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Blackrock Dart – Park Active Travel Scheme

Outline Construction Environmental Management Plan

Dún Laoghaire – Rathdown County Council

June 2024

Notice

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Document history

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Client signoff

Client	Dún Laoghaire – Rathdown County Council
Project	Blackrock Dart – Park Active Travel Scheme
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List of Acronyms

The following list of abbreviations have been used within this document;

CEMP - Construction Environmental Management Plan
CFRAM – Catchment Flood Risk Assessment & Management
CIRIA – Construction Industry Research and Information Association
DART – Dublin Area Rapid Transit
DLRCDP – Dún Laoghaire- Rathdown County Development Plan
DLRCC – Dún Laoghaire- Rathdown County Council
EcIA – Ecological Impact Assessment
ECoW - Ecological Clerk of Works
ECP - Environmental Control Plans
EIRP – Emergency Incident Response Plan
EPA - Environmental Protection Agency
EWC – European Waste Catalogue
GSI - Geological Survey of Ireland
GWB – Groundwater Bodies
IAQM – Institute of Air Quality Management
NHA – Natural Heritage Area
pNHA – proposed Natural Heritage Area
NIAH – National Inventory of Architectural Heritage
NRA - National Roads Authority
OPW – Office of Public Works
OTMP – Outline Traffic Management Plan
pNHA – proposed Natural Heritage Area
PPMP – Pollution Prevention Management Plan
PSCS - Project Supervisor Construction Stage
PSDP - Project Supervisor for the Design Process
PWS – Public Water Supply
RWMP - Resource Waste Management Plan
SAC - Special Area of Conservation
SMR – Sites & Monuments Record
SPA – Special Protection Area
SUDs – Sustainable Urban Drainage Systems
TII – Transport Infrastructure Ireland
TMP – Traffic Management Plan
WFD - Water Framework Directive
ZoI - Zone of Influence

1. Introduction

Dún Laoghaire-Rathdown County Council intends to apply for Part 8 planning permission to carry out a proposed scheme comprising the construction of Sustainable Travel Facilities in Blackrock, Dún Laoghaire-Rathdown County.

The Active Travel Scheme will improve connectivity between Blackrock DART Station and Blackrock Park as well as providing a safe and attractive pedestrian and cycle link catering for all pedestrian and cycle users including, commuter, leisure and family cycling groups.

The proposed project is located immediately to the west of Blackrock DART Station between Bath Place and Blackrock Park.

WS Atkins Ireland Limited (Atkins) was commissioned by Dún Laoghaire-Rathdown County Council (DLRCC) to prepare an Outline Construction Environmental Management Plan for the Blackrock Dart-Park Active Travel Scheme.

1.1. Project Details

The proposed development commences at Bath Place (in the location of Blackrock Dart Station) and includes the provision of 130m of a two-way cycle track varying in width from 3m to 3.65m, a 2m wide footpath and associated 1m and 3m grass verges, linking into the existing pedestrian and cycle path facilities in Blackrock Park by means of a new prefabricated bridge over the Priory Stream which is proposed to replace the existing narrow pedestrian bridge. A new sustainable urban drainage system will collect surface water run-off from the proposed development and will regulate discharge into the Priory Stream. The proposed development includes for a new public lighting system and landscaping which will be located within the proposed grass verges. The proposed development includes the retention of the existing masonry wall along the northern boundary and its extension at both ends to close off access to the existing laneway. Where required, the height of the existing masonry wall will be raised to maintain a minimum height of 2.0m in relation to the finished scheme levels. The southern boundary of the proposed development includes the construction of a new boundary wall which will replicate the style of the existing boundary wall to the north and will be constructed at a height of 3.0m above the proposed back of verge level or existing private garden level, whichever is higher. Accommodation works will be required within private lands to facilitate the proposed development, including but not limited to landscaping and the relocation of the existing folly within Deepwell House grounds, the final details of which will be confirmed with the landowner.

Figures 1-1 and 1-2 below illustrate the project location.

