Planning and Environmental Consultants

Construction and Environmental Management Plan

Woodquay Park Enhancement

DOCUMENT DETAILS

Client:	**Galway City Council**
Project Title:	**Woodquay Park Enhancement**
Project Number:	**230108**
Document Title:	**Construction and Environmental Management Plan**
Document File Name:	**Woodquay Park CEMP F - 2024.09.27 - 230108**
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Rev	Status	Date	Author(s)	Approved By
01	Draft	03/09/2024	MV	VK
02	Final	27/09/2024	MV	VK

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1. INTRODUCTION

This Construction & Environmental Management Plan (CEMP) has been prepared by MKO on behalf of Galway City Council (GCC) who intend to submit a Part 10 planning application seeking the upgrade of the existing Woodquay Park and surrounding public realm in Galway City ('Proposed Development'). The Proposed Development site is located in the heart of Galway City Centre, to the north of the R338 Road (colloquially known as the Headford Road) and Woodquay Street. The total site area is 0.15 hectares (ha). A full description of the Proposed Development is included in Section 2.2 below.

This CEMP will provide 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, including: the Planning Report, Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS, Archaeological Heritage Impact Assessment, and various other engineering reports and technical assessments.

This CEMP, to be finalised subsequent to a grant of permission and updated before construction, will incorporate all identified mitigation measures for the Proposed Development, which are to be followed during pre-commencement and construction phases.

The CEMP (as prepared by MKO) will be a single, amalgamated document intended for use 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. As construction proceeds, the CEMP may be updated through successive iterations, but it must always comply with or surpass the standards and requirements stipulated in this document. The contractor's most recent version of the CEMP will dictate the on-site construction activities and its implementation will be audited throughout the construction phase.

1.1 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 and following completion of the works. It clearly outlines the mitigation measures that are required to be adhered to in order to complete the works 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, along with providing an overview of construction methodologies that will be adopted throughout the project.
- **Section 3** outlines the specifics of the on-site environmental controls, examining various factors including water quality, biosecurity measures, and noise and dust management. 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 project outlining the roles and responsibilities of the project team. The Emergency Response Plan to be adopted in the event of an emergency in terms of site health and safety and environmental protection is also included in this section.
- **Section 5** consists of a summary table of all mitigation proposals to be adhered to during 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.

1.2 Targets and Objectives

The following key targets and objectives will inform the final detailed design including consideration of the buildability of emerging designs:

- Adoption of a sustainable approach to construction ensuring sustainable sources for materials supply where possible.
- Compliance with correct fuel storage and refuelling procedures.
- Alteration of construction methods and designs where an adverse effect on the environment is identified.
- Implementation of good waste management and housekeeping.
- Use of recycled materials if possible (e.g., excavated stone, soil and subsoil material).
- Avoidance of vandalism.
- Implementation of air and noise pollution prevention.
- Monitoring of the works and any potential adverse effects on the environment.
- Provision of adequate environmental training and awareness for all project personnel.

The key site objectives are as follows:

- Ensure construction works and activities have minimal impact 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.

2. SITE AND PROJECT DETAILS

2.1 Site Location

The Proposed Development site is located in the heart of Galway City Centre, directly to the north of the R338 Road (colloquially known as the Headford Road) and Woodquay Street. The Grid Reference co-ordinates for the approximate centre of the site are X 529731, Y 724907 in Irish Transverse Mercator (ITM). The site area is 0.15 hectares.

The Proposed Development site is bordered to the south, east, and west by residential dwellings, public roads, carparks and pathways. Additionally, an educational facility is situated approximately 30 m west of the site. A bus stop serving Bus Eireann Route 407 is located to the north of the Proposed Development site. The wider area includes the historic Woodquay neighbourhood in Galway's city centre, comprising of both commercial properties and private residences.

The River Corrib (Environmental Protection Agency (EPA) Code: IE_WE_30C020600, Order 6) which is designated as part of the Lough Corrib Special Area of Conservation (SAC) [000297] are located directly adjacent to the northern margin of the Proposed Development boundary.

The Proposed Development site will be accessed via new site entrances which will be established at the northern and southern boundaries of the park. On street parallel parking is located adjacent to the Proposed Development site on both Riverside and Corrib Terrace.

The site location of the Proposed Development is shown in Figure 2-1. A layout of the Proposed Development has been shown in Figure 2-2 below.

2.2 Description of the Proposed Development Site

2.2.1 Land Use

The Proposed Development site consists of the current extent of the Woodquay Park, the parking currently located to the south of it, and the current pocket of parking located to east of the park across Riverside. The park is currently lightly landscaped with grass, 18 no. of trees, 5 no. benches, a path running through the park between each entrance (one on Corrib Terrace, and one on Riverside) and partially down the length of the park to the southeast. The park is currently bordered by a hedge and fencing, with gates located at each entrance point. The parking lot to the immediate south of the park contains 10 no. parking spaces, 2 no. of which provide for disabled access. There is also a Transport for Ireland (TFI) Bike Rental station with docks for 20 no. bikes. The parking to the east of the park contains 9 no. parking spaces in total; 2 no. are Electric Vehicle (EV) spaces, 3 no. are standard, and 4 no. are motorcycle parking. Vehicular access to the driveway of the houses no. 7 and 8, Walsh's Terrace, Galway is made through this area.

2.2.2 Hydrology

The Proposed Development is located in the Corrib Catchment (Catchment_ID_30) and Corrib Sub Catchment (Sub catchment ID: 30_18). The site is located within the Maam- Clonbur Groundwater Body, in an area of High Groundwater Vulnerability, as per EPA Maps. There are no mapped watercourses within the proposed works boundary.

The River Corrib (EPA Code: IE_WE_30C020600, Order 6), which is designated as part of the Lough Corrib SAC [000297], is located directly adjacent to the northern margin of the Proposed Development boundary. The River Corrib flows in a southernly direction into Corrib Estuary (IE_WE_170_0700), which is designated as part of the Inner Galway Bay Special Protection Area (SPA) [004031] and

Galway Bay Complex SAC [000268], which are located approximately 795 m to the southeast and 680 m southwest of the Proposed Development boundary, respectively. The proximity of the Proposed Development to the Lough Corrib SAC [000297] highlights the sensitivity of the site and necessitates the adoption of mitigation measures as detailed in the NIS and specified below in Section 3.1.

PUNCH Consulting Engineers were appointed by LUC Architects to carry out a Site-Specific Flood Risk Assessment for the Proposed Development. The report concludes that the Proposed Development site is partially located in Flood Zone B for Fluvial flooding and Flood Zone C for Coastal Flooding. The Proposed Development is water-compatible in nature, at a low risk of flooding and will not impact flood risk to the adjacent area.

2.2.3 Designated Areas

The Lough Corrib SAC [000297] is located directly adjacent to the northern margin of the Proposed Development boundary. The Inner Galway Bay Special Protection Area (SPA) [004031] and Galway Bay Complex SAC [000268], are 795 m to the southeast and 680 m southwest of the Proposed Development boundary, respectively.

The nearest proposed National Heritage Area (pNHA) to the Proposed Development is Galway Bay Complex pNHA [000268], situated approximately 763 m southeast of the site boundary. The closest National Heritage Area (NHA) is Moycullen Bogs NHA [002430], approximately 3.2 km northwest of the site boundary.

2.2.4 Archaeology

Tobar Archaeological Services Ltd. was appointed to carry out an archaeological impact assessment of the Proposed Development. The report concluded that the Proposed Development boundary does not contain any recorded monuments, however, it is partially located within the Zone of Notification for the historic town of Galway (GA094- 100—) and its associated town defences (GA094-100001-). These sites of archaeological and cultural interest are further addressed in the Archaeological Impact Assessment (IAC). Furthermore, appropriate mitigation, as set out in the archaeological impact assessment are described below in Section 3.7.

2.3 Proposed Development Description

The Proposed Development seeks to enhance the existing Woodquay Public Park and surrounding public realm. The Proposed Development consists of upgrades and expansion of the Woodquay park including the provision of:

- Hard and soft landscaping including rain gardens, seating areas, natural play landform, and planting of Molina meadow, spring bulbs, hedge row, and ground cover;
- Removal of 1 no. ‘Class C’, and 1 no. ‘Class B’ trees. Planting of 4 no. new ‘Golden Alder’ trees;
- Relocation and reduction in size of existing bike share station;
- Galway Orb Sculpture and Light Feature;
- Litter Bins;
- Bollards;
- Flexible Events and Open Space Area;
- Enhanced Public Lighting;
- Enhanced SuDS based surface water management,
- Relocation of existing ICA memorial; and

- All other associated and ancillary works;
- Provision of 4 no. pedestrian crossings including 2 no. across Riverside, 1 no. across Waterside, and 1 no. across Corrib Terrace;
- Hard and soft landscaping adjacent to the park (across Riverside) to provide enhanced public realm including: public lighting, drainage rain garden, seating areas, and all other associated and ancillary works;
- Vehicular parking consisting of relocation of 2 no. EV parking spaces, relocation of 2 no. accessible parking spaces, retention of approx. 10 no. on street parking spaces on Corrib Terrace with modifications for new pedestrian crossings, and relocation of 4 no. motorcycle spaces. This is a net removal of 11 no. existing car spaces.
- Hard and soft landscaping adjacent to the park (across Waterside) to enable a continuation of paving type, wider footpaths, enhanced lighting, and consistent public realm design;
- All other associated and ancillary development and site works.

