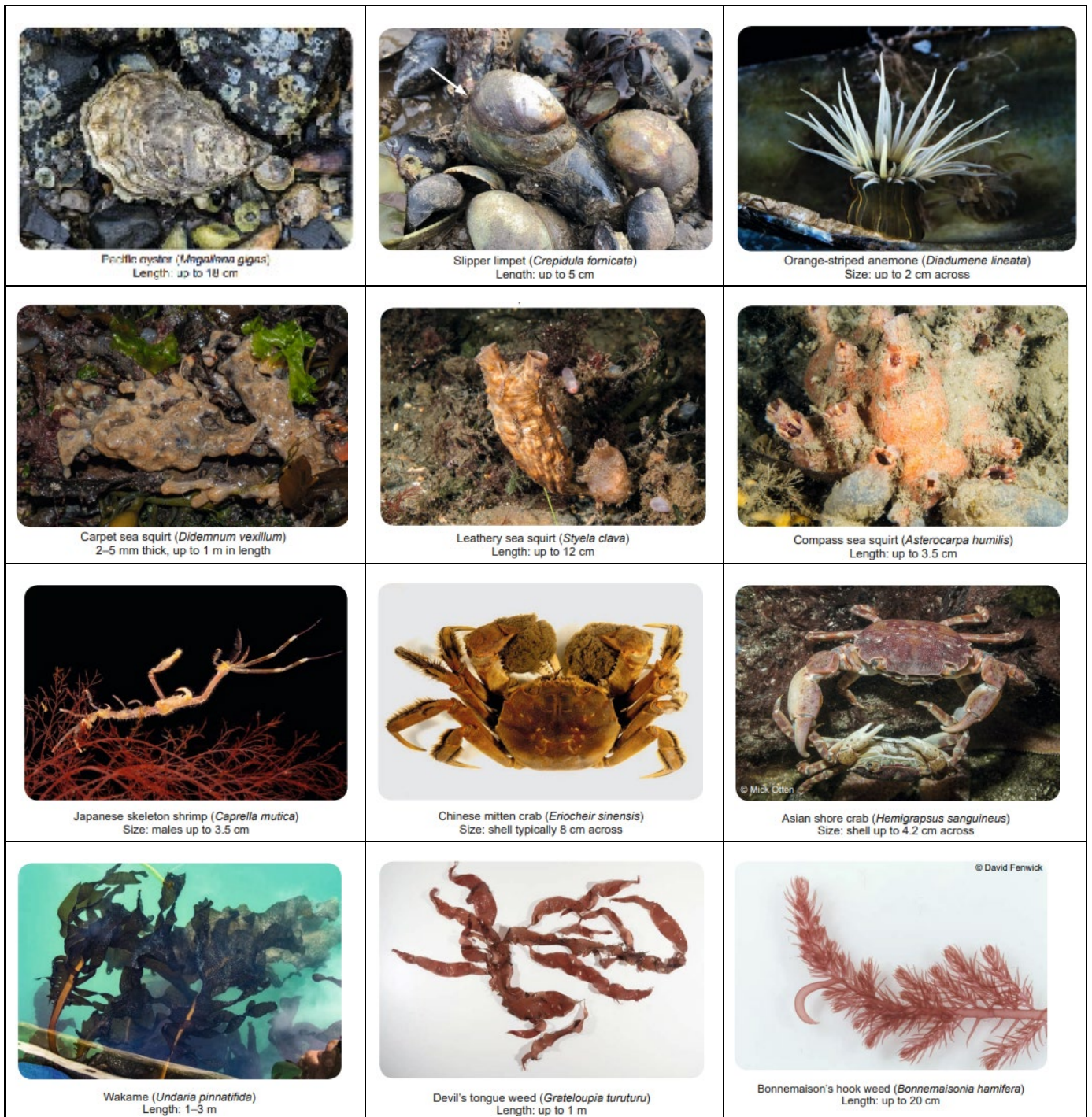
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
Himalayan Balsam													See Jan & Feb
Japanese Knotweed													See Jan & Feb
Ragwort													See Jan & Feb
Giant Hog Weed													See Jan & Feb

Figure 21.1 - Invasive Terrestrial Plant Identification

Where pre-construction information and investigations indicate a potential for the presence of invasive plant species, a survey will be carried out by a competent person and a distribution map drawn up to indicate specific locations of the plant on site.