1.2. Purpose of CEMP

The purpose of this CEMP is to provide recommended measures to avoid, minimise and control adverse environmental impacts associated with the construction of the proposed pedestrian and cycle route. The CEMP will document the commitment to safeguarding the environment through the identification, avoidance, and mitigation of the potential negative environmental impacts associated with this proposed project. The Contractor will undertake the works in accordance with the provisions of the CEMP. This may be added to, to address other detailed construction matters.

The Outline CEMP will be further developed by the Contractor to produce a Detailed CEMP. The Detailed CEMP will address any subsequent planning conditions relevant to the proposed project, and will include further detail as required once the programme, methodology and identification of any associated key environmental risks have been further developed by the Contractor.

The CEMP aims to define good practice as well as specific actions required to implement mitigation requirements as identified in the following environmental reports and documents reviewed by AtkinsRéalis:

- AtkinsRéalis (2023), Preliminary Design Report. Blackrock Dart – Park Active Travel Scheme;
- AtkinsRéalis (2024), AA Screening. Blackrock Dart – Park Active Travel Scheme;
- AtkinsRéalis (2024),EIA Screening Report. Blackrock Dart – Park Active Travel Scheme;
- AtkinsRéalis (2023), Constraints Study. Blackrock Dart – Park Active Travel Scheme;
- AtkinsRéalis (2024), Stage 2 – Initial Flood Risk Assessment. Blackrock Dart – Park Active Travel Scheme.

- AtkinsRéalis (2024), Ecology Report. Blackrock Dart – Park Active Travel Scheme.

The party responsible for the preparation of the CEMP is likely to change over the life of a project. In the absence of Irish guidelines, the UK guidelines LA 120 Environmental management, March 2020 for CEMP were followed.

1.3. Structure

This CEMP has been structured as follows:

- Section 1 outlines the purpose of the CEMP and introduces the proposed project;
- Section 2 describes in detail the proposed project;
- Section 3 outlines the minimum standards, legislation and guidance required by the Contractor during the development of the CEMP;
- Section 4 identifies the relevant roles and responsibilities for developing, implementing, maintaining, and monitoring environmental management;
- Section 5 sets out the mechanisms through which environmental requirements will be managed;
- Section 6 sets out the general requirements of this CEMP;
- Section 7 a summary of minimum requirements that should be implemented by the Contractor; and.
- Section 8 sets out the procedures for the Emergency Response Plan.