Map Legend

Site Location

N

Drawing Title

Site Location

Project Title

Woodquay Park Enhancement

Drawn By	Checked By
MV	VK
Project No.	Drawing No.
230108	Figure 2-1
Scale	Date
1:10,000	26.09.2024

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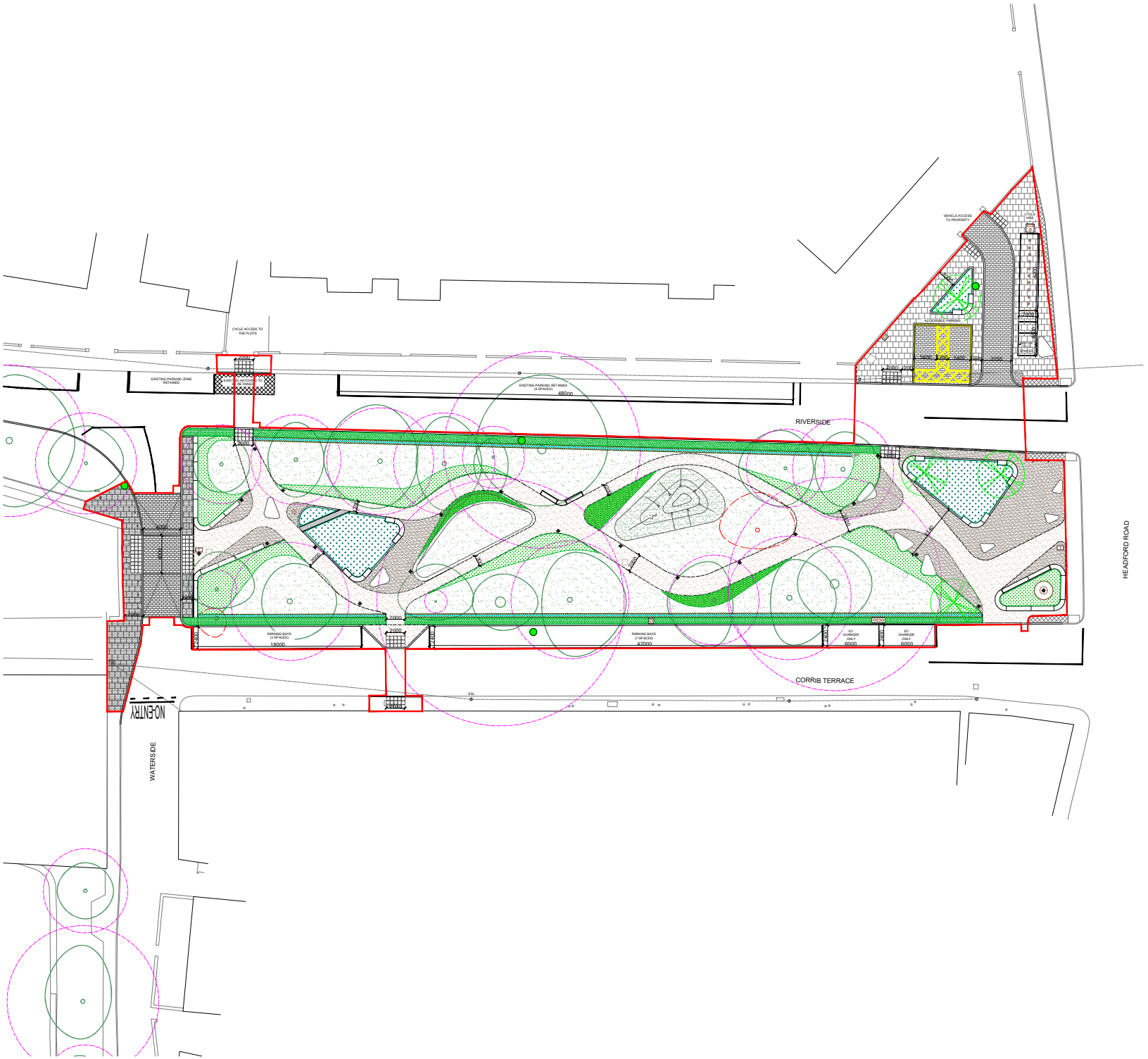

LEGEND

- Red Line Boundary
- Site Notice Locations

Paving

- Temporary tie-in to existing surfacing
  Refer to Hard Landscape Plans for details
- High Quality Concrete Paving - type 1
  Refer to Hard Landscape Plans for details
- High Quality Concrete Paving - type 2
  Refer to Hard Landscape Plans for details
- Natural Stone Paving - type 1
  Refer to Hard Landscape Plans for details
- Natural Stone Paving - type 2
  Refer to Hard Landscape Plans for details
- Resin Bound Gravel - type 1
  Refer to Hard Landscape Plans for details
- Resin Bound Gravel - type 2
  Refer to Hard Landscape Plans for details
- Tactile Paving - Courtesy Crossings
  Refer to Hard Landscape Plans for details
- Boardwalk to Rain Garden
  Refer to Hard Landscape Plans for details

Kerbs and Edges

- Kerb
  Refer to Hard Landscape Plans for details
- Edging
  Refer to Hard Landscape Plans for details

Furniture

- Free-standing Feature Seating
  Refer to Hard Landscape Plans for details
- Curved Seating
  Refer to Hard Landscape Plans for details
- Litter Bins
  Refer to Hard Landscape Plans for details
- Bollards
  Refer to Hard Landscape Plans for details
- Drop Bollards
  Refer to Hard Landscape Plans for details
- EV Charging Point
  Refer to Hard Landscape Plans for details
- Feeder Pillar
  Refer to Hard Landscape Plans for details
- Bike Hire Stands
  Refer to Hard Landscape Plans for details
- ICA Memorial
  Refer to Hard Landscape Plans for details

Lighting

- Path Lighting
  Indicative spacing only - refer to Don O'Malley lighting plans
- Galway Orb
  Refer to Hard Landscape Plans for details

Soft landscape

- Existing trees
  To be retained.
  Refer to Tree Constraints Plan and Tree Schedule for details.
- Root Protection Area
  Refer to Tree Constraints Plan and Tree Schedule for details.
  No excavation to take place within Root Protection Zone.
  Existing ground levels to be maintained.
- Existing trees
  To be removed.
  Refer to Tree Retention & Removals Plan.
- Proposed trees
  Refer to Soft Landscape Plans for details
- Hedge planting
  Refer to Soft Landscape Plans for details
- Grassed areas
  Refer to Soft Landscape Plans for details
- Reinforced grassed areas
  Refer to Soft Landscape Plans for details
- Bulb Planting
  Refer to Soft Landscape Plans for details
- Rain garden planting mix
  Refer to Soft Landscape Plans for details
- Molinia meadow planting mix
  Refer to Soft Landscape Plans for details
- Ground cover planting mix
  Refer to Soft Landscape Plans for details

Rev	Date	Description	Drn	Chk	App
P10	16.09.24	Issue for Planning	KT	CO	TJO

Scale 1:200

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Project
Woodquay Park Enhancement

Client
Galway City Council

LUC Job Nr	Scale @A1	Status
12357	1:200	Planning

Drawing Title
Site Layout Plan (Proposed)

Drawing Nr	Rev
12357-LUC-XX-00-DR-L-0100	P10

2.4 Construction Management

2.4.1 Introduction

The appointed contractors for the construction of the Proposed Development 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.

2.4.2 Overview of Proposed Construction Methodology

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

- Site Establishment
- Earthworks
- Existing Underground Utilities
- Car Park Area and Hardstanding Construction
- Park Expansion Hardstanding
- Lighting
- Landscaping and Ground Works
- Site Drainage Works
- Placement of Special Features

2.4.2.1 Site Establishment

The Proposed Development site will be accessed via new site entrances which will be established at the northern and southern boundaries of the park. Prior to the commencement of any construction, the entrance to the Proposed Development site will need to be fully established with appropriate security gates.

It is proposed to remove existing hedgerow and fencing to improve sightlines and facilitate access to the site. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Excavated materials will be sent for disposal to an authorized waste facility.

A controlled access point in the form of the site entrance will be kept locked outside of normal working hours. Due to the nature of the works, appropriate signage will be provided at the site to alert pedestrians to the construction activities and related traffic at the site. The contractor will be required to undertake the following:

- Operate a Site Induction Process for all site staff.
- Ensure all site staff shall have current ‘Safe Pass’ cards.
- Maintain Site Security staff at all times.
- Install access security in the form of gates for staff.

2.4.2.2 Earthworks

As the Proposed Development advances, some excavation and temporary stockpiling of tarmac, soils, and subsoils may be necessary to facilitate the installation of site drainage, landscaping, adjustments to car and motorbike spaces, and for the relocation of the existing bike share station.

Prior to the commencement of any works, tree protection fencing shall be installed to the locations shown on plan 12357-LUC-XX-00-DR-L-0108 P02 to create a Construction Exclusion Zone, in accordance with the recommendations of BS5837:2012. Trees in relation to design, demolition and construction– Recommendations. This fencing is to remain in place for the duration of the works and

should only be moved towards the end of the construction works to allow planting works in close proximity to the trees.

