Planning and Environmental Consultants

Construction and Environmental Management Plan

Proposed Part X Planning Application on lands at Claregalway, Co. Galway

DOCUMENT DETAILS

Client:	**Galway County Council**
Project Title:	**Proposed Part X Planning Application on lands at Claregalway, Co. Galway**
Project Number:	**210947**
Document Title:	**Construction and Environmental Management Plan**
Document File Name:	**CEMP F - 2023.08.14 - 2109147**
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Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	03/08/2023	BT	OC
02	Final	14/08/2023	BT	OC
03				

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1. INTRODUCTION

This Construction & Environmental Management Plan (CEMP) has been prepared by MKO on behalf of Galway County Council who have applied to An Bord Pleanála for permission to construct a residential development comprising 88 no. residential dwellings.

The CEMP provides the environmental management framework to be adhered to during the pre-commencement and construction phases of the development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur. The CEMP has been informed by and takes account of the accompanying documents which have been prepared for the proposed development.

All measures identified in this CEMP and the associated Natura Impact Statement (NIS) will be finalised subsequent to any permission granted and updated prior to construction and include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the proposed development.

The CEMP to be prepared by the appointed contractor will be a single, amalgamated document that can be used during the construction phase of the project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer and contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set out in this document. It will be the contractor's current version of the CEMP, which at any point in time, will guide the construction activities on-site and the implementation of which will be audited during construction.

1.1 Potential Amendment Scenarios

This CEMP may require further updating and final agreement with the various stakeholders should the Proposed Development receive Planning Permission, in alignment with all the conditions which apply and in order to identify, assess and satisfy the contract performance criteria. The final CEMP will also require updating by the selected contractor. Therefore, this is a working document and will be developed further prior to construction commencing.

Triggers for amendments to the CEMP will include:

- When there is a need to improve performance in an area of environmental impact;
- As a result of changes in environmental legislation applicable and relevant to the project;
- Where the outcomes from auditing establish a need for change;
- Where Work Method Statements identify changes to a construction methodology to address high environmental risk; and
- As a result of an incident or complaint occurring that necessitates an amendment.

1.2 Scope of the Construction and Environmental Management Plan

This report is presented as a guidance document for the management of construction activities and waste materials generated during the works and following completion. It outlines clearly the mitigation measures that are required to be adhered to in order to manage activities and waste materials in an appropriate manner. The report is divided into seven sections, as outlined below.

- **Section 1** provides a brief introduction as to the scope of the report detailing the targets and objectives of this plan.
- **Section 2** outlines the site and project details and an overview of construction methodologies that will be adopted throughout the proposed project.
- **Section 3** sets out details of the environmental controls on-site which looks at noise and dust controls. Site drainage measures and a waste management plan are also included in this section.
- **Section 4** sets out a fully detailed implementation plan for the environmental management of the proposed project outlining the roles and responsibilities of the project team. Also included in this section is the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection.
- **Section 5** consists of a summary table of all mitigation proposals to be adhered to during the implementation of the project.
- **Section 6** sets out a programme for the timing of the works.
- **Section 7** outlines the proposals for reviewing compliance with the provisions of this report.

1.3 Targets and Objectives

The construction phase works are designed to approved standards, which include specified materials, standards, specifications and codes of practice. The design of the project has considered environmental issues, and this is enhanced by the works proposals.

The key site targets are as follows;

- Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible.
- Correct fuel storage and refuelling procedures to be followed.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment.
- Good waste management and housekeeping to be implemented.
- Using recycled materials, if possible, e.g., excavated stone, soil and subsoil material.
- Avoidance of vandalism.
- Air and noise pollution prevention to be implemented.
- Monitoring of the works and any adverse effects that it may have on the environment and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows.

- Keep impact of construction to a minimum on the local environment and wildlife.
- Ensure construction works and activities are completed in accordance with any planning conditions for the development.
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community.
- Ensure construction works and activities have minimal impact on the Natural Environment
- Keep impact of construction to a minimum on the local environment, watercourses and wildlife.
- Correct fuel storage and refuelling procedures to be followed.
- Good waste management and housekeeping to be implemented.
- Air and noise pollution prevention to be implemented, and
- Monitoring of the works and any adverse effects that it may have on the environment.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment.
- Comply with all relevant water quality legislation.
- Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the site is kept in place at all times.

2. SITE AND PROJECT DETAILS

2.1 Site Location

The subject site is currently a plot of greenfield agricultural lands located approximately 0.4km south of Claregalway village and 10.1km northeast of Galway City Centre (Grid Reference: M 37299 32240) as illustrated in Figure 2-1. The site occupies a strategic location adjacent to R381 Regional Road and (L7110) Lakeview Road and adjoins a developed urban area with good access to road networks to facilitate vehicular, bike and pedestrian access. Lands in the surrounding area are characterised by existing residential development to the north and industrial development and agricultural field to the south. The site covers an area of 2.66 Hectares.

There are a range of facilities in the surrounding area. Claregalway Community Centre is located c.110m east of the site, Claregalway College and Galway Music Academy are located c. 250m and c. 330m southeast of the site respectively. Claregalway Corporate Park is located approx. 300m south of the site. The Claregalway Bus Stop is located approx. 750m north of the site.

A layout of the proposed development has been shown in Figure 2-2.

2.2 Development Description

The proposed development description is as follows:

- Construction of 88 no. residential units comprising:
  - 13 No. 1-bedroom (2 persons) apartments
  - 20 No. 2-bedroom (3 persons) apartments
  - 1 No. 2-bedroom (4 persons) apartment
  - 15 No. 3 bedroom (5 persons) apartments
  - 7 No. 2 bedroom semi-detached houses
  - 11 No. 2 bedroom terraced houses
  - 19 No. 3 bedroom terraced houses
  - 2 No. 4 bedroom terraced houses.
- Provision of a creche facility for 21 children; including a secure external play area;
- Provision of 2 no. new vehicular access from the (L7110) Lakeview Road and R381 Regional Road;
- Provision of 260 no. bicycle parking and 144 no. car parking spaces comprising:
  - 6 no. disabled parking spaces
  - 133 no. car parking spaces for residential use
  - 11 no. car parking spaces for creche use
- Provision of public open space, communal open space, private open space, site landscaping, public lighting, refuse storage, resident and visitor car parking including electric vehicle charging points, bicycle parking, boundary treatments, and all associated site development works;
- This application is accompanied with a Natura Impact Statement (NIS).