Where survey information identifies that invasive plants are present on site, an invasive plant management plan/ method statement to outline controls must be put in place.

## Marine

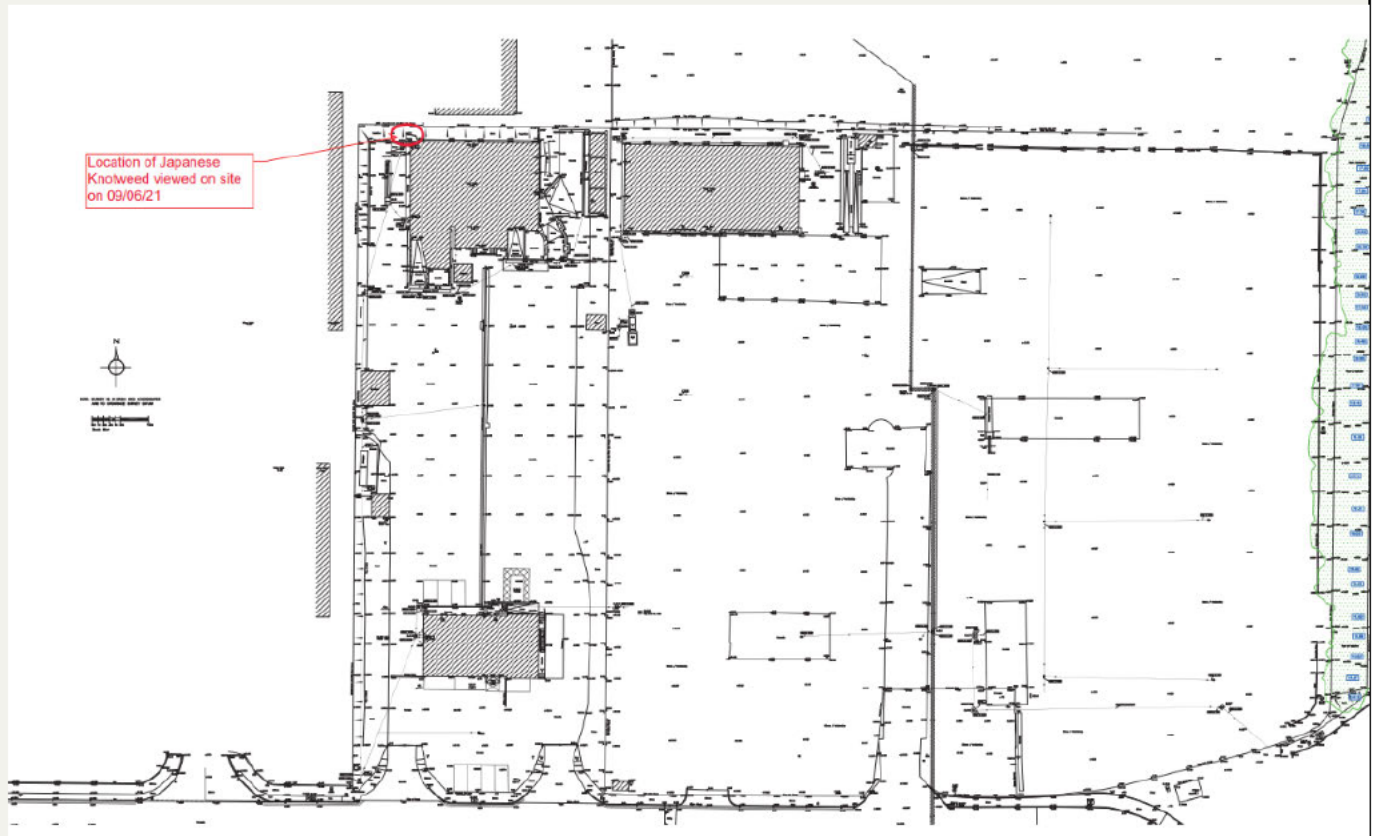


**Figure 22.1 Invasive Marine Species Identification**

Information on the identification of marine invasive non-native species (INNS) will be communicated to site operatives via the relevant RAMS and through toolbox talks using [Marine invasive non-native species in Northern Ireland \(dive-ni.com\)](https://www.dive-ni.com).

### 10.3 Site Conditions

Japanese Knotweed has been previously identified to the north of the existing livestock facility. This area is currently zoned off and it is not anticipated that there will be any requirement to enter this area.