The requirement for this will be limited due to the nature of the works. Where these works occur, the following will apply:

- The area where works are planned will be surveyed and all existing services will be identified.
- All relevant bodies, such as ESB, Gas Networks Ireland, Eir, and Galway City Council, will be contacted and all drawings for existing services will be requested.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator will be used to strip the existing tarmac and topsoil (as necessary), and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All material not required for future landscaping works or for backfill will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be sealed with the back of an excavator bucket, damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- Stockpiles of excavated materials will be located a minimum of 50 metres from watercourses.
- 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 and as far as possible from nearby watercourses. A series of silt fences will also be utilised around the area where the water will be discharged.

2.4.2.3 Existing Underground Services

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 (e.g. ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with specified material. All works will be in compliance with required specifications.

2.4.2.4 Car Park Area and Hardstanding

As part of the Proposed Development, 2 no. EV charging car parking spaces, and 2 no. accessible parking spaces will be provided within the confines of the Proposed Development site. Approximately 10 no. on-street parking spaces on Corrib Terrace will be retained, with modifications for new pedestrian crossings, and relocation of 4 no. motorcycle spaces. The Proposed Development will also include the provision of 4 no. pedestrian courtesy crossings including 2 no. across Riverside, 1 no. across Waterside, and 1 no. across Corrib Terrace. Furthermore, the existing bike hire stands will be relocated. The proposed car park and other areas of tarmac hardstanding will be constructed by the following methodology:

- The areas where hardstanding are to be installed will be surveyed and all existing services will be identified.
- The car park area and other hardstanding areas (including the new pedestrian access) will be marked out using ranging rods or wooden posts.
- 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 strip the area down to a competent stratum as approved by the Design Engineer.
- A geotextile woven membrane will be laid down. This will help suppress weed growth, minimise sinking and strengthen the base of the car park and other hardstanding areas where tarmac will be installed.
- A layer of permeable aggregate in the form of clause 804 gravel or similar will then be installed. This layer will be compacted and checked for correct levels.
- Edgings in the form of natural stone kerbs will be installed as per the design drawings.
- At this stage the tarmac will be applied. This will be applied in two layers, a base coat and a top layer. The tarmac will also be compacted.
- The tarmac will be allowed to cure for the appropriate amount of time prior to use.
- Respective components (e.g. bike hire stands) will be placed on top.

2.4.2.5 Electric Vehicle Charging Stations

The contractor is to supply and install 2 no. EV charging stations in the new carpark.

These spaces will be constructed with ducting installed underneath to allow for electrical connection to charging points.

2.4.2.6 Park Expansion Hardstanding

It is proposed to expand the park into the existing car park area in the south of the Proposed Development site. Once the tarmac from the existing car park is stripped using the methodology as set out in Section 2.4.2.2 above, permeable resin bound gravel will be installed on a suitable sub-base.

Throughout the Proposed Development site, kerbs and edgings will be installed, as per Drawing No. 12357-LUC-XX-00-DR-L-0107 which has been included as Appendix 1 of this CEMP. This will include flexible steel edging installed to the resin bound surfacing, 150 mm wide light grey granite kerb, and 150 mm wide light grey granite edging, hammered finish, in line with Galway Public Realm Strategy.

2.4.2.7 Lighting

Existing street lighting will be retained, and additional lighting features will be installed at the site. One-metre-high lighting bollards, warm light-emitting diode (LED) source (2200K), and dark sky approved lighting will be installed in the Proposed Development site. Further details regarding lighting will be included in the Site Lighting Plan.

2.4.2.8 Landscaping and Ground Works

Prior to completion of works on the Proposed Development site, landscaping works will be carried out. Landscaping works will include native boundary hedgerow with rain gardens, *Molina* meadows, and spring bulbs. Two unhealthy trees will be removed, and two new ones will be added. The proposed landscaping is shown in Figure 2-2 above.

These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. The following methodology will be used:

- All rubble, stone over 50 mm, and any debris will be cleared from the proposed planting areas to the appropriate depth and disposed/recovered off-site at an appropriately licensed facility.
- The planting area shall be treated with an approved herbicide prior to spreading the topsoil.
- The entire area shall be levelled to a medium grade prior to topsoil being spread.
- Topsoil and subsoil will be spread in layers (to an approved level) and gently firmed.

2.4.2.9 Site Drainage Works

All surface water run-off from the surrounding road is currently drained with road gullies, and these will be retained and continue to discharge stormwater into the combined sewer. The stormwater in the park itself will continue to infiltrate to ground as the main means of disposal. The use of permeable materials for the hardstand and paths will provide interception reduction in stormwater volumes and the use of biofiltration and bioretention, by means of a planted raingarden, will improve stormwater quality prior to discharge via infiltration to ground.

Additional road gullies will be installed to reduce the risk of surface ponding at crossing locations. These new gullies will discharge directly into the biofiltration areas for treatment prior to discharging to ground.

2.4.2.9.1 *Rain Garden Installation*

The following methodology will be used for the installation of a rain garden at the Proposed Development site, as per Drawing No. 231101-PUNCH-01-XX-DR-C-0501- (which has been included as Appendix 2 of this CEMP):

- A tracked 360-degree excavator or similar will be used to excavate the area to a competent stratum as approved by the Design Engineer.
- Geotextile membrane to clause 519 of the Transport Infrastructure Ireland (TII) specification for roadworks will be laid out.
- A DN150 perforated pipe with inspection chambers at both ends will be installed.
- 300 mm deep type B filter material will be installed in accordance with Clause 505 of the TII specification for roadworks.
- 500 mm of deep filter medium will be installed, as specified in Drawing No. 231101-PUNCH-01-XX-DR-C-0501.
- The filter medium layer material shall not be compacted when placed.

2.4.2.9.2 *Gully Installation*

The precast concrete road gullies will be surrounded by concrete surround and bed and will be installed as per Drawing No. 231101-PUNCH-01-XX-DR-C-0501. The following methodology will be used:

- A tracked 360-degree excavator or similar will be used to excavate the area to a competent stratum, as approved by the Design Engineer.
- Casing/formwork into which the wet concrete will be poured will then be installed.
- The concrete will then be levelled quickly and allowed to cure for the appropriate time period.
- Proposed mitigation to avoid release of cement leachate is set out in Section 3.1.2. These measures include only permitting chute cleaning where concrete is delivered on site, using the smallest volume of water possible and using weather forecasting to plan dry days for pouring concrete.
- The gulley will be installed in the trench, making sure that it is level and properly aligned. The gulley will be secured in place using the appropriate anchors or fasteners.
- Once the surface water sewer is properly connected, the trench will be backfilled with suitable material and compacted to ensure proper coverage.

2.4.2.10 Placement of Special Features

The Proposed Development will involve the installation of an existing corten sculpture used during the Galway City of Culture ceremony. This sculpture is a 2000mmØ perforated sphere set on 800mmØ, 500 mm high column, welded to 2000 mm square steel frame. The Proposed Development works will

also include the relocation of an existing stone Irish Countrywomen's Association (ICA) Memorial, currently located within the park. Approximate dimensions are 400 mm by 400 mm.

The Proposed Development also includes the placement of seating areas, litter bins, and relocation of the existing bike hire stands.

These elements will be installed at suitable locations throughout the park.

3. ENVIRONMENTAL MANAGEMENT

3.1 Protecting Water Quality

The River Corrib (EPA Code: IE_WE_30C020600, Order 6), which is designated as part of the Lough Corrib SAC [000297], is located directly adjacent to the northern margin of the Proposed Development boundary. The River Corrib flows in a southernly direction into Corrib Estuary (IE_WE_170_0700), which is designated as part of the Inner Galway Bay Special Protection Area (SPA) [004031] and Galway Bay Complex SAC [000268], which are located approximately 795 m to the southeast and 680 m southwest of the Proposed Development boundary, respectively.

Prior to the commencement of any 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. Surface waters will be managed to ensure the prevention of runoff from the site work areas. Stockpiling of soil during construction, should it be required, will take place in designated areas within the site boundary away from any watercourses or waterbodies.

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 and groundwater. If groundwater is encountered during excavations, waters will be pumped from excavation and discharged through a pipe with a silt bag attached onto an area of overland vegetation within the site boundary.

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 site visits. However, the River Corrib, which is designated as part of the Lough Corrib SAC, is located directly adjacent to northern margin of the Proposed Development boundary. The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering the wider environment.

- Prior to the commencement of earthworks, silt fencing will be erected around the northern boundary of the Proposed Development site, along the River Corrib. This will be embedded into the ground adjacent to the perimeter boundary. The silt fences will be left in place throughout construction until all exposed soil has revegetated.
- The appointed contactor will be fully briefed by an ecologist as to the sensitive nature of the site (i.e., proximity to the River Corrib and Lough Corrib SAC), and the required mitigation measures.
- The majority of excavated spoil will be transported off-site for appropriate treatment or disposal. Some spoil may be retained onsite for infilling and landscaping. Stockpiles will be covered in polyethylene sheeting and if required, surrounded by a layer of silt fencing.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- Earthworks will not take place during periods of high rainfall to reduce runoff and potential siltation of watercourses. ‘High rainfall’ is defined as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events); or
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,

- Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).