Map Legend

- Site Boundary
- Special Area of Conservation (SAC)

N

Drawing Title

Site layout

Project Title

Proposed Part X Planning Application on lands at Claregalway Co. Galway

Drawn By	Checked By
AvdGM	RW
Project No.	Drawing No.
210947	Fig 2-1
Scale	Date
1:25000	02.08.2023

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PROPOSED SITE LAYOUT
Scale 1:500

Site Area = 27,110.04m²/ 2.7Ha (6.70 acres)

LEGEND:

- Public Open Space
- Private Open Space
- Home Zone (printed concrete or similar)
- "Extent of "OS-Open Space/ Recreation & Amenity" Zone as per CDP 2022-2028 Baile Chláir Land Zoning Map". (1,972.62m²)
- Site Area
- Site Area belongs to another owner
- Bin Store
- Car Parking Space
- Bike Stand
- Bench

UNIT TYPES

TYPE A (4 Bedrooms)

4 BEDS. HOUSE
2 Houses

TYPE B (3 Bedrooms)

3 BEDS. HOUSE
19 Houses

3 BEDS. APARTMENT
15 Apartments

TYPE C (2 Bedrooms)

2 BEDS. HOUSE
18 Houses

2 BEDS. APARTMENT
21 Apartments

TYPE D (1 Bedroom)

1 BED. APARTMENT
13 Apartments

TYPE E (Crèche)

CRÈCHE
1 Unit - 21 Children

88 PROPOSED UNITS + 01 CRÈCHE

NOTE: Landscape included as reference only and subject to Landscape Architect's design.

SITE STATISTICS:

(As required for Housing by Galway Co. Development Plan 2022-2028)

Overall Site Area *(Edged in RED)*:
27,110.04m² Approx. (6.70 acres approx.)

DENSITY
Required : *N/A*
Provided : 33 Units/Ha.

OPEN SPACE
Public:
Required : *15% (4,066.51m²)*
Provided : 26.8%(7,267.45m²)

Private Open Space for Housing is provided in the form of rear gardens of minimum 11m in depth (22m back to back between houses), in compliance with the recommended areas required by the current Galway Co. Development Plan 2022-2028.

New Car Parking calculation
(based on new Galway County Development Plan 2022-2028 requirements)

Houses and Apartments:
4 bedroom units = 2 per unit = 4 car parking spaces required.
1 to 3 bedroom units = 1.5 per unit = 86 x 1.5 = 129 car parking spaces required.

Crèche:
Total capacity = 6 babies (0 to 1 years old)
7 children (1 to 2 years old)
8 children (2 to 6 years old)
Total= 21 (babies & children).

Staff: (0 to 1 years old) 1 staff each 3 children = 2 staff required.
(1 to 2 years old) 1 staff each 5 children = 1 ~ 2 staff required.
(2 to 6 years old) 1 staff each 8 children = 1 staff required.
Total staff required = 5.

Crèche car parking spaces required = 1 space/staff = 5
1 space each 4 children = 5.25 ~ 6

Total = 11 car parking spaces required for the crèche.

Total car parking spaces required:
Dwelling Units = 133 spaces.
Crèche = 11 spaces.

Total overall required = 144 spaces.

Provided:
148 spaces (Total)
Including 6 Disabled parking spaces

BICYCLE STANDS
Required: 1 bicycle spaces per bed for residents, 1 each 2 dwellings for visitors & 1 each car space (Crèche) = 258 bicycle spaces

Provided: 260 Bicycle parking spaces

Comhairle Chontae na Gaillimhe
Galway County Council

Rialtas na hÉireann
Government of Ireland

Housing for All

N

Rev	Description	By	Date
A	Updated Layout	WS	14-06-23

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Client:	Galway County Council
Project:	Proposed Housing Development at Baile Chláir. Co. na Gaillimhe
Drawing Description:	Proposed Site Layout Plan
Scale:	1:500 @ A1
Status:	Planning
Drawing No:	210503-03-003
Rev:	A
Date:	June 2023
Drawn by:	SF/ WS
Checked by:	BF

2.3 Construction Management

2.3.1 Introduction

The appointed contractor for the construction of the proposed development and will be required to comply with this CEMP and any revisions made to this document throughout the construction phase. An overview of the anticipated Construction Methodologies is provided below.

2.3.2 Overview of Proposed Construction Methodology

The proposed anticipated construction methodology is summarised under the following main headings:

- Site Establishment
- Perimeter Hoarding
- Site Excavation
- Proposed Site Roads
- Services and Utilities
- Residential Unit Construction
- Landscaping Works

2.3.2.1 Site Establishment

Prior to the commencement of any construction, entrances to the proposed development site will need to be fully established with appropriate security gates. The proposed development will be accessed via the 2 no. new accesses on the R381 serving the western units and on (L7110) Lakeview Road serving the eastern units. Both accesses are 6m wide surrounded by 2 no. pedestrian gates.

A site compound inclusive of a parking area for construction worker's vehicles will be provided within the confines of the site. There will be no parking permitted for any vehicles associated with the project on the public road during the construction phase of the development. A designated section of the site will be fenced off as the construction compound.

2.3.2.2 Perimeter Hoarding

The existing site boundaries are comprised of stone/block walls along with a section of non-native ornamental hedgerow and treelines. Perimeter hoarding will be provided around the site, in the form of 2.4m high fencing, to provide a barrier against unauthorised access from the public areas. Controlled access points in the form of 2 no. site entrance will be kept locked outside of normal working hours.

The hoarding will be well maintained and painted or covered with graphics portraying project information. Due to the nature of the works and the construction traffic using the site entrance, appropriate signage will be provided along the footpath and site entrance to alert pedestrians to the traffic exiting/entering the site. Likewise, appropriate signage will be installed within and outside the site to alert drivers of the pedestrians crossing ahead.

2.3.2.3 Site Excavation

Soil Stripping and temporary stockpiling of soils and subsoils will be required around the site as the proposed development progresses. While these works occur, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e., ESB, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material will be reused for future landscaping works or for backfill of excavations.
- All stockpiles will be damped down or covered in a sheet of polyethylene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- Silt filtration in the form of silt fencing or silt bags will be used as appropriate to prevent contamination of any watercourses in the vicinity of the site.
- Trenches will be backfilled as soon as possible after excavation. When practically possible, excavation depths and volumes will be kept to a minimum.

2.3.2.4 Proposed Site Roads

The construction methodology for the proposed access roads are outlined as follows:

- Excavation will take place until a competent stratum is reached.
- The competent stratum will be overlain with up to 500mm of granular fill.
- A layer of geogrid/geotextile may be required at the surface of the competent stratum.
- A final hard surface layer will be placed over the excavated road to provide a road profile to accommodate construction traffic.
- Prior to completion of the construction works on-site, the finished asphalt road surface will be applied.