#### Pathways for the potential introduction of non-native species

- Accidental imports from materials brought into the system as a result of the development.

#### Pathways for the potential introduction of non-native plant species

- Human transport (plant) routes
- Human movement via footwear
- Incorrect disposal methods

### 10.4 Invasive Species Management

#### Terrestrial

- An invasive plant management plan/ method statement to outline controls will be put in place.
- The plant and the surrounding area will be fenced off. The fence will be at least 4 metres away from the outer perimeter of the plant
- Signage will be installed at the area – e.g., Environmentally sensitive area – Keep Out

- Information and basic requirements with regards to the invasive plant will be identified as part of the induction training so that everyone is aware of the requirements
- The control and management of the invasive weed will be regularly monitored for any spread, regrowth or reintroduction. The “Invasive Plants – Record of Monitoring” form and the “Invasive Plants – Record of Treatment” will be completed as required
- If plant and machinery are working in a contaminated area, wheels will be washed on exit
- Double handling of the contaminated materials will be avoided to reduce the risk of spreading the plant

## Marine

See Marine Biosecurity Management Plan

## 10.5 Invasive Species Control and Eradication

### Terrestrial

Currently there are various means by which invasive plants can be eradicated from sites. These include:

- Long-term treatment with herbicides.
- Excavation and disposal at a licensed landfill site. (If invasive plants are disposed of offsite, they will be dealt with as waste in accordance with the Duty of Care Requirements)
- Excavation, deep burial and/or bunding on site prior to treatment with herbicide.

Due to site specific variations in soil type, topography, adjacent sensitivities and degree of invasive weed infestations, combinations of various control methods may be used. These methods are detailed within the invasive plant management plan/ method statement.

## Marine

DAERA’s Marine Invasive Non-native Species Guidance and the Check Clean Dry protocol will be followed at all times. These principles underpin the methodologies outlined in the Biosecurity Management Plan



Check your equipment, boat, and clothing after leaving the water for mud, aquatic animals or plant material; **Freshwater still/slow moving** – Remove anything you find and leave it at the site  
**Saltwater** – remove any material you find and put it in the bin. Reapply anti-fouling annually.



Clean everything thoroughly as soon as you can, paying attention to areas that are damp or hard to access. Use hot water if possible.



Dry everything for as long as you can before using elsewhere as some invasive plants and animals can survive for over two weeks in damp conditions.

[Check Clean Dry – Invasive Species Northern Ireland \(invasivespeciesni.co.uk\)](https://invasivespeciesni.co.uk)

## SECTION 11 Archaeology & Cultural Heritage

### **Guidance Notes:**

This section contains details of archaeological considerations and steps required to safeguard archaeology and cultural heritage during construction.

#### **11.1 Archaeological Monitoring**

#### **11.2 Discovery of Unexpected Archaeological Finds**

### **11.1. Archaeological Monitoring**

Access will be afforded to the site at all reasonable times to any nominated Archaeologist to observe the operations and to monitor the implementation of archaeological requirements.

### **11.2. Discovery of Unexpected Archaeological Finds**

- STOP work immediately.
- IMMEDIATELY PROTECT the find by fencing/blocking off.
- NOTIFY the discovery to the project team
- Access to the area by machinery and personnel is to be prevented.
- Time is to be allowed for the archaeologist to undertake the appropriate level of recording.
- Archaeological objects and treasure discovered must be reported to the regulator

## SECTION 12 Emergency Response

### **Guidance Notes:**

This section contains details of the procedure to follow in the event of an environmental complaint, spill or incident.

#### **12.1 Emergency Response Equipment and Resources**

#### **12.2 Environmental Incident Response Plan**

#### **12.3 Incident Response Reporting**

## 12.1. Emergency Response Equipment and Resources

Oil spillage kits will be available on site at all times and a team of operatives will be trained on how to maintain, position and use them properly. Training may be carried out in-house by the Environmental Manager or by the site team.

The trained Emergency Spill Response team will be identified on the site's environmental noticeboard.

Spill kits should be appropriate and adequate for risk on site



Figure 22: Spill kits



Figure 23: Spill Response Team Poster

If the nature of the incident necessitates external spill response provision, the Emergency Response Team will be contacted using the contact details below:



Response Team	Phone	Availability
OHES Environmental	[REDACTED]	24hr Service

## 12.2. Environmental Incident Response Plan

The Environmental Incident Response Plan describes the actions to take in order to deal with any unexpected environmental incidents and details simple guidance on the immediate action to be taken in order to prevent and minimise pollution resulting from an environmental incident. The response actions are detailed according to the specific pollutant and the receiving receptor.