- If ground water is encountered during excavations, water will be pumped from the excavation and discharged through a pipe with a silt bag attached onto an area of overland vegetation within the site boundary.
- Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites, *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.

Plate 3-1 displays an example of an embedded silt fence which may be utilized to prevent sediment from stockpiles from entering watercourses. Details of control measures which will be implemented at the site are shown in Plates 3-2, 3-3 and 3-4.

Plate 3-1 Embedded Silt Fence

Plate 3-2 Silt Bag with water being pumped through.

Plate 3-3 Silt Bag under inspection.

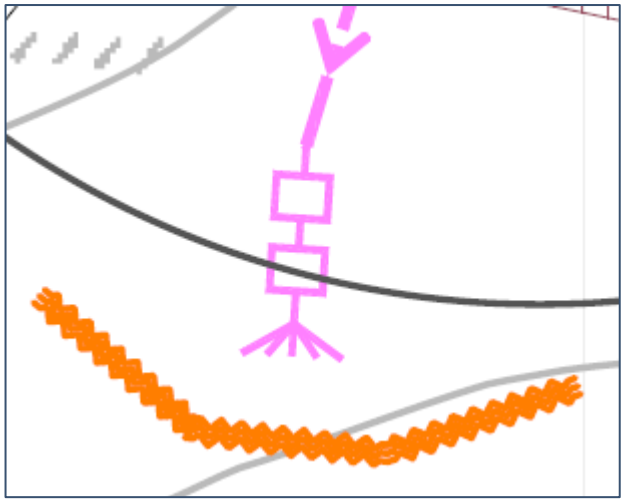


Plate 3-4 Indictive Silt Fence surrounding the discharge from a Silt Bag.

3.1.2 Cement Based Products Control Measures

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 and where possible, emplacement of pre-cast elements will take place.
- Where possible, pre-cast elements for concrete works will be used.
- 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 any watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

3.1.3 Refuelling, Fuel and Hazardous Materials Storage

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

- Storage/refuelling will be located in and carried out in a designated area of the construction site, located a suitable distance from excavation works. This area should be underlain by impermeable hard standing, and tanks should be inspected for leaks regularly. Spill kits should be supplied at these stations and staff should be trained in their use and in spill control. Drainage from these areas shall be diverted for collection and not discharged into waterbodies or municipal drains without treatment and other best management practices.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Minimal refuelling or maintenance of construction vehicles or plant will take place on site.
- Onsite refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.

- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- The small volume of fuels, lubricants and hydraulic fluids that will be stored at the site will be placed within an appropriately bunded storage area within the boundaries of the Proposed Development site.
- Storage bunds/trays, if required will be constructed of an impermeable membrane (High density polyethylene (HDPC) Plastic) and will have the adequate capacity to contain the volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels.
- All site plant will be inspected at the beginning of each day 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.
- Potential impacts caused by spillage etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.
- Spill kits will be used to deal with any accidental spillage in and outside the refuelling area.

3.2 Dust Control

Construction dust can be generated from many on-site activities such as soil stripping 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 public road. The measures below will also prevent construction debris arising on the public road network.

Proposed measures to control dust include:

- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Material handling systems and material storage areas, if required will be designed and laid out to minimise exposure to wind.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions, if required.
- The transport of soils, aggregates or other material, which has the potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- All construction related traffic will have speed restrictions on un-surfaced areas within the site to 15 km/h.

3.3 Noise Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. Construction phase noise is typically assessed in light of guidance set out in British Standard BS 5228-1:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise* (2014), as well as the National Roads Authority (NRA) (now TII) document *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes* (NRA 2014). Although the NRA document is not directly relevant to the Proposed Development, it has seen increasing application to non-road projects in recent years in the absence of any specific Irish guidance.

Proposed measures to control noise include:

- All plant will be maintained in satisfactory condition, and in accordance with manufacturer requirements. Maintenance and lubrication of bearings and other moving parts will be undertaken as specified by the manufacturer.
- 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.
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected.
- Where practical, separation distances to receptors will be maximised through appropriate on-site positioning of plant.
- The requirement to house continuously operating plant in sound-attenuating enclosures or casings will be assessed on-site.
- Equipment not in active use will be shut down.
- Use of horns will be prohibited on-site. Communication between operators (e.g. between excavator and dumper operators) will be by visual methods only.
- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. Heavy Goods Vehicle (HGV) drivers will be instructed to extend care and courtesy to other road users, and to avoid unnecessary revving of engines.
- Offsite queuing of HGVs will be prohibited.
- All construction plant used on-site will be required to comply with maximum sound power levels set out in Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. 632 of 2001), as amended by the European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations, 2006 (S.I. 241 of 2006).

The hours of working should be planned, and account should be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods.

The proposed construction working hours will be 08:00 to 18:00 Monday to Friday and 09.00 to 13.00hrs on Saturday. Construction will not take place at the site on Sundays or Public Holidays.

3.4 Vibration Control

Vibration standards can be considered in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5 mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance. Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 7385: 1993: *Evaluation and Measurement for Vibration in Buildings Part 2: Guide to Damage Levels from Ground Borne Vibration.*
- British Standard BS 5228: 2009+A1 2014: *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration.*

Vibration can be more difficult to control than noise, and there are few generalisations which can be made about its control. It should be borne in mind that vibration can cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement. The following mitigation measures will be implemented at the site during the construction phase to control vibration levels:

- The hours of working should be planned, and account should be taken of the effects of vibration upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned and the duration of work.
- Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations.
- Vibration should be controlled at source and the spread of vibration should be limited.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working.
- Where processes could potentially give rise to significant levels of vibration, on-site vibration levels should be monitored regularly by a suitably qualified person appointed specifically for the purpose, particularly if changes in machinery or project designs are introduced. A method of vibration measurement should be agreed prior to commencement of site works.
- On those parts of a site where high levels of vibration are likely to be a hazard to persons working on the site, prominent warning notices should be displayed.
- Equipment is to be task specific.
- Best practice vibration control measures will be employed by the contractor.
- A designated member of staff will be appointed as the point of contact for any queries or complaints from nearby local residents.

3.5 Traffic Management Proposals

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.

- Warning signs/Advanced warning signs will be installed at appropriate locations in advance of the construction site 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 City Council.
- Deliveries of construction materials will be planned to ensure that the materials are delivered only as they are required and will avoid peak hours when possible.
- A road sweeper will be employed, if necessary, to clean the public roads of any residual debris that may be deposited on the public roads leading away from the construction works.
- 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.

3.6 Invasive Species Management

In the event that an invasive species designated under Regulations 49 and 50 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) is discovered, an invasive species management plan will be developed, and the following actions will be implemented.

Careful preparation of the site and planning of the works is crucial to successful prevention of introduction of invasive species. The following list of guidelines, which is not exhaustive, shall be followed by all on-site personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas.

3.6.1 General Biosecurity Measures

The following best practice measures will be adhered to during the treatment and management of the invasive species within the Proposed Development site.

- All staff will be given a Toolbox Talk, by a qualified ecologist, on invasive species removal, and their management on site.
- Ensure all visitors to the site are made aware of the location of the Invasive Alien Species (IAS) recorded and are familiar with its characteristics and method of reproduction.
- A designated biosecurity area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Third schedule invasive species and non-native invasive species of potential concern will be marked with hazard tape in order to identify the species prior to vegetation clearance works and to keep it separate from other brash material.
- All machinery will be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.
- Machinery that is used for excavation and on-site removal of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of invasive plant material are present.
- Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area. Any collected loose material will be collected and disposed of in the cell/bund.
- The contractor will assign a member of their team as Environmental Manager to ensure the management plan is adhered to throughout the proposed works.
- All works in relation to Third Schedule invasive species and non-native invasive species of potential concern will be supervised by a suitably qualified ecologist.
- As a precautionary measure, machinery will be thoroughly cleaned down before exiting the site to prevent potential spread of invasive species elsewhere.
- Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site.
- Once the machinery has been cleaned down as much as possible the machines will be power-washed, or air blasted to remove any remaining material. The machine will track out of the contaminated areas on-site and bund location over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated cell/bund area.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- Any material imported to the site will be screened for invasive species by a suitably qualified ecologist before transportation to the site.

3.7 Archaeological Protection Measures

According to the archaeological impact assessment which was prepared by Tobar Archaeological Services Ltd., no direct impacts to any recorded monuments as a result of the Proposed Development have been identified. A potential direct impact to any previously unrecorded sub-surface archaeological finds, features or deposits which may exist within the Proposed Development site has been identified.

Appropriate mitigation in the form of archaeological monitoring of Site Investigations and construction stage ground works has been recommended. These mitigation measures include:

- Archaeological monitoring, under licence from the National Monuments Service (NMS), of all geotechnical Site Investigations which may be carried out within the Proposed Development site. A report on the monitoring will be compiled on completion of the works and submitted to the relevant authorities.
- Construction Stage archaeological monitoring of all topsoil removal and other relevant ground works associated with the Proposed Development by a suitably qualified archaeologist under licence from the NMS. A report on the monitoring will be compiled on completion of the works and submitted to the relevant authorities.
- Should archaeological finds or features be uncovered during the course of the monitoring the National Monuments Service shall be informed of such findings and further mitigation in the form of preservation in situ or preservation by record (excavation) may be required

3.8 Resource Waste Management Plan

The generation of waste as a result of construction related activity will provide the majority of on-site wastes which will need to be managed under guidelines set out in this document. This section of the CEMP provides a Waste Management Plan (WMP) which outlines the best practice procedures during the construction phase of the project. This plan has been compiled based on The Department of the Environment document entitled, *Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects* (2021).