2.3.2.5 Services and Utilities

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

It is proposed to direct the foul sewer from the development to the western boundary of the site, to the existing foul sewer network along the R381. The western side of proposed foul sewer will discharge under gravity to the existing foul network, while the eastern side will be pumped through a rising main at a proposed wastewater pump to the western side. As part of the design process, it is proposed to divert a section of the existing foul network to cater for the development.

It is proposed to discharge the stormwater generated from the development into two separate soakaway systems located in the public amenity areas to the north and west of the development. The storm water generated from the development will discharge under gravity, passing through a petrol interceptor

before entering an appropriately sized soakaway, located within the public amenity areas to the north and west of the development.

The installation of services and connections to the residential units will be carried out as follows:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e., ESB, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- A traffic management plan will be produced if required for connection works to the existing service network.
- A road opening licence will be obtained where required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stockpiled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

2.3.2.6 Residential Unit Construction

The Residential dwellings along with the proposed creche will be constructed using the following methodology:

- The area where excavations are foundations are to be installed will be surveyed and all existing services will be identified.
- The area of each building will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby storage area for later use in landscaping.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the area down to a competent stratum as approved by the Design Engineer.
- Foundations will be shuttered and cast with reinforced concrete as per the Design Engineer's specification.
- The block work walls will be built up from the foundation including a Damp Proof Course (DPC).
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for these works.
- Any concrete flooring slabs will be lifted into position using an adequately sized mobile crane.
- The timber roof trusses will then be lifted into position using a teleporter or mobile crane depending on-site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.

- Windows, electrics, plumbing and all other building components and services will be installed in as timely a manner as is possible.
- Each building will be inspected and certified by the project design engineer at the appropriate stages of construction.

2.3.2.7 Landscaping Works

Prior to the completion of works on the development site, the landscaping works will be carried out. This work will be carried out before the completion of each phase in order to ensure that the development will be an aesthetically pleasing place for residents to live. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. During site preparation works, where topsoil is stripped prior to excavation, this material will be retained on-site for use in landscaping.

2.4 Construction Works Sequencing

The sequencing of construction phase works has is summarised Table 2-1. This provides a schedule of the expected sequence of operations for the works to be completed during the construction phase.

Table 2-1 Construction Works Sequence

No.	Construction Works
1.	Foundation's excavation and formation level establishment
2.	Foundations: formwork and steel reinforcement installation
3.	Masonry Blockwork: including insulation installation
4.	Carpentry 1st fix: timber roof structure and coverings
5.	Window/Door installation
6.	Plastering (external)
7.	Painting (external)
8.	Internal services (electrical and plumbing)
9.	Plastering (internal)
10.	Floor: Sand and cement screed
11.	Services connection: electrical, sewage, telecoms.
12.	Painting (internal)
13.	Tiling: Floors, walls etc.
14.	Carpentry 2nd fix: doors, flooring etc.
15.	Landscaping
16.	Road finishes: Tarmacadam roads and parking areas

2.5 Hours of Working

It is expected that construction works will occur during normal working hours:

- 08:00 and 18:00 from Monday to Saturday (inclusive);
- No works will be undertaken on Sunday; and
- Public holidays will be observed unless otherwise agreed with the local planning authority.
- Deliveries will also be scheduled to avoid peak times, i.e. avoiding rush hours and school drop off/pick up times

3. ENVIRONMENTAL MANAGEMENT

3.1 Protecting Water Quality

The site of the proposed development does not contain any watercourses. The nearest waterbody is the River Clare (Galway) (EPA Code: 30C01) located 670m to the northeast of the proposed development site, which flows in a westerly direction before discharging into Lough Corrib. Lough Corrib is located 7.1km west of the proposed development site. The proposed development site is, however, located within the Clare-Corrib groundwater body which has an EPA Groundwater Bodies Risk of "At risk". A potential pathway for significant effect on Lough Corrib Special Area of Conservation (SAC) and Lough Corrib Special Protection Area (SPA) was identified in the form of percolation of contaminated groundwater into the Clare-Corrib groundwater body which ultimately discharges into the River Clare and Lough Corrib.

Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby watercourses thus ensuring the protection of surface water during the works. This will involve confirming the location of all existing services and delineating between drainage systems. Surface waters will be managed to ensure the prevention of runoff from areas where excavation occur does not result in silt laden water entering the existing storm water network. Stockpiled material will be covered with polyethylene sheet and if deemed necessary will be surrounded by silt fencing where there is a risk of runoff during prolonged periods of rainfall.

Waters will not be discharged directly to any existing surface water sewers or drains. Particular emphasis will also be placed on hazardous materials entering the surface water management system as well as spill or leaks of fuel oils. Section 4 provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects.

Excavation works have the potential to encounter sub-surface waters and ground water. In the event of encountering groundwaters during excavation, waters will be pumped from the excavation and discharged through a pipe with a silt bag attached on to an area of overland vegetation within the site boundary. A series of silt fences will also be utilised around the area where the water will be discharged, if necessary.

Surface and storm water generated during the operational phase will be captured by the proposed drainage network within the confines of the site boundary as outlined in Section 2.3.2.5 above.

3.1.1 Prevention Pollution Control Measures

The proposed development site does not contain any mapped watercourses and no watercourses were identified within the site boundary during the site walkover. However, the following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering any of the wider environments including watercourses/drains near the site:

- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised.
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce the potential for sediment runoff. These areas will be surrounded with silt fencing, if deemed necessary to prevent runoff.

- Works shall not take place at periods of high rainfall and shall be scaled back if heavy rain is forecast.
- Any excess construction material shall be removed from the area and sent to an authorized waste recovery facility.
- Spill kits shall be available in each item of plant required.
- In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary.
- All diesel or petrol pumps required onsite will be operated within bunded units
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into silt bags prior to overland discharge allowing water to percolate naturally to ground. Overland discharge, if required, will be located within the confines of the site boundary.
- The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site.

Details of control measures which will be implemented at the site, if required are included in the Plates below.

Plate 3-1 Silt Bag with water being pumped through.