The Environmental Incident Response Plan also describes environmental incident reporting and investigation processes.

The Environmental Incident Response Plan will be displayed on site and communicated to all operatives. (IMS Ref: PF10-PR10-43-F013)

### **12.3. Incident Response Reporting**

- All operatives will be made aware that any environmental incident, spillage or complaint must be reported to the GRAHAM site staff as soon as it happens
- Environmental Events as a result of the Works will be recorded by adding an "Environmental Incident", "Environmental Complaint" or "Other" event record on Cora.
- Every effort will be made to establish the cause of the issue leading to a complaint/ spill/ incident. Assuming the issue arose from the failure of a control system, the issue will be put right at the earliest opportunity
- The response action will be recorded on Cora by the Site Manager
- A log of all complaints/ spills/ incidents and follow-up actions will be maintained
- The Environmental Manager will undertake an investigation of all major incidents and will notify relevant agencies as required. Any reference numbers will be recorded and notified to the Employers Representative.

**CEMP APPENDICIES (1.1-1.8; 2.1-2.4)***(Retained on site in CEMP Site Folder 1)***1.0 RECORDS INITIATED DURING THE PRE-CONSTRUCTION PHASE**

<b>1.1</b>	<b>Project Environmental Risk and Opportunities Register</b> <i>Completed by the Regional/ Project Environmental Manager (in co-operation with the Project Manager)</i>
<b>1.2</b>	<b>Waste Management Supplier Pre-Appointment Assessment</b> <i>Completed by the Regional/ Project Environmental Manager upon receipt of supplier information</i>
<b>1.3</b>	Expectations for Removal of Excavated Material from site by a Sub-contractor <i>Completed by the relevant Subcontractor</i>
<b>1.4</b>	<b>Concrete Washout Risk Assessment</b>
<b>1.5</b>	Noise Monitoring Plan
<b>1.6</b>	<b>Site Drainage plan</b>
<b>1.7</b>	Licences, consents, permits or permissions granted to GRAHAM (as detailed in section 1.14 of the CEMP)
<b>1.8</b>	Ecological Surveys

**2.0 RECORDS OF ENVIRONMENTAL TRAINING AND COMMUNICATION**

<b>2.1</b>	<b>Introductory Site Environmental Awareness Training &amp; Environmental Champion Training</b> <i>(Delivered by the Project/ Regional Environmental Manager)</i>
<b>2.2</b>	<b>Spill Kit Training (Training certificate or communication sheets)</b> <i>(Can be delivered by the Project/ Regional Environmental Manager or by the site team (dependant on risk))</i>
<b>2.3</b>	<b>Toolbox talks (Communication sheets)</b>
<b>2.4</b>	<b>Advice Notes (Communication sheets)</b>

*Records in bold text are those that must be available for each project. Other records are process and site specific*

**CEMP APPENDICIES (3.1-3.14; 4.1-4.8; 5.1-5.4; 6.1-6.2)**  
 (Retained on site in CEMP Site Folder 2)

**3.0 ENVIRONMENTAL MEASURING AND MONITORING**

<b>3.1</b>	<b>Weekly Site Supervisors Environmental Report</b>
<b>3.2</b>	Water Quality: Visual Inspection Record
<b>3.3</b>	Water Quality – Sampling Record
<b>3.4</b>	<b>Materials Storage Inventory</b>
<b>3.5</b>	Invasive Plants - Record of Monitoring
<b>3.6</b>	Invasive Plants – Record of Treatment
<b>3.7</b>	NRMM Inventory
<b>3.8</b>	Noise Monitoring Report Form
<b>3.9</b>	Dust and Air Quality Monitoring Plan
<b>3.10</b>	Fuel delivery data (for upload to cora)
<b>3.11</b>	Electricity and water meter readings (for upload to cora)
<b>3.12</b>	Biodiversity Actions (for upload to cora)
<b>3.13</b>	<b>Environmental Risk Assessment</b>
<b>3.14</b>	Recycled Aggregate – Quality Protocol Compliance