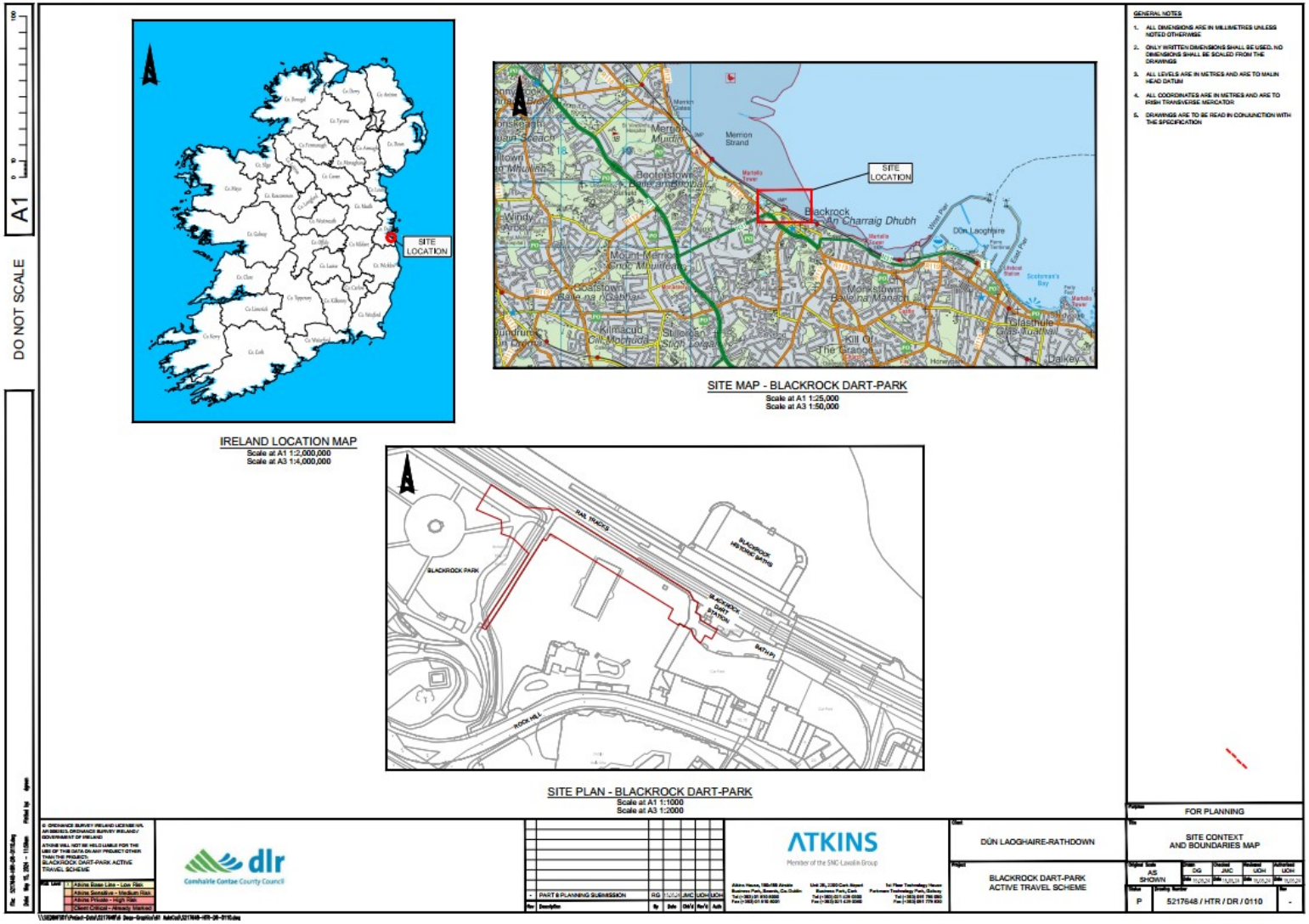

Figure 1-1 - Project Location (1 of 2)

Figure 1-2 - Project Location (2 of 2)

2. The Proposed Project

2.1. Site Location and Surrounding Land Use

The proposed development is located adjacent to the existing railway line in Blackrock, Co. Dublin, between Bath Place and Blackrock Park at grid reference 53.303313 -6.1799075. The proposed scheme is ca. 130m in length between the tie in point to the existing pedestrian and cycle facilities within Blackrock Park to the west of the scheme, and the tie in point at Bath Place to the east of the Scheme.

The project site is located ca. 20m from South Dublin Bay which is a designated conservation site; South Dublin Bay SAC (Site Code; 000210), South Dublin Bay and River Tolka Estuary SPA (Sire Code 004024) and South Dublin Bay proposed Natural Heritage Area (pNHA site code; 000210). The south side of Dublin Bay is also a Ramsar site; Sandymount Strand / Tolka Estuary (Site Code; 832).

The proposed development is within the Liffey and Dublin Bay Water Framework Directive (WFD) catchment area and the Dodder_SC_010 sub-catchment area. A review of Geological Survey Ireland datasets[1] identifies the project site as being predominantly within areas of '*Extreme'* groundwater vulnerability and *an area of 'rock at or near surface or karst* at the eastern end of the proposed scheme.

There is 1no. watercourse within the project site; Priory Stream (EPA: IE_EA_09B130400), the stream is crossed by the proposed scheme via a bridge in Blackrock Park. The Priory Stream outfalls to South Dublin Bay ca.200m west of the watercourse crossing. The Priory Stream is a first order stream which is culverted for a large extent under Blackrock and receives storm water / surface water drainage from the upstream urban developed areas. The Priory Stream has been assigned '*Poor'* ecological status under the Water Framework Directive (WFD) for the 2016-2021 monitoring period and the WFD risk is detailed as '*under review'* with respect to meeting the relevant WFD objectives by 2027.

Existing pedestrian and cycle facilities run from Blackrock Park towards Blackrock Dart Station via a bridge that crosses the Priory Stream. The bridge is ca. 2m wide, with a ca. 0.25m thick deck made up of steel and concrete.

The existing route enters a narrow lane which is 1.2m in width and is bounded by the northbound platform of the Blackrock Dart Station to the north, and the boundary wall of a private property known as "Deepwell House" to the south.