The plan is based on the European waste hierarchy which sets out the most to least preferred options for waste management. Waste prevention and re-use are viewed as the most desirable options for managing wastes with the least desirable option considered being disposal to a licensed landfill.

This plan has a number of key objectives as outlined below:

- To set out management prescriptions that adhere to the waste management hierarchy.
- To outline the roles and responsibilities of the appointed Waste Manager.

3.8.1.1 Legislation

The Waste Management Act 1996 (as amended) provides measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related 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. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

3.8.1.2 Waste Management Hierarchy

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

Prevention and Minimisation:

The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project. The prevention and minimisation of waste of this development will be developed by implementing effective on-site materials management in terms of both material acquisition and storage on site.

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 to recovery facilities or landfill. Site management will be required to encourage the appropriate reuse of materials where possible as well as identify re-use opportunities to achieve ultimate goal of waste reduction.

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. A designated Waste Storage Area (WSA) will be maintained on site which will cater for segregation and recycling of various waste streams

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

3.8.2 Construction Waste Management

During the construction phase of the project, waste will be generated from the excavation of soil and subsoil material. 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 require disposal or recovery at an appropriately licensed waste facility.

Waste generated post excavation on site will be managed in the 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 (MRF) 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. Other waste mitigation measures which will be implemented at the site are as follows;

- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes be disposed of in accordance with the requirements of the Waste Management Act 1996 (as amended).
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to an appropriately licensed waste facility.

- A self-contained port-a-loo with an integrated waste holding tank will be used within the confines of the site. This unit will be maintained by the providing contractor and removed from site upon completion of the construction works.
- No wastewater will be discharged on-site during the construction phase.

The expected wastes arising from the works including the individual European List of Waste codes are outlined in Table 3-1.

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

Materials	Example	LoW Code
Cables	Electrical wiring	17 04 11
Metals	Rebar, reinforced steel joists, powder coated aluminium, copper water service pipes	17 04 07
Mixture of inert material	Sand, stones, plaster, brick, rock	17 01 07
Plastic	PVC frames, electrical fittings	17 02 03
Soil & Stones	Overburden, soil, subsoil	17 05 04
Canteen Waste	Miscellaneous waste from site staff	20 01 08

It is also essential that all waste oils, empty oil containers and other hazardous wastes be disposed of in accordance with the requirements of the Waste Management Act 1996 (as amended).

3.8.2.1 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. Co-ordination is required with suppliers enabling them to take/buy back surplus stock.
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on site.
- Request that suppliers 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 appropriately.

3.8.2.2 Wastes Arising from Construction Activities

All waste generated on-site will be contained in waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein.

Any packaging waste generated from the delivery of materials will be deposited into the on-site skips and subsequently transferred to the MRF.

Site personnel will be instructed at induction that, under no circumstances, can waste be brought to site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on-site is forbidden.

3.8.3 Implementation

3.8.3.1 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 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 must have sufficient authority so that they can ensure everyone working on the Proposed Development adheres to the WMP. The Waste Manager will also be required to conduct regular waste audits in the WSA and throughout the site to ensure that the WMP is operating effectively.

3.8.3.2 Training

It is important for the Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the WMP. All employees working on site during the construction phase of the project will be trained in materials management and thereby, should 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.
- Identify and liaise with waste contractors and waste facility operators.

3.8.3.3 Record Keeping

The WMP will provide systems that will enable all arisings, movements and treatments of waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. 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. Each record will contain the following:

- Consignment Reference Number
- Material Type(s) and List of Waste (LOW) 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 Transport Vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

3.8.4 Waste Management Plan Conclusion

The WMP will be correctly implemented and 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 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

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 will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with Galway City Council and other statutory bodies as required. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the 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 mitigation measures.
- Ensure proper mitigation measures are initiated and adhered to during the construction phase.
- 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 Resource Waste Management Plan as set out in Section 3.8 above.

4.1 Emergency Response Plan

4.1.1 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/ Project Supervisor Construction Stage (PSCS) 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.

4.1.2 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.

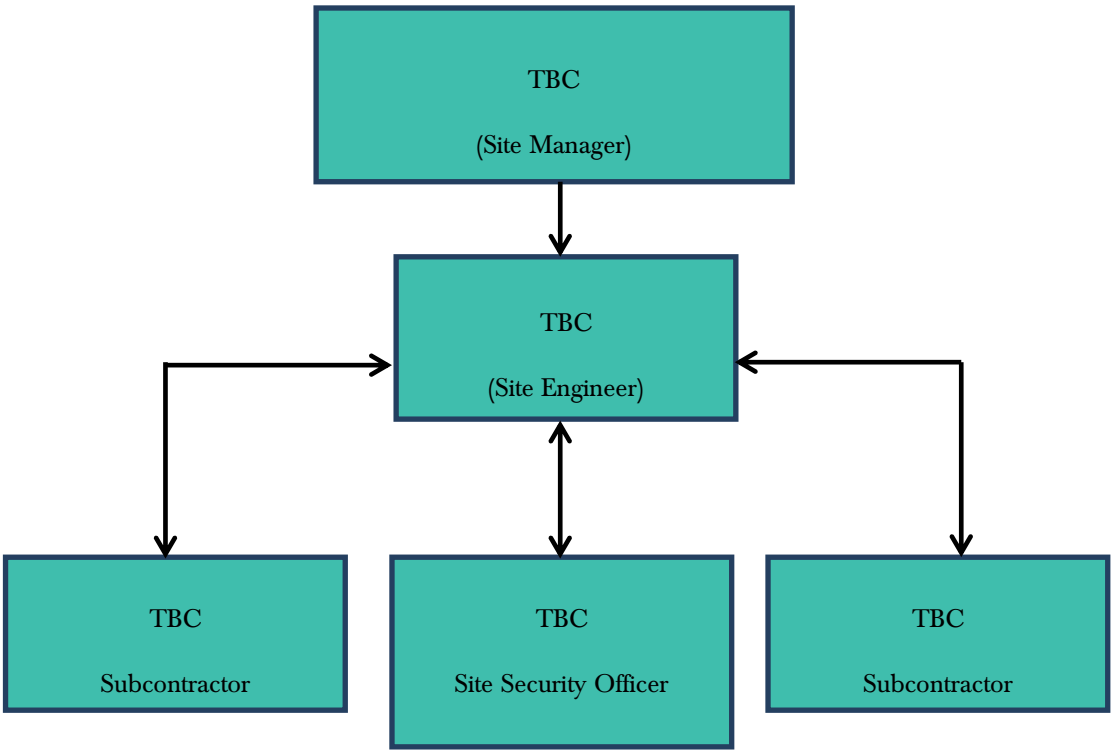


Figure 4-1 Emergency Response Procedure Chain of Command.

4.1.3 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 Hazard 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 4.1.6.
- 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 4.1.6.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.1.6.

4.1.4 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.

4.1.5 Environmental Emergency Response Procedure

4.1.5.1 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction 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, watercourses 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 City 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.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (e.g., SPA or SAC), the Environmental Manager will liaise with an Ecologist.
- 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 City 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.

4.1.6 Contacting the Emergency Services

4.1.6.1 Emergency Communication 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.

4.1.6.2 Contact Details

A list of emergency contacts is presented in Table 4-2.

Table 4-2 Emergency Contacts

Hazard	Emergency Situation
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Doctor365	081 800 0365
Hospital –University Hospital Galway	091-524 222
ESB Emergency Services	1850 372 999
Bórd Gais Emergency	1850 20 50 50
Gardaí – Mill Street Garda Station	091 538 000
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client – Galway City Council	TBC

4.1.6.3 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.