Plate 3-2 Silt Bag under inspection

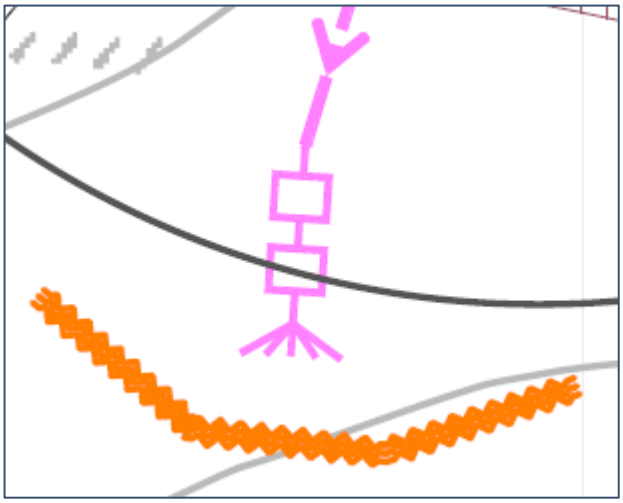

Plate 3-3 Indictive Silt Fence surrounding the discharge from a Silt Bag.

(Approximate locations for such a control measure cannot be provided as it cannot be identified where such measure may be adopted on-site prior to commencement)

Plate 3-4 Embedded Silt Fence

3.1.2 Groundwater Mitigation Measures

- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.
- Plant will travel slowly across bare ground at a maximum of 5 kilometres per hour (km/hr).
- The site will be continuously monitored by the Site Manager for signs of runoff such as silt in surrounding vegetation, and measures will be put in place to prevent this where necessary.
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised.
- The FRA concluded that the Clare Flood Relief Scheme has mitigated flood risk at the site. As a precautionary measure, any stockpiling at the site will be located outside of OPW-mapped floodable areas and will be surrounded by silt fencing. Stockpiles will be removed on a regular basis to avoid potential sediment-laden runoff escaping the site.
- Earthworks will take place during periods of low rainfall to reduce influx of sediment laden waters to groundwater and to reduce the need for groundwater pumping out of excavations.
- Due to the high to extreme groundwater vulnerability within the site, long-range and short-range weather forecasting will be used and works will be postponed if heavy rain is forecast.
- Good construction practices such as dust suppression on site roads, and regular plant maintenance will ensure minimal risk.
- If groundwater is encountered during excavations, discharge of pumped water to ground will be via a silt bag which will filter remaining sediment from the pumped water to a designated area within the site. The entire discharge area from silt bags will be enclosed by a perimeter of silt fencing. Alternatively, it will be pumped to a sealed clean tanker and removed from the site for appropriate treatment and discharge. No construction water will be discharged directly to groundwater.

3.1.3 Cement Based Products Control Measures

The complete washing out of concrete trucks will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided at various locations in close proximity to the concrete pour locations.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on-site.
- Ready-mixed supply of wet concrete products will be used where needed.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on-site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to groundwater will be allowed.
- The weather forecast will be checked prior to the pouring of concrete and no such works will be undertaken when bad weather is forecast (i.e. Heavy Rain, see below Environmental Monitoring Section). Concrete will not be poured at times when rain is predicted as this may lead to runoff and over spillage of the formwork.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
- Concrete (including waste and wash down) will be contained and managed appropriately to prevent pollution of groundwater.

3.1.4 Refuelling, Fuel and Hazardous Materials Storage

The following measures are proposed to avoid release of hydrocarbons at the site:

- All plant will be inspected prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off-site.
- Minimal refuelling or maintenance of vehicles or plant will take place on-site. Off-site refuelling will occur at a controlled fuelling station.
- Vehicles will never be left unattended during refuelling. Only dedicated, trained, and competent personnel will carry out refuelling operations. Plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Refuelling will be completed in a controlled manner using drip trays at all times.
- Fuels volumes stored on-site will be minimised. Any fuel storage areas will be bunded appropriately for the fuel storage volume for the time period of the works and fitted with a storm drainage system and an appropriate oil interceptor.
- Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- All pipework from containers to pump nozzles will have anti siphon valves fitted.
- The plant refuelling procedures shall be detailed in the contractor’s method statements, including an emergency plan to deal with accidental spillages.
- The plant used will be regularly inspected for leaks and fitness for purpose.

3.2 Potential Release of Hydrocarbons

- Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- All plant refuelling will take place using mobile fuel bowsers. Only dedicated trained and competent personnel will carry out refuelling operations. A spill kit and drip tray shall be on-site at all times and available for all refuelling operations. Equipment shall not be left unattended during refuelling. All pipework from containers to pump nozzles will have anti siphon valves fitted. The plant refuelling procedures shall be detailed in the contractor’s method statements.
- Spill kits shall be available in each item of plant required.

- Oil booms and oil soakage pads, spill kits and other appropriate equipment will be kept on-site to deal with any accidental spillage.

3.3 Spill Control Measures

It is not proposed to store any large volumes of oils/fuels for the purpose of refuelling on the site as refuelling of large plant equipment will be carried out directly from the fuel suppliers delivery truck at a designated refuelling location on-site. Where fuel is required to be stored for smaller plant and equipment, it will be in a bunded fuel tank will be stored within the confines of the site boundary. It will be positioned on an impermeable surface and will be equipped with a spill kit. This bunded fuel tank will be used for smaller plant and equipment i.e., site dumpers and teleporters. On-site plant (excavator) will be refuelled by an external contractor who will call to site as required. Road vehicles will not be refuelled at the site.

In the event of minor spills and leaks from road vehicles and the on-site excavator, the following steps provide the procedure to be followed in the event of any significant spill or leak.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager (see roles and responsibilities in Section 4) immediately, giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Environmental Manager will notify the appropriate regulatory body such as Galway County Council if deemed necessary.

3.4 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e. soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the approach road. The measures below will also prevent construction debris arising on the public road network.

Proposed means to control dust include:

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Public roads outside the site and along the main access route to the site will be regularly inspected by the Site Manager for cleanliness, most notably before and after plant and machinery deliveries to site.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.

- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions.
- If transport of soils or other material off-site is required, which has significant potential to generate dust, this will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of site to examine dust measures and their effectiveness.

3.5 Noise and Vibration Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. Noise levels shall be kept below those levels specified in the National Roads Authority – "Guidelines for the Treatment of Noise and Vibration in National Roads Schemes" or such further limits as imposed by Galway County Council. The proposed development shall comply with BS 5228 "Noise Control on Construction and open sites Part 1: Code of practice for basic information and procedures for noise control." During the works, any plant introduced to the site will not be excessively noisy. Exhaust and silencer systems on plant will be maintained in a satisfactory condition and operating correctly at all times. Defective silencers will be immediately replaced.

Proposed measures to control noise include:

- Construction equipment for use outdoors shall comply with the European Communities Regulations– Noise Emission by Equipment for Use Outdoors – SI 241 - 2006.
- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts.
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations.
- Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints.
- If work activities have the potential to result in vibration, the appointed contractor shall source vibration monitoring equipment immediately from a specialist company who specialise in monitoring equipment.
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down during those periods when they are not in use.
- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.