The existing route continues for ca. 95m before emerging onto Bath Place to the west of the Blackrock Dart Station where the extents of the scheme terminate. This area ties into a private garage business known as Hill Motors and also the rear entrance to Deepwell House.

The house located within the grounds of Deepwell is a protected structure (RPS No. 110) according to the DLRCC County Development Plan 2022-2028. The property is a mid-19th Century house, built on the site of an 18th Century dwelling. The proposed development is located partially within the residential grounds of Deepwell House. The grounds contain original ancillary structures, a masonry stone wall, formal landscaping, mature vegetation, and a folly. The boundary wall structure of Deepwell House borders the site of the proposed development on the northern, north eastern and north western sides.

Additionally, the existing bridge in Blackrock Park has architectural significance. These features include a platform and railings of 20th century construction.

Refer to the Architectural Heritage Impact Assessment Report conducted by Deaton Lysaght Architects (2023) for further information on the heritage of Deepwell House and the existing bridge. It is also noted that the railway station is a protected building.

2.2. Proposed Project

The proposed project is summarised as follows:

- A pedestrian and cycle link between the Blackrock Dart Station and Blackrock Park;
- The existing bridge will be demolished over the Priory Stream and a new prefabricated bridge will be constructed;
- A boundary wall will be constructed between the proposed scheme and Deepwell House;
- The existing folly will be relocated to an alternative location within the grounds of Deepwell House;

[1] https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

- SuDS will be implemented;
- Lighting will be installed as per DLRCC standards;
- Land acquisition will be required;

Plans for the proposed project have been submitted as part of this Part 8 planning application.

2.3. Key Stages

The proposed project will involve the following key work phases:

- Detailed Design Stage and Procurement;
- Appointment of the Contractor;
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents;
- Site mobilisation;
- Demolition works;
- Construction Stage;
- Completion;
- Demobilisation; and,
- Operational Stage.

Details of machinery to be used on site are unknown at this time, but are likely to be standard site equipment including tracked excavators, dumpers, bulldozers etc.

2.4. Environmental Constraints

2.4.1. Noise

A review of the Environmental Protection Agency (EPA 2023) Noise Maps indicates that the primary source of noise is the Blackrock rail network adjacent to the site. Lnight levels are recorded at 65-69dB, while Lden levels can rise up to >75dB (EPA, 2023). Although there are high levels of noise pollution caused by road traffic along N31 located ca. 140m from the site, the proposed project site is not anticipated to be affected by this. The EIA Screening Report states that noise levels are unlikely to increase significantly above existing levels during operation.

2.4.2. Air Quality

Dust arising from excavation and import of soil to the proposed site, along with vehicle movement as well as emissions from construction vehicles and plant will contribute to reduced air quality. Some activities including infilling / excavating, stockpiling and movement of materials, and construction vehicle movements may all contribute to generating ambient dust.

The current air quality of the proposed project site is recorded by the EPA as ‘good’, with an Air Quality Index of ‘3’ (EPA, 2023).

2.4.3. Soils and Geology

The quaternary sediments underlying the project area are predominately estuarine silts and clays, with a proportion of bedrock outcrop or subcrop located in the southwestern portion of the site. The GSI bedrock geology 100k map identifies the underlying bedrock as Granite with microcline phenocrysts of the ‘Type 2p microcline porphyritic’ formation. Groundwater vulnerability at this site is extreme to karstic.

The region of the site around Blackrock Station is located on a generally unproductive ‘poor’ aquifer and the region around Deepwell House sits primarily on a locally important (Ll) aquifer (GSI, 2023).

There is no evidence of any karst features within the site. The closest karst feature is St. Doolaghs Well, a spring situated ca. 12.4km north of the site (GSI, 2023).

Groundwater vulnerability at this site is classified as ‘extreme’, with small areas with ‘rock at or near surface or karst', making it especially vulnerable to contamination (GSI, 2023).

There are no wells or springs within or in close proximity to the site. The closest features are 2no. boreholes, both lying ca.2.5km northwest of the site, in Merrion (2923SEW034) and Donnybrook (2923SEW017) (GSI, 2023).