**4.0 CARBON MANAGEMENT**

<b>4.1</b>	<b>Pre-Construction Environmental Information</b> <i>Completed by the Project Manager and/ or members of the pre-construction team to inform Environmental Sustainability and Carbon Management Planning</i>
<b>4.2</b>	<b>Embodied Carbon Workshop</b>
<b>4.3</b>	<b>Environmental Sustainability Action Plan</b>
<b>4.4</b>	<b>Carbon Data Tracker</b>
<b>4.5</b>	<b>Carbon Measurement Data and Reports</b>
<b>4.6</b>	<b>Evidence of Sharing Good Practice Outcomes</b>
<b>4.7</b>	<b>Evidence of Continuous Improvement and Ongoing Review</b>
<b>4.8</b>	<b>Carbon Training Records</b>

<b>5.0 WASTE MANAGEMENT</b>	
<b>5.1</b>	<b>Duty of Care Waste Transfer Notes</b>
<b>5.2</b>	<b>Details of Permitted, licenced or exempt sites</b>
<b>5.3</b>	<b>Details of Waste Management carriers for transporting waste</b>
<b>5.4</b>	<b>Waste Log (Only if CORA is not used)</b>
<b>6.0 PERMITS</b>	
<b>6.1</b>	Permit to pump and discharge
<b>6.2</b>	Permit to Clear

*Records in bold text are those that must be available for each project. Other records are process and site specific*

## Appendix 1.1: Project Environmental Risk and Opportunities Register

## Appendix 1.2: Waste Management Supplier Pre-Appointment Assessment

## **Appendix 1.3: Expectations for removal of excavated material from site by a Subcontractor**

## Appendix 1.4: Concrete Washout Risk Assessment

## Appendix 1.5: Noise Monitoring Plan

## Appendix 1.6: Site Drainage Plan

## Appendix 1.7: Licences, consents, permits or permissions

## Appendix 1.8: Ecological Surveys

## **Appendix 2.1: Introductory Site Environmental Awareness Training & Environmental Champion Training**

## Appendix 2.2: Spill Kit Training

## Appendix 2.3: Toolbox Talks

## Appendix 2.4: Environmental Advice Notes

## Appendix 3.1: Weekly Site Supervisors Environmental Report

## Appendix 3.2: Water Quality - Visual Inspection Record

## Appendix 3.3: Water Quality - Sampling Record

## Appendix 3.4: Materials Storage Inventory

## Appendix 3.5: Invasive Plants - Record of Monitoring

## Appendix 3.6: Invasive Plants – Record of Treatment

## Appendix 3.7: NRMM Inventory

## Appendix 3.8: Noise Monitoring Report Form

## Appendix 3.9: Dust and Air Quality Monitoring Plan

## Appendix 3.10: Fuel Delivery Data

## Appendix 3.11: Electricity and Water Meter Readings

## Appendix 3.12: Biodiversity Actions

## Appendix 3.13: Environmental Risk Assessment

## Appendix 3.14: Recycled Aggregate – Quality Protocol Compliance

## Appendix 4.1: Pre-Construction Environmental Information

## Appendix 4.2: Embodied Carbon Workshop

## Appendix 4.3: Environmental Sustainability Action Plan

## Appendix 4.4: Carbon Data Tracker

## Appendix 4.5: Carbon Measurement Data and Reports

## Appendix 4.6: Evidence of Sharing Good Practice Outcomes

## **Appendix 4.7: Evidence of Continuous Improvement and Ongoing Review**

## Appendix 4.8: Carbon Training Records

## Appendix 5.1: Duty of Care Waste Transfer Notes

## Appendix 5.2: Details of permitted, licenced or exempt sites

## Appendix 5.3: Details of Waste Management Carriers for Transporting Waste

## Appendix 5.4: Waste Reports

## Appendix 6.1: Permit to Pump and Discharge

## Appendix 6.2: Permit to Clear

Insert PF no's in list of appendices

File Labels

**CEMP File 1**

- **Construction Environmental Management Plan**
- Appendices 1.1 - 1.8 (Documents initiated during the pre-construction phase)
- Appendices 2.1 – 2.4 (Records of Environmental Training and Communication)

**CEMP File 2**

- Appendices 3.1 - 3.14 (Environmental Measuring and Monitoring)
- Appendices 4.1 – 4.8 (Carbon Management)
- Appendices 5.1 – 5.4 (Waste Management)
- Appendices 6.1 - 6.2 (Permits to work)