It is recommended that drivers of heavy goods vehicles (HGVs) associated with the development extend due care and courtesy to other road users. Excessive use of and unnecessary engine revving will be avoided.

The proposed construction working hours will be 08:00 – 18:00 Monday to Saturday. Construction will not take place at the site on Sundays or Public Holidays.

Deviation from these times will only be allowed in exceptional circumstances where written approval has been received from the planning authority and when other relevant third parties i.e., nearby homeowners have been notified and have agreed to works taking place during such time periods.

3.6 Traffic Management Proposals

A traffic management plan will be developed by the appointed contractor and agreed with Galway County Council prior to the commencement of works.

The proposed traffic management measures to be adopted during the construction works are summarised below. Please note that this is not an exhaustive list, and it will be updated accordingly by the appointed contractor in consultation with the local authority:

- Access to the proposed site will be via 2 no. new accesses on the R381 serving the western units and on (L7110) Lakeview Road serving the eastern units.
- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations.
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds.
- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with Galway County Council.
- A road sweeper will be employed to clean the public roads of any residual debris that may be deposited on the public roads leading away from the construction works, if deemed necessary.
- On-site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel.
- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with Galway County Council.
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.

3.7 Invasive Species Management

A baseline survey was carried out at the site to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) by a suitably qualified ecologist. No invasive species were recorded within the proposed works area.

Good construction site hygiene will be employed to prevent the introduction of problematic invasive alien plants by thoroughly washing vehicles prior to entering the site.

3.8 Construction Waste Management Plan

3.8.1 Introduction

This section of the CEMP provides a Construction Waste Management Plan (WMP) which outlines the best practice procedures during the construction phase of the project. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage. Disposal of waste will be seen as a last resort.

3.8.2 Legislation

The Waste Management Act 1996, as amended, and regulations provide for measures in relation to waste management, recycling and recovery and provide a regulatory framework for attaining the objectives of EU and Irish law.

The Act requires that anyone carrying out a waste activity must have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the proposed development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits and that waste is delivered to a licensed or permitted waste facility.

3.8.3 Guidance

The Department of the Environment provides a document entitled, 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'.

These Department of the Environment guidelines which been considered in the preparation of this CEMP state that, at the design stage of the project, only a preliminary Waste Management Plan (WMP) is required,

> *"Formal production and presentation of the Plan may be at a later stage but a clear 'waste management philosophy' needs to be adopted...at the initial conceptual stage of the Project..."*

This WMP – which will incorporate all the measures set out in this document will be finalised subsequent to any permission granted by An Bord Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed – has a number of key objectives as outlined below:

- To set out management prescriptions that adhere to a waste management hierarchy
- To outline the roles and responsibilities of the Waste Manager
- Prevention and minimisation of waste at the construction stage of the development.

3.8.4 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing waste in the following order:

Prevention and Minimisation:

The primary aim of the WMP is to prevent and thereby reduce the amount of waste generated at each stage of the project.

Reuse of Waste:

Reusing as much of the waste generated on-site as possible will reduce the quantities of waste that will have to be transported off-site.

Recycling of Waste:

There are a number of established markets available for the beneficial use of Construction waste such as using waste concrete as fill for new roads.

At all times during the implementation of the WMP, disposal of waste to an appropriately licenced facility will be considered only as a last resort.

3.8.5 Construction Phase Waste Management Plan

The excavation phase of the proposed development will require the removal and management of the materials from the foundation excavations. Although a quantity of this material will be used for landscaping, backfilling and general restoration of excavated areas, it is anticipated that a quantity of this material will be exported off-site by a licenced haulier to an authorised waste facility.

Waste generated post excavation on-site will be managed in the Waste Storage Area (WSA) where the various waste components will be segregated into a number of waste categories in accordance with a general waste segregation policy and placed into individual skips. The categories for segregation will include, timber, metal, cardboard and plastics. This material will be removed by authorised waste collection contractors for recycling and recovery at various licensed facilities. The remaining volume of waste material which cannot be allocated to any of these four waste streams will be disposed of in a general waste skip. This waste material will be transferred to a Materials Recovery Facility by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal. This general waste will be subject to constant monitoring by site management to ensure that potential reusable and recyclable material is not being disposed of therein. The on-site canteen will include waste receptacles for dry recyclables and food waste which will eliminate the potential of any waste produced within the canteen being sent to landfill. The expected wastes arising from the works including the individual European Waste Catalogue (EWC) codes are outlined in Table 3-2.

Table 3-1 Expected waste types arising during the Construction Phase

Materials type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Concrete	Surfacing, flooring material	17 01 01
Insulation	Cavity & Floor Insulation	17 06 04
Tiles and ceramics	Wall and floor tiles	17 02 03
Bituminous materials	Tarmacadam	17 03 01
Metals	Rebar, reinforced steel joists, lead	17 04 07
Mixture of inert material	Sand, stones, plaster, rock	17 01 07
Plastic	PVC frames, electrical fittings	17 02 03
Soil & Stones	Overburden, soil, subsoil	17 05 04

Materials type	Example	EWC Code
Gypsum materials	Roof tiles/slabs	17 08 02
Wood	Frames and doors,	17 02 01
Canteen Waste	Miscellaneous waste from site staff	20 01 08

The potential for the reuse of materials on-site during the works will be minimal however, clean inert concrete, rubble and stones may have a reuse potential for landscaping and site restoration. However, considering the major excavation works on-site have been completed, the quantity of such material being generated will be minimal and is likely to be reused locally.

3.8.5.1 Waste Arisings and Proposals for Minimisation, Reuse and Recycling of Construction Waste

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste.

Appropriate measures will be taken to ensure excess waste is not generated during construction, including;

- Ordering of materials will be on an 'as needed' basis to prevent over supply to site.
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on-site.
- Require suppliers to use least amount of packaging possible on materials delivered to the site.
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal.
- Ensuring correct sequencing of operations.
- Use reclaimed materials in the construction works.

Hazardous waste will be kept separate from all other construction waste to prevent contamination and removed to an appropriately licenced appropriately. In addition to fuel as outlined above, the potentially hazardous wastes that may be generated at the site during the construction include;

- Paints including all associated by products
- Glues and solvents
- Asphalt materials from roofing products and external paving finishes
- Asbestos (if identified prior to demolition works as summarised above)

3.8.6 Waste Arising from Construction Activities

The expected waste volumes generated on-site are unlikely to be large enough to warrant source segregation or a dedicated waste storage area. Wastes will generally comprise soils and subsoils which will be removed by truck to an appropriately licenced facility.