While there are no geoheritage features within the project site, Blackrock Breccia (Site Code: DLR003) lies ca. 20m north of the site and is described as a small area of rocks that are exposed in the intertidal zone beside Blackrock Dart station (GSI, 2023).

2.4.4. Ecology

The project site is located ca. 20m from South Dublin Bay. South Dublin Bay is a designated conservation site; South Dublin Bay SAC (Site Code; 000210), South Dublin Bay and River Tolka Estuary SPA (Site Code: 004024) and South Dublin Bay proposed Natural Heritage Area (pNHA site code; 000210). The south side of Dublin Bay is also a Ramsar site; Sandymount Strand / Tolka Estuary (Site Code; 832).

An AA Screening Report (AtkinsRéalis Report ref: 5217684DG0038) was completed in 2024. The report noted that '*with the absence of any mitigation measures the proposed Blackrock Dart-Park Active Travel Scheme, either alone or in-combination with other plans or projects, will not result in likely significant effects on South Dublin Bay SAC or South Dublin Bay and River Tolka Estuary SPA or any other European site. Thus, it is recommended that it is not necessary for the scheme to proceed to Appropriate Assessment*.'

Site surveys were undertaken by AtkinsRéalis ecologists in October 2022 and in September 2023. The Ecological Impact Assessment (EcIA) states that no invasive species were found. See AtkinsRéalis EcIA report for full survey results (Report ref: 5217648DG0065).

2.4.5. Landscape and Visual Amenity

The proposed development will lead to a noticeable change in character of the immediate area due to the removal of 31no. trees, surrounding ornamental shrub planting and extension of the wall at Deepwell House. There will be no impact on the wider landscape of the proposed development. The visual receptors within the vicinity will be residential (Deepwell House), pedestrians and cyclists.

In line with Dun Laoghaire Rathdown County Biodiversity Action Plan (BAP) 2021-2025 to '*develop ecologically resilient and varied landscapes and integrate adaptation and mitigation measures into management, planning and decision-making*', a landscaping design will be developed at the detailed design stage of the proposed scheme.

The landscaping design will outline specimen trees and shrubs suitable for a coastal location, wildflower meadow underplanting within a grass verge bordering the new cycleway and footpath. The proposed scheme can be considered to facilitate certain elements of the Blackrock Park Masterplan. The Masterplan includes for biodiversity enhancement measures within the neighbouring park including an increase in tree canopy along coastal edge using evergreen species, the planting of groves of small trees and meadow planting and planting a large scale high quality herbaceous display suitable for coastal conditions.

2.4.6. Water Resources

Priory Stream (IE_EA_09130400) is the single water course passing through this site. It has been assigned 'Poor' ecological status under the Water Framework Directive (WFD) 2016-2021. The likelihood of it not meeting the relevant WFD objectives by 2027 is still 'under review' (EPA, 2023).

The site is within Flood Zone A and B, due to the risk of coastal/tidal flooding. A Stage 2 Initial Flood Risk Assessment (Report Ref: 52176480049 AtkinsRéalis 2023) was prepared for the proposed development states that although there is a risk of wave overtopping, flood defence walls have been put in place along South Dublin Bay. It noted that levels within the proposed project are above the 1 in 100-year flood event and a justification test is not required.

2.4.7. Cultural Heritage

There are no Sites and Monuments Record (SMR) or National Inventory of Architectural Heritage (NIAH) features listed sites within 200m of the site. The closest SMR listed feature is a 12th century cross situated ca. 200m south east of the site. The closest NIAH listed features are located ca. 1km south east of the site, in the town of Rockford and include an early 20th century gate lodge (Reg No. 60230087) and the surrounding gates and railings (Reg No. 60230088) (NMS, 2023).

The house located within the grounds of Deepwell is a protected structure (RPS No. 110) according to the DLRCC County Development Plan 2022-2028. The house a mid-19th Century house, built on the site of an 18th Century dwelling. The proposed development is located partially within the residential grounds of Deepwell House. The grounds contain original ancillary structures, a masonry stone wall, formal landscaping, mature vegetation and a folly. The boundary wall structure of Deepwell House borders the site of the proposed development on the northern, north eastern and north western sides.