4.1.6.4 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 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 City 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 for the Pre-commencement and Construction phases

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase				
1	CEMP Section 1	All measures identified in this Construction Environmental Management Plan, 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.		
2	CEMP Section 4.1	Construction Manager and the Environmental Manager (EM), and to monitor all site works and to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
Construction Phase				
Construction Management				
3	CEMP Section 3.1.2 and EcIA 6.2.3	› No batching of wet-cement products will occur on site. › Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible, pre-cast elements for concrete works will be used. › Where possible, pre-cast elements for concrete works will be used. › 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 any watercourse will be allowed. › Use weather forecasting to plan dry days for pouring concrete.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.		
		Fuel and Oil Control		
4	CEMP Section 3.1.3 and EcIA Section 6.2.3	› Storage/refuelling will be located in and carried out in a designated area of the construction site, located a suitable distance from excavation works. This area should be underlain by impermeable hard standing, and tanks should be inspected for leaks regularly. Spill kits should be supplied at these stations and staff should be trained in their use and in spill control. Drainage from these areas shall be diverted for collection and not discharged into waterbodies or municipal drains without treatment and other best management practices. › Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment. › Minimal refuelling or maintenance of construction vehicles or plant will take place on site. › On-site refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. › Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements. › The small volume of fuels, lubricants and hydraulic fluids that will be stored at the site will be placed within an appropriately bunded		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		storage area within the boundaries of the Proposed Development site. › Storage bunds/trays, if required will be constructed of an impermeable membrane (High density polyethylene (HDPC) Plastic) and will have the adequate capacity to contain the volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels. › All site plant will be inspected at the beginning of each day 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. › Potential impacts caused by spillage etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site. › Spill kits will be used to deal with any accidental spillage in and outside the refuelling area.		
5	CEMP Section 4.1.5.1	› 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.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Notify the applicant 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 applicant will notify the appropriate regulatory body such as Galway City Council if deemed necessary.		
Surface Water Mitigation				
6	CEMP Section 3.1.1 and and EcIA Section 6.2.3	› Prior to the commencement of earthworks, silt fencing will be erected around the northern boundary of the Proposed Development site, along the River Corrib. This will be embedded into the ground adjacent to the perimeter boundary. The silt fences will be left in place throughout construction until all exposed soil has revegetated. › The appointed contactor will be fully briefed by an ecologist as to the sensitive nature of the site (i.e. proximity to the River Corrib and Lough Corrib SAC), and the required mitigation measures. › The majority of excavated spoil will be transported off-site for appropriate treatment or disposal. Some spoil may be retained on site for infilling and landscaping. Stockpiles will be covered in polyethylene sheeting and if required, surrounded by a layer of silt fencing. › All excavated material which is not required for future landscaping works or for backfill of excavations will be		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site. › Earthworks will not take place during periods of high rainfall to reduce run-off and potential siltation of watercourses. 'High rainfall' is defined as follows: o >10 mm/hr (i.e. high intensity local rainfall events); or o >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, o Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week). › If ground water is encountered during excavations, water 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. › Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors' (CIRlA 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.		
7	CEMP Section 2.4.2.2	› The area where works are planned will be surveyed and all existing services will be identified. › All relevant bodies i.e., ESB, Gas Networks Ireland, Eir, Galway City Council etc. will be contacted and all drawings for all existing services sought.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› All plant operators and general operatives will be inducted and informed as to the location of any services. › A tracked 360-degree excavator will be used to strip the existing tarmac (as necessary) topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location. › All material which is not required for future landscaping works or for backfill will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site. › All stockpiles will be sealed with the back of an excavator bucket, damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation. › Stockpiles of excavated materials will be located a minimum of 50 metres from watercourses. › 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 and as far as possible from nearby watercourses. A series of silt fences will also be utilised around the area where the water will be discharged. › Prior to the commencement of any works, tree protection fencing shall be installed to the locations shown on plan 12357-LUC-XX-00-DR-L-0108 P02 to create a Construction Exclusion Zone, in accordance with the recommendations of BS5837:2012. Trees in relation to design, demolition and construction– Recommendations. This fencing is to remain in place for the duration of the works and should only be moved towards the end of the construction works to allow planting works in close proximity to the trees.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Dust Control		
8	CEMP Section 3.2 and EcIA Section 6.2.3	› The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary. › Material handling systems and material storage areas, if required will be designed and laid out to minimise exposure to wind. › Water misting will be utilised on-site as required to mitigate dust in dry weather conditions, if required. › The transport of soils, aggregates or other material, which has the potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary. › Daily inspection of construction sites to examine dust measures and their effectiveness. › All construction related traffic will have speed restrictions on un-surfaced areas within the site to 15 kph.		
		Noise Control		
9	CEMP Section 3.3	› All plant will be maintained in satisfactory condition, and in accordance with manufacturer requirements. Maintenance and lubrication of bearings and other moving parts will be undertaken as specified by the manufacturer. › 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. › Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Where practical, separation distances to receptors will be maximised through appropriate on-site positioning of plant. › The requirement to house continuously operating plant in sound-attenuating enclosures or casings will be assessed onsite. › Equipment not in active use will be shut down. › Use of horns will be prohibited onsite. Communication between operators (e.g. between excavator and dumper operators) will be by visual methods only. › Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. HGV drivers will be instructed to extend care and courtesy to other road users, and to avoid unnecessary revving of engines. › Offsite queuing of HGVs will be prohibited. › All construction plant used on-site will be required to comply with maximum sound power levels set out in Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, implemented in Ireland by the European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001 (S.I. 632 of 2001), as amended by the European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations, 2006 (S.I. 241 of 2006).		
Vibration Control				

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
10	CEMP Section 3.4	› The hours of working should be planned, and account should be taken of the effects of vibration upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned and the duration of work. › Where reasonably practicable, low vibration working methods should be employed. Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible vibrations, and economy and speed of operations. › Vibration should be controlled at source and the spread of vibration should be limited. › Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises should be replaced by other less intrusive plant and/or methods of working. › Where processes could potentially give rise to significant levels of vibration, on-site vibration levels should be monitored regularly by a suitably qualified person appointed specifically for the purpose, particularly if changes in machinery or project designs are introduced. A method of vibration measurement should be agreed prior to commencement of site works. › On those parts of a site where high levels of vibration are likely to be a hazard to persons working on the site, prominent warning notices should be displayed. › Equipment is to be task specific. › Best practice vibration control measures will be employed by the contractor. › A designated member of staff will be appointed as the point of contact for any queries or complaints from nearby local residents.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Traffic Management				
11	CEMP Section 3.5	› Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction site 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 City Council. › Deliveries of construction materials will be planned to ensure that the materials are delivered only as they are required and will avoid peak hours when possible. › A road sweeper will be employed, if necessary, to clean the public roads of any residual debris that may be deposited on the public roads leading away from the construction works. › 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		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		facilities will cater for vulnerable users including mobility impaired persons.		
		Invasive Species Management		
12	CEMP Section 3.6	In the event that an invasive species listed under Regulations 49 and 50 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) is encountered, an invasive species management plan will be prepared, and the following measures will be adopted. Careful preparation of the site and planning of the works is crucial to successful prevention of introduction of invasive species. The following list of guidelines, which is not exhaustive, shall be followed by all on-site personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas.		
13	CEMP Section 3.6.1	› All staff will be given a Toolbox Talk, by a qualified ecologist, on invasive species removal, and their management on site. › Ensure all visitors to the site are made aware of the location of the IASs recorded and are familiar with its characteristics and method of reproduction. › A designated bio-secure area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Third schedule invasive species and non-native invasive species of potential concern will be marked with hazard tape in		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		order to identify the species prior to vegetation clearance works and to keep it separate from other brash material. › All machinery will be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere. › Machinery that is used for excavation and on-site removal of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of Invasive plant material are present. › Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area. Any collected loose material will be collected and disposed of in the cell/bund. › The contractor will assign a member of their team as Environmental Manager to ensure the management plan is adhered to throughout the proposed works. › All works in relation to the Third Schedule invasive species and non-native invasive species on potential concern will be supervised by a suitably qualified ecologist. › As a precautionary measure, machinery will be thoroughly cleaned down before exiting the site to prevent potential spread of invasive species elsewhere. › Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site. › Once the machinery has been cleaned down as much as possible the machines will be power-washed, or air blasted to remove any remaining material. The machine will track out of the contaminated areas on site and bund location over plywood or other suitable		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		material in order to protect the machine from potential contamination while exiting the contaminated cell/bund area. › Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. › Any material imported to the site will be screened for invasive species by a suitably qualified ecologist before transportation to the site.		
		Resource Waste Management		
14	CEMP Section 3.8	› All waste will be collected in skips and the site will be kept tidy and free of debris at all times. › Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996. › All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licensed waste facility. › A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site upon completion of construction works. › No wastewater will be discharged on-site during the construction phase.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› All waste oils, empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management act, 1996. › Removal of asbestos and asbestos containing materials will be carried out in accordance with Asbestos Regulations 2006 (SI 386) and 2010 (SI 589) and HSA Practical Guideline for Asbestos Management & Abatement. All removal will be carried out by a specialist contractor in strict adherence with a detailed Risk Assessment and Method Statement (RAMS) which will be prepared for the works.		
Archaeological Protection Measures				
15	CEMP Section 3.7 & Archaeological Impact Assessment Section 7.1.1.3.2	› Archaeological monitoring, under licence from the National Monuments Service (NMS), of all geotechnical Site Investigations which may be carried out within the Proposed Development site. A report on the monitoring will be compiled on completion of the works and submitted to the relevant authorities. › Construction Stage archaeological monitoring of all topsoil removal and other relevant ground works associated with the Proposed Development by a suitably qualified archaeologist under licence from the NMS. A report on the monitoring will be compiled on completion of the works and submitted to the relevant authorities. › Should archaeological finds or features be uncovered during the course of the monitoring the National Monuments Service shall be informed of such findings and further mitigation in the form of preservation in situ or preservation by record (excavation) may be required.		

6. PROGRAMME OF WORKS

6.1 Construction Programme

The construction phase will take approximately 9 months to complete. This 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 from months 1-3 and includes site fencing for the site setup and machinery mobilization.
Phase 2	Construction	This phase includes excavation, and other construction works on site.
Phase 3	Close Out	This occurs in the last months of construction and includes any landscaping works, followed by machinery demobilization 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.