3.8.6.1 Reuse

Many construction materials can be reused a number of times before they have to be disposed of:

- Concrete can be reused as aggregate for roads backfilling material.
- Plastic packaging etc. can be used to cover materials on-site or reused for the delivery of other materials.

3.8.6.2 Recycling

If a certain type of construction material cannot be reused on-site, then recycling is the most suitable option.

All waste that is produced during the construction phase including dry recyclables will be sent directly for subsequent segregation at a remote facility. The low volume of such material that is anticipated to be generated at the proposed development is the justification for adopting this method of waste management.

3.8.7 Wastewater

The removal and disposal of wastewater from site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations 2007, as amended. Information on the appointed permitted contractor and evidence of a maintenance will be retained on-site and available for inspection on request.

3.8.8 Implementation

3.8.8.1 Roles and Responsibilities for Waste Management

Prior to the commencement of the proposed development a Waste Manager will be appointed by the project team. The role of Waste Manager is likely to be fulfilled by the Site Manager (see roles and responsibilities in Section 4) given the scale of the development and will be responsible for the implementation of the objectives of this plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated will have sufficient authority so that they can ensure everyone working on the proposed development adheres to the management plan. The Waste Manager will also be required to conducted regular waste audits in the WSA and throughout the site to ensure that the waste management plan is operating effectively.

3.8.8.2 Training

The Construction Waste Manager will communicate effectively with colleagues in relation to the aims and objectives of the WMP. All employees working on-site during the construction phases of the project will be trained in materials management and thereby, will be able to:

- Distinguish reusable materials from those suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with site manager on the best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.

3.8.8.3 Record Keeping

The implementation of the WMP will ensure that all arisings, movements and treatments of construction waste are recorded. This system will enable records of the quantity of waste being generated to be maintained. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site of the proposed development. Each record will contain the following:

- Consignment Reference Number
- Material Type(s) and EWC Code(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility
- Date and Time of Waste Dispatch
- Registration no. of Waste Carrier vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Weight of Material
- Site Address of Destination Facility

3.8.9 Waste Management Plan Conclusion

The WMP will be adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy will always be employed when designing the plan to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION AND EMERGENCY RESPONSE

4.1 Roles and Responsibilities

4.1.1 Construction Manager/Site Supervisor

The Construction Manager/Site Supervisor will have overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The duties and responsibilities of the Site Supervisor/Construction Manager will include:

- Ensure that all works are completed safely and with minimal environmental risk;
- Implement the CEMP and supporting environmental documentation, and ensure that all environmental standards are achieved during the construction phase of the project;
- Take advice from the Site Environmental Manager on legislation, codes of practice, guidance notes and good environmental working practice relevant to their work;
- Ensure compliance through audits and management site visits;
- Ensure timely notification of environmental incidents; and,
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced.

4.1.2 Environmental Manager

The main contractor appointed to carry out the works on-site will be required to provide a level of supervision on-site in the form of an Environmental Manager who will also fulfil the role of Waste Manager. Due to the scale of activity proposed for the site, this role can be adopted by a Site Manager/Foreman as part of their duties. In general, this Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. The Environmental Manager, or an appointed deputy, will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with Galway County Council and other statutory bodies as required. The Site Environmental Manager will report to the Site Supervisor/Construction Manager. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the Construction Phase CEMP and supporting; environmental documentation and review/approval of contractor method statements
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP;
- Monitor the implementation of the CEMP, particularly all proposed/required Environmental Monitoring;
- Generate environmental reports as required to show environmental data trends and incidents and ensure environmental records are maintained throughout the construction period;
- Advise site management/contractor/sub-contractors on:
    - Prevention of environmental pollution and improvement to existing working methods
    - Changes in legislation and legal requirements affecting the environment
    - Suitability and use of plant, equipment and materials to prevent pollution

- Environmentally sound methods of working and systems to identify environmental hazards

- Ensure proper mitigation measures are initiated and adhered to during the construction phase;
- Liaise with Project Team and present the findings of site audits/inspections that are completed;
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents;
- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email;
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties;
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and
- Fulfil the role of Waste Manager and implement the objectives of the Waste Management Plan as set out in Section 3 above.

4.1.3 Project Ecologist

The Project Ecologist will be available to support the Environmental Manager on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the wind farm. The Project Ecologist will not be full time on-site but will undertake pre-commencement surveys and visit the site as required.

Responsibilities of the Project Ecologist include:

- Provide a briefing to the appointed contractor as to the sensitive nature of the site, and the required mitigation measures.
- Visit the construction site during the works to ensure that mitigation measures are being implemented.

4.2 Emergency Response Plan

4.2.1 Emergency Response

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor and suppliers as the proposed project progresses. Where sub-contractors that are contracted on-site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the project.

4.2.2 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be

identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4-1. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4-1. This will be updated throughout the various stages of the project and considering the scale of the development, all roles may not be applicable during the construction phase.