Additionally, the existing bridge in Blackrock Park has architectural significance. These features include a platform and railings of 20th century construction. The cast and wrought iron features (railings) of the existing bridge will be salvaged for future use by DLRCC.

Refer to the Architectural Heritage Impact Assessment Report conducted by Deaton Lysaght Architects (2023) for further details of the heritage of Deepwell House and the existing bridge. It is also noted that the railway station is a protected building.

2.4.8. Traffic & Transportation

In relation to transport, the Contractor will utilise a Traffic Management Control Plan to mark relevant identified receptors so that construction impacts on them can be considered. Mitigation will include traffic management measures and the use of signage with speed restrictions and diversions.

2.4.9. Local Amenities and Other Sensitive Receptors

Local Services / Amenities (Social Infrastructure) includes a wide range of services and facilities including education, healthcare, community, retail, and sports facilities that contribute to the quality of life. The closest sensitive receptors to the proposed scheme are residential dwellings (Deepwell House) and amenity areas (Blackrock Park).

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3. Legislation and Guidance

All parties, contractors and consultants working on this project shall be subject to the Irish laws and the various international/regional protocols and agreements to which Ireland is a party. In the event legislation is updated, the latest version shall be followed. All relevant new legislation will be followed as appropriate. This document outlines most current legislation at the date of issue. It is the responsibility of the Contractor to ensure that they are up to date with the details of the latest iterations of legislation relevant to the project throughout the duration of the contract.

The Designer should be aware of all key environmental risks and associated measures set out within this CEMP, and the final detailed design should take due cognisance of these.

The Contractor should set out the detailed CEMP in a clear format and should address all key environmental risks and associated measures. The Contractor must be aware of and comply with the legislation and guidance set out in this document, any specific planning conditions which may be associated with the proposed project, and other relevant documentation as prescribed by the Employer and planning authority.

3.1. Legislation

It should be noted that the appointed Contractor will be required to be aware of their obligations under legislation. Such legislation, includes, but is not restricted, to:

- Planning and Development Act and subsequent amendments, 2000- 2023;
- Planning and Development Regulations 2001 to 2023;
- The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC);
- The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;
- The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015) and 2021 (S.I. No. 388 of 2021);
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015), 2019 (S.I. No. 77 of 2019);
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016);
- European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015);
- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended 2018 (S.I. No. 851 of 2018);
- Waste Management Acts of 1996 to 2023;
- The Water Pollution Acts of 1977 & 1990;
- The Wildlife Acts 1976 to 2021;
- Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended, 2005 (S.I No. 413 of 2005), 2008 (S.I No. 219 of 2008), 2010 (S.I. No. 93 of 2010) and Amendment (No. 2) Regulations, (S.I. 326 of 2010) & EU Water Policy Regulations 2014 (S.I 350 of 2014); 2018 (S.I. No. 261 of 2018), as amended 2022 (S.I. No. 166/2022);
- Water Conservation Regulations 2008, (S.I. No. 527 of 2008);
- European Union (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended 2017 (S.I No. 464 of 2017), 2020 (S.I. No. 2184 of 2020) and 2023 (S.I. No. 99 of 2023);
- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);
- Litter Pollution Act of 1997, as amended, 2017 (S.I. No. 58 of 2017);

- Litter Pollution Regulations 1999 (S.I. No. 359 of 1999);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014), as amended 2019 (S.I. No. 233 of 2019);
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007), as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019);
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016), 2023 (S.I. No. 63 of 2023, as amended S.I. No. 104 of 2023);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Environment (Miscellaneous Provisions) Act 2011, as amended 2015;
- Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015), 2019 (S.I. No.182 of 2019);
- Waste Management (Hazardous Waste) Regulations 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management (Shipment of Waste) Regulations 2007 (S.I. No. 419 of 2007);
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011 (S.I. No 324 of 2011);
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998;
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96 of 2018);
- European Union Batteries and Accumulators Regulations 2014, (S.I. No. 283 of 2014), as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. No. 113 of 2008);
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009 (S.I No. 286 of 2009), as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017), 2019 (S.I. No. 684 of 2019), 2022 (S.I. No. 51 of 2022) and 2023 (S.I. No. 16 of 2023);
- European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended 2016 (S.I. No. 315 of 2016) and (S.I. No. 323 of 2020);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002, 2015 and 2018;
- Waste Management (Food Waste) Regulations 2009 (S.I. No 508 of 2009), as amended, 2015 (S.I. No. 190 of 2015);
- Protection of the Environment Act 2003;
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015 (S.I. No. 233 of 2015), as amended, 2018 (S.I. No. 383 of 2018);
- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2002 (S.I. No. 271 of 2002), 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016);
- EC (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007 (S.I. No.147 of 2007), as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I No. 417 of 2013);
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006 (S.I. No 281 of 2006), as amended, 2011 (S.I. No. 465 of 2011);
- EU F Gas Regulations 2006, as amended, 2014 (S.I. No. 517 of 2014), 2019 (S.I. No. 367 of 2019), 2020 (S.I. No. 32 of 2020);
- Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 (S.I. 174 of 1994);