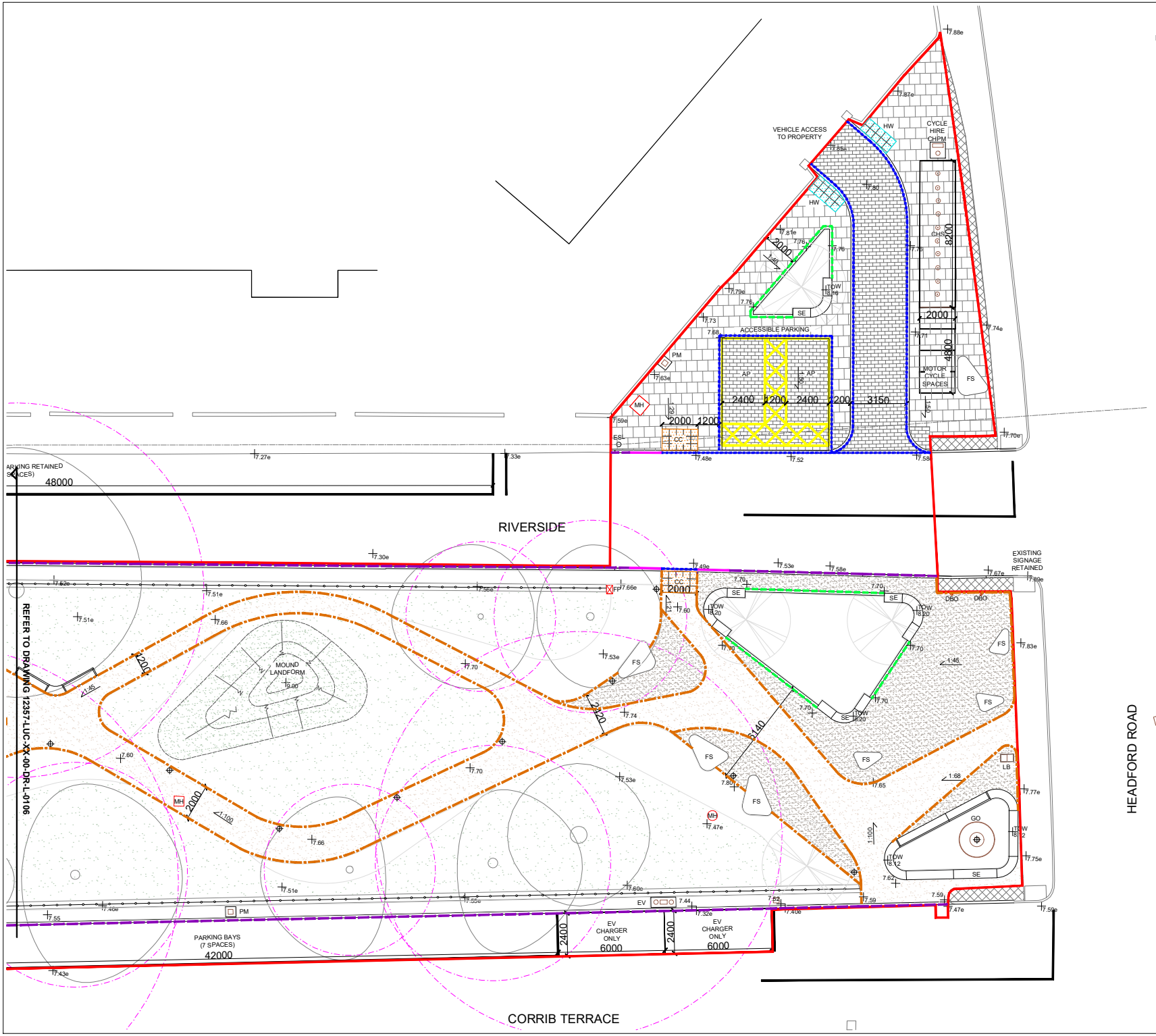
- Environmental Audits
- Environmental Inspections and Reviews
- Environmental Incidents
- Environmental Complaints

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.

APPENDIX 1

DRAWING NO. 12357-LUC-XX-00-DR-L-0107



LEGEND

- Existing spot heights
- Proposed indicative spot heights
- Proposed gradients
- Red Line Boundary

Paving

- Temporary tie-in to existing surfacing
- High Quality Concrete Paving - type 1
- High Quality Concrete Paving - type 2
- Natural Stone Paving - type 1
- Natural Stone Paving - type 2
- Resin Bound Gravel - type 1
- Resin Bound Gravel - type 2
- Tactile Paving - Courtesy Crossings
- Tactile Paving - Hazard Warning
- Boardwalk to Rain Garden

Kerbs and Edges

- Existing Kerb - Retained
- Natural Stone Kerb - Upstand
- Natural Stone Kerb - Transition
- Natural Stone Kerb - Flush
- Natural Stone Edging - Flush
- Steel Edging - Flush

Line Marking

- Line marking to roads
- Yellow line marking to accessible parking spaces

Furniture

- Free-standing Feature Seating
- Curved Seating
- Litter Bins
- Bollards
- Drop Bollards
- Cycle Hire Stands

Special Features

- ICA Memorial
- Galway Orb

Lighting

- Existing Street Lighting
- Path Lighting
- Galway Orb

Infrastructure

- EV Charging Point
- Parking Meter
- Cycle Hire Pay Meter
- Feeder Pillar
- Access Cover

Rev	Date	Description	Drn	Chk	App
P02	16.09.24	Planning Issue	CO	CO	TZ

Scale 1:100

Do not scale from this drawing
All dimensions are to be verified on site
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LUC www.landuse.co.uk

Project: Woodquay Park Enhancement

Client: Galway City Council

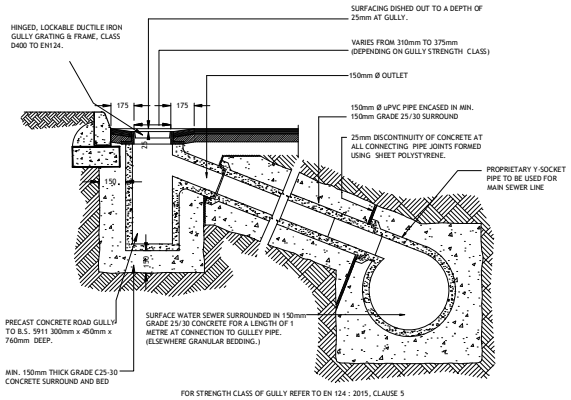
LUC Job Nr	Scale @A1	Status
12357	1:100	PLANNING

Drawing Title: HARD LANDSCAPE PLAN SHEET 2 OF 2

Drawing Nr	Rev
12357-LUC-XX-00-DR-L-0107	P02

APPENDIX 2

DRAWING NO. 231101-PUNCH-01-XX-DR-C-0501

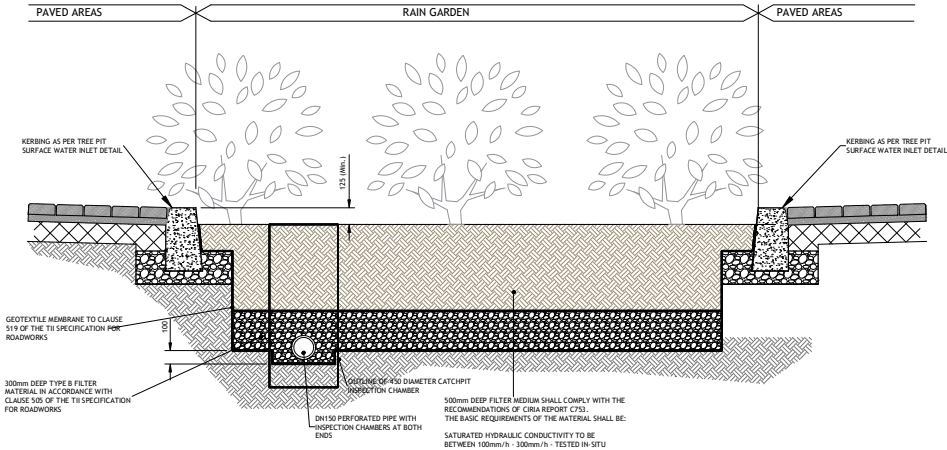


FOR STRENGTH CLASS OF GULLY REFER TO EN 124 : 2015, CLAUSE 5

NOTE 1 : PLACE OF INSTALLATION & FIGURES 9A AND 9B PROPRIETARY FITTINGS TO BE USED ON ALL PIPEWORK CONNECTIONS

NOTE 2 :
GROUP 1 - MIN. CLASS A15 GROUP 4 - MIN. CLASS D400
GROUP 2 - MIN. CLASS B125 GROUP 5 - MIN. CLASS E600
GROUP 3 - MIN. CLASS C250 GROUP 6 - MIN. CLASS F900

PRECAST CONCRETE GULLY IN MACADAM AREA
SCALE 1:20



500mm DEEP FILTER MEDIUM SHALL COMPLY WITH THE RECOMMENDATIONS OF CIRIA REPORT C753. THE BASIC REQUIREMENTS OF THE MATERIAL SHALL BE:

SATURATED HYDRAULIC CONDUCTIVITY TO BE BETWEEN 100mm/h - 300mm/h - TESTED IN-SITU USING THE SINGLE RING INFILTRATION TEST - EN ISO 22282-5:2012

POROSITY > 30% (WHEN TESTED IN ACCORDANCE WITH BS 1377-2:1990)

PARTICLE SIZE DISTRIBUTION

6mm	100% PASSING
2mm	90-100% PASSING
0.6mm	40-70% PASSING
0.2mm	5-20% PASSING
0.063mm	<5% PASSING

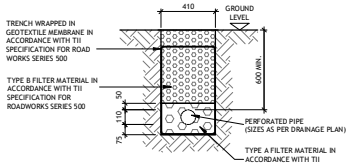
ORGANIC MATER CONTENT - 3-5% (w/w)

SOILS SHALL BE ASSESSED BY HORTICULTURIST TO ENSURE THAT IT WILL SUPPORT HEALTHY VEGETATION COMMUNITY.