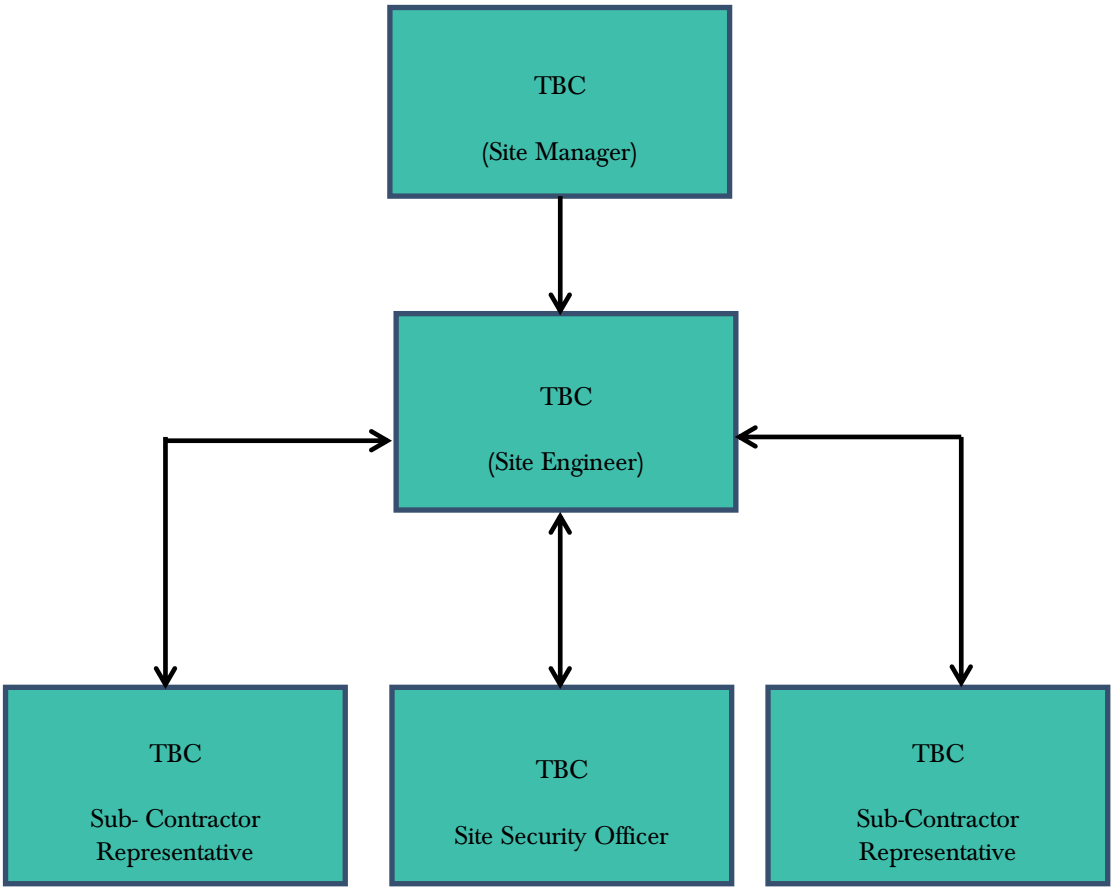

Figure 4-1 Emergency Response Procedure Chain of Command

4.2.3 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 4-1 Hazards associated with potential emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools.	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services.	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.

Falls from heights including falls from scaffold towers, scissor lifts, ladders and roofs.	Injury to operative after a fall from a height.
Sickness	Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1, the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.2.6.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks the numbers for which as provided in Section 4.2.6.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.2.6.

4.2.4 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on-site.
- The Site Security Officer will inform the Site Manager when all personnel have been accounted for. At this time the Site Manager will decide the next course of action which will be determined by the situation that exists at that time. The Site Manager will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

4.2.5 Environmental Emergency Response Procedure

4.2.5.1 Spill Control Measures

It is not proposed to store any large volumes of oils/fuels for the purpose of refuelling on the site. A bunded fuel tank will be stored at the temporary construction compound which will be used for smaller plant and equipment i.e. site dumpers and teleporters. This will be stored on an impermeable surface

and will be equipped with a spill kit. On-site plant (excavator) will be refuelled by an external contractor who will call to site as required. Road vehicles will not be refuelled at the site.

Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will exist on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The Environmental Manager will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Galway County Council and Environmental Protection Agency (EPA) etc. if deemed necessary.

Environmental Incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.
- If necessary, the Environmental Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures that were used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- A record of all environmental incidents will be kept on file by the Environmental Manager and the Main Contractor. These records will be made available to the relevant authorities such as Galway County Council and the EPA if required.

The Environmental Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

4.2.6 Contacting the Emergency Services

4.2.6.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

- Stay calm. It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

- Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- Do not hang up the call until directed to do so by the call taker.

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

4.2.6.2 Contact Details

A list of emergency contacts is presented in Table 4-2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

Table 4-2 Emergency Contacts

Contact	Telephone no.
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Claregalway Medical Centre	091 797 106
Hospital – Bon Secours Hospital Galway	091 381 900
ESB Emergency Services	1850 372 999
Gas Networks Ireland	1850 20 50 50
Gardaí – Loughgeorge Claregalway Garda Station	091 798 122
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Client – Galway County Council	TBC

4.2.6.3 Procedure for Personnel Tracking

All operatives on-site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

4.2.6.4 Induction Checklist

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3 Emergency Response Plan Items Applicable to the Site Induction process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
Due to the location of the site it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on-site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

5. MITIGATION PROPOSALS

The Mitigation Measures which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to any permission granted by Galway County Council and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the project.