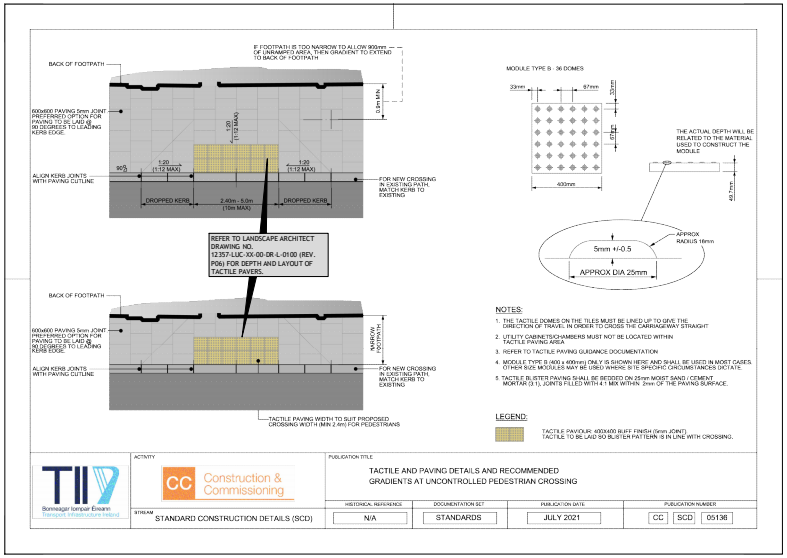
ANY COMPONENT FOUND TO CONTAIN HIGH LEVELS OF SALT, CLAY OR SILT PARTICLES OR OTHER EXTREMES WHICH MAY BE CONSIDERED RETARDENT TO PLANT GROWTH SHALL BE REJECTED.

THE FILTER MEDIUM LAYER MATERIAL SHALL NOT BE COMPACTED WHEN PLACED.

RAIN GARDEN DETAIL
SCALE 1:20



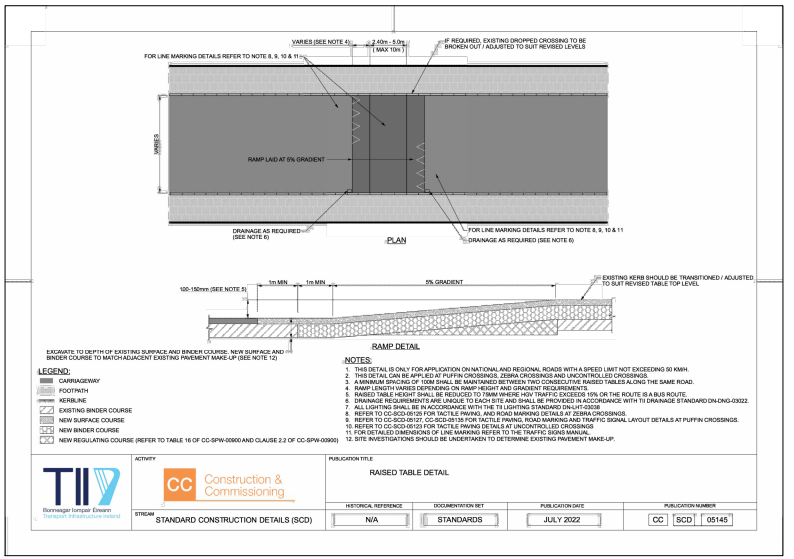
FILTER DRAIN TYPICAL SECTION
NOT TO SCALE



NOTES:
1. THE TACTILE DOMES ON THE TILES MUST BE LINED UP TO GIVE THE DIRECTION OF TRAVEL IN ORDER TO CROSS THE CARRIAGEWAY STRAIGHT
2. UTILITY CABINETS/CHAMBERS MUST NOT BE LOCATED WITHIN TACTILE PAVING AREA
3. REFER TO TACTILE PAVING GUIDANCE DOCUMENTATION
4. MODULE TYPE B (400 x 400mm) ONLY IS SHOWN HERE AND SHALL BE USED IN MOST CASES. OTHER SIZE MODULES MAY BE USED WHERE SITE SPECIFIC CIRCUMSTANCES DICTATE
5. TACTILE BLISTER PAVING SHALL BE BEDDED ON 25mm MOIST SAND / CEMENT MORTAR (3:1), JOINTS FILLED WITH 4:1 MIX WITHIN 2mm OF THE PAVING SURFACE.

LEGEND:
TACTILE PAVIOUR: 400X400 BUFF FINISH (5mm JOINT)
TACTILE TO BE LAID SO BLISTER PATTERN IS IN LINE WITH CROSSING.

ACTIVITY: Construction & Commissioning	PUBLICATION TITLE: TACTILE AND PAVING DETAILS AND RECOMMENDED GRADIENTS AT UNCONTROLLED PEDESTRIAN CROSSING		
STREAM: STANDARD CONSTRUCTION DETAILS (SCD)	HISTORICAL REFERENCE: N/A	DOCUMENTATION SET: STANDARDS	PUBLICATION DATE: JULY 2021
			PUBLICATION NUMBER: CC SCD 05136



PLAN

RAMP DETAIL

EXCAVATE TO DEPTH OF EXISTING SURFACE AND BINDER COURSE. NEW SURFACE AND BINDER COURSE TO MATCH ADJACENT EXISTING PAVEMENT MAKE-UP (SEE NOTE 12)

LEGEND:
CARRIAGEWAY
FOOTPATH
KERBLINE
EXISTING BINDER COURSE
NEW SURFACE COURSE
NEW BINDER COURSE
NEW REGULATING COURSE (REFER TO TABLE 16 OF CC-SPW-00900 AND CLAUSE 2.2 OF CC-SPW-00900)

NOTES:
1. THIS DETAIL IS ONLY FOR APPLICATION ON NATIONAL AND REGIONAL ROADS WITH A SPEED LIMIT NOT EXCEEDING 50 KMH.
2. THIS DETAIL CAN BE APPLIED AT PUFFIN CROSSINGS, ZEBRA CROSSINGS AND UNCONTROLLED CROSSINGS.
3. A MINIMUM SPACING OF 100M SHALL BE MAINTAINED BETWEEN TWO CONSECUTIVE RAISED TABLES ALONG THE SAME ROAD.
4. RAMP LENGTH VARIES DEPENDING ON RAMP HEIGHT AND GRADIENT REQUIREMENTS.
5. RAISED TABLE HEIGHT SHALL BE REDUCED TO 75MM WHERE HGV TRAFFIC EXCEEDS 15% OR THE ROUTE IS A BUS ROUTE.
6. DRAINAGE REQUIREMENTS ARE UNIQUE TO EACH SITE AND SHALL BE PROVIDED IN ACCORDANCE WITH TII DRAINAGE STANDARD DN-DNG-03022.
7. ALL LIGHTING SHALL BE IN ACCORDANCE WITH THE TII LIGHTING STANDARD DN-LHT-03038
8. REFER TO CC-SCD-00125 FOR TACTILE PAVING, AND ROAD MARKING DETAILS AT ZEBRA CROSSINGS.
9. REFER TO CC-SCD-00127, CC-SCD-00128 FOR TACTILE PAVING, ROAD MARKING AND TRAFFIC SIGNAL LAYOUT DETAILS AT PUFFIN CROSSINGS.
10. REFER TO CC-SCD-00129 FOR TACTILE PAVING DETAILS AT UNCONTROLLED CROSSINGS.
11. FOR DETAILED DIMENSIONS OF LINE MARKING REFER TO TII TRAFFIC SIGNS MANUAL.
12. SITE INVESTIGATIONS SHOULD BE UNDERTAKEN TO DETERMINE EXISTING PAVEMENT MAKE-UP.

ACTIVITY: Construction & Commissioning	PUBLICATION TITLE: RAISED TABLE DETAIL		
STREAM: STANDARD CONSTRUCTION DETAILS (SCD)	HISTORICAL REFERENCE: N/A	DOCUMENTATION SET: STANDARDS	PUBLICATION DATE: JULY 2022
			PUBLICATION NUMBER: CC SCD 05145

Rev	Amendment	By	Date
C01	ISSUED FOR PLANNING	DF	2024-09-20

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Project: WOODQUAY PARK ENHANCEMENT				
Title: STANDARD DETAILS				
Drawn: PJ Mulcahy	Date drawn: 2024-09-19	Technician Check: PJ Mulcahy	Engineer Check: Padraig Troy	Approved: Aiden O Donoghue
Project No: 231101	Model Size: A0 (Planning)		Drawing Status:	
Scale @ A1: As Shown	Document No: 231101-PUNCH-01-XX-DR-C-0501			Revision No: C01