Table 5-1 Mitigation Measures

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
	Pre-Commencement Phase			
MM1	CEMP Section 1	› All measures identified in this CEMP and the Natura Impact Statement (NIS), which will be finalised subsequent to any permission granted and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the proposed development.		
MM2	CEMP Section 4.1	› The main contractor will be required to provide a level of supervision on-site in the form of an Environmental Manager who will also fulfil the role of Waste Manager and will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective, act as the regulatory interface on environmental matters by reporting directly to the client and liaise with Galway County Council and other statutory bodies as required.		
	Construction Phase			
		Protecting Water Quality		
MM3	CEMP Section 3.1.1	› Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall. › Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised. › Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Depending on the nature of the excavated material, the stockpiles of excavated materials will be sealed with a digger bucket to reduce		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		the potential for sediment runoff. These areas will be surrounded with silt fencing, if deemed necessary to prevent runoff. › Works shall not take place at periods of high rainfall and shall be scaled back if heavy rain is forecast. › Any excess construction material shall be removed from the area and sent to an authorized waste recovery facility. › Spill kits shall be available in each item of plant required. › In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary. › All diesel or petrol pumps required onsite will be operated within bunded units. › As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into silt bags prior to overland discharge allowing water to percolate naturally to ground. Overland discharge, if required, will be located within the confines of the site boundary. › The minimum number of soil/subsoils and bedrock material should be removed from site. Soil may be reused for landscaping elsewhere on the site.		
MM4	CEMP Section 3.1.2 NIS Section 5.2.1.1.2	› Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area. › Plant will travel slowly across bare ground at a maximum of 5 kilometres per hour (km/hr). › The site will be continuously monitored by the Site Manager for signs of runoff such as silt in surrounding vegetation, and measures will be put in place to prevent this where necessary.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		› Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised. › The FRA concluded that the Clare Flood Relief Scheme has mitigated flood risk at the site. As a precautionary measure, any stockpiling at the site will be located outside of OPW-mapped floodable areas and will be surrounded by silt fencing. Stockpiles will be removed on a regular basis to avoid potential sediment-laden runoff escaping the site. › Earthworks will take place during periods of low rainfall to reduce influx of sediment laden waters to groundwater and to reduce the need for groundwater pumping out of excavations. › Due to the high to extreme groundwater vulnerability within the site, long-range and short-range weather forecasting will be used and works will be postponed if heavy rain is forecast. › Good construction practices such as dust suppression on site roads, and regular plant maintenance will ensure minimal risk. › If groundwater is encountered during excavations, discharge of pumped water to ground will be via a silt bag which will filter remaining sediment from the pumped water to a designated area within the site. The entire discharge area from silt bags will be enclosed by a perimeter of silt fencing. Alternatively, it will be pumped to a sealed clean tanker and removed from the site for appropriate treatment and discharge. No construction water will be discharged directly to groundwater.		
MM5	CEMP Section 3.1.3 NIS Section 5.2.1.1.2	› No batching of wet-cement products will occur on-site. › Ready-mixed supply of wet concrete products will be used where needed. › No washing out of any plant used in concrete transport or concreting operations will be allowed on-site. › Where concrete is delivered on-site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to groundwater will be allowed.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		› The weather forecast will be checked prior to the pouring of concrete and no such works will be undertaken when bad weather is forecast (i.e. Heavy Rain, see below Environmental Monitoring Section). Concrete will not be poured at times when rain is predicted as this may lead to runoff and over spillage of the formwork. › Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event. › Concrete (including waste and wash down) will be contained and managed appropriately to prevent pollution of groundwater.		
MM6	CEMP Section 3.1.4 NIS Section 5.2.1.1.2	› All plant will be inspected prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off-site. › Minimal refuelling or maintenance of vehicles or plant will take place on-site. Off-site refuelling will occur at a controlled fuelling station. › Vehicles will never be left unattended during refuelling. Only dedicated, trained, and competent personnel will carry out refuelling operations. Plant refuelling procedures shall be detailed in the contractor's method statements. › Fuels, lubricants and hydraulic fluids for equipment used will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment. › Refuelling will be completed in a controlled manner using drip trays at all times. › Fuels volumes stored on-site will be minimised. Any fuel storage areas will be bunded appropriately for the fuel storage volume for the time period of the works and fitted with a storm drainage system and an appropriate oil interceptor. › Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		When not in use, all valves and fuel trigger guns from fuel storage containers will be locked. › All pipework from containers to pump nozzles will have anti siphon valves fitted. › The plant refuelling procedures shall be detailed in the contractor's method statements, including an emergency plan to deal with accidental spillages. › The plant used will be regularly inspected for leaks and fitness for purpose.		
		Potential Release of Hydrocarbons		
MM7	CEMP Section 3.2 NIS Section 5.2.1.1.2	› Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked. › All plant refuelling will take place using mobile fuel bowsers. Only dedicated trained and competent personnel will carry out refuelling operations. A spill kit and drip tray shall be on-site at all times and available for all refuelling operations. Equipment shall not be left unattended during refuelling. All pipework from containers to pump nozzles will have anti siphon valves fitted. The plant refuelling procedures shall be detailed in the contractor's method statements. › Spill kits shall be available in each item of plant required. › Oil booms and oil soakage pads, spill kits and other appropriate equipment will be kept on-site to deal with any accidental spillage.		
		Spill Control Measures		
MM8	CEMP Section 3.3	› Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
	NIS Section 5.2.1.1.2	› If applicable, eliminate any sources of ignition in the immediate vicinity of the incident. › Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill. › If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses. › If possible, clean up as much as possible using the spill control materials. › Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited. › Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately. › External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring. › The Environmental Manager will notify the appropriate regulatory body such as Galway County Council if deemed necessary.		
		Dust Control		
MM9	CEMP 3.4 NIS Section 5.2.1.1.2	› Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions. › Public roads outside the site and along the main access route to the site will be regularly inspected by the Site Manager for cleanliness, most notably before and after plant and machinery deliveries to site. › Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind. › Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		› Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions. › If transport of soils or other material off-site is required, which has significant potential to generate dust, this will be undertaken in tarpaulin-covered vehicles where necessary. › Daily inspection of site to examine dust measures and their effectiveness.		
		Noise and Vibration Control		
MM10	CEMP 3.5	› Construction equipment for use outdoors shall comply with the European Communities Regulations– Noise Emission by Equipment for Use Outdoors – SI 241 - 2006. › Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts. › Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations. › Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints. › If work activities have the potential to result in vibration, the appointed contractor shall source vibration monitoring equipment immediately from a specialist company who specialise in monitoring equipment. › Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers. › All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		› Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. › Machines which are used intermittently will be shut down during those periods when they are not in use. › Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.		
Traffic Management Proposals				
MM11	CEMP Section 3.6	› Access to the proposed site will be via 2 no. new accesses on the R381 serving the western units and on (L7110) Lakeview Road serving the eastern units. › Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations. › Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes. › Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material. › Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds. › Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with Galway County Council. › A road sweeper will be employed to clean the public roads of any residual debris that may be deposited on the public roads leading away from the construction works, if deemed necessary.		

Mitigation Measure	Reference	Mitigation Measure	Audit Result	Action Required
		› On-site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site. › All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. › Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with Galway County Council. › Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.		
Invasive Species Management				
MM12	CEMP Section 3.7 NIS Section 5.2.1.1.2	› Good construction site hygiene will be employed to prevent the introduction of problematic invasive alien plants by thoroughly washing vehicles prior to entering the site.		

6. PROGRAMME OF WORKS

6.1 Construction Programme

The construction of the proposed scheme will be split over two stages taking approximately 18-24 months per stage to complete. Each stage is typically broken down into several phases. An example of the programme of works is outlined in Table 6-1 below. The construction programme will be finalised on appointment of a contractor before commencement of the development.

Table 6-1 Phasing Scope of Works

Phase No.	Description	Scope of works
Phase 1	Site Setup	This occurs in month 1 to 4 and includes laying the matting or gravel for the site setup and machinery mobilisation.
Phase 2	Foundations	This occurs from months 5-8. It includes digging laying foundations and other preparatory works.
Phase 3	Building Structures	This occurs from months 9-17. It includes building the main structures within the site.
Phase 4	Internal Fit Out and Underground Cabling	This occurs from months 18-20. It includes the fitting out of the buildings and civils connections.
Phase 5	Close Out	This occurs in the last months of construction (months 20 to 24) and includes landscaping followed by machinery demobilisation and site disassembly.

7. COMPLIANCE AND REVIEW

7.1 Site Inspections and Environmental Audits

Routine inspections of activities will be carried out on a daily and weekly basis by the Site Environmental Manager/Construction Manager as appointed by the applicant to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP. Environmental site inspections will be carried out by suitably trained staff.

7.2 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during the infilling works:

Environmental Near Miss

An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident

Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Non-Compliance

Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the CEMP.

7.3 Corrective Action Procedure

A corrective action is implemented to rectify an environmental issue on-site. Corrective actions will be implemented by the Construction Manager, as advised by the Site Environmental Manager. Corrective actions may be required as a result of the following:

- Environmental Audits
- Environmental Inspections and Reviews
- Environmental Incidents
- Environmental Complaints

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on-site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on-site that requires immediate attention direct communications between the Construction Manager and the Site Environmental Manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.