- Environmental Noise Regulations 2006 (S.I. No. 140 of 2006);
- European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018), as amended 2021 (S.I. No. 663 of 2021);
- European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001 (S.I No. 632 of 2001), as amended, 2006 (S.I No. 241 of 2006);
- European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996 (S.I No. 359 of 1996) and 2001 (S.I No. 632 of 2001);
- Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);
- Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990 (S.I. No. 112 of 1990), Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000), 2022 (S.I. No. 485 of 2022);
- European Communities Conservation of Wild Bird Regulations 1985 (S.I. No. 291 of 1985), as amended, 1986 (S.I. No. 48 of 1986), 1995 (S.I. No. 31 of 1995), 1997, (S.I. No. 210 of 1997), 1998 (S.I. No. 154 of 1998), (S.I. No. 131 of 1999), 2005 (S.I. No. 716 of 2005), 2010 (S.I. No. 65 of 2010), 2011 (S.I. No. 626 of 2011), 2012 (S.I. No. 84 of 2012), 2013 (S.I. No. 281 of 2013), 2019 (S.I. No. 178 of 2019);
- Flora (Protection) Order, 2015 (S.I. No 356 of 2015), 2022 (S.I. No. 235 of 2022);
- The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014, (S.I. No. 31 of 2014);
- Forestry Regulations, 2017 (S.I. No. 191 of 2017), as amended 2022 (S.I. No. 319 of 2022);
- The National Monuments Act 1930 (S.I. No. 2 of 1930), as amended, 2004 (S.I. No. 22 of 2004);
- European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013 (S.I. No. 403 of 2013), 2015 (S.I. No. 301 of 2015), 2019 (S.I. No. 418 of 2019), 2022 (S.I. No. 708 of 2022).

3.2. Industry Guidance

The Contractor should take due consideration of, and incorporate best practice guidance, including but not limited to the following:

- BS 5837/2012. Trees in relation to design, demolition and construction;
- BS 3998; 2010. Tree Work. Recommendations;
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry.;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- DEHLG (2010a) *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Revised 11/02/2010.
- DEHLG (2010b) Circular NPW 1/10 & PSSP 2/10.
- Environmental Protection Agency (2021). *'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects'*
- National Parks and Wildlife Service - Development Consultations (2018)
- National Roads Authority (NRA) (2008). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
- NRA (2005). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes;
- NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes;

- NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes;
- NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1); and,
- Sustainability & Environmental Appraisal (March 2020) LA 120 Environmental management.

4. Project Roles and Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed project should be determined at the very outset of the Construction Stages of this project. Key roles are listed below. These are typically performed by the Client, Engineer, and Contractor as presented below. Specific details will be determined upon the Detailed Design and Contract Stage.

Table 4.1 - Roles and Responsibilities

Employer	Planning Agents
The Client: Dún Laoghaire – Rathdown County Council Tel: Contact:	The Planner: to be confirmed Tel: to be confirmed Contact: to be confirmed
Employers Representative	**Civil, Structural and Environmental Team**
The Engineer: to be confirmed Tel: to be confirmed Contact: to be confirmed	Consultant: AtkinsRéalis Tel: 01 8108000 Contact: TBC
Project Supervisor for the Design Process (PSDP)	**Contractor**
The Engineer: to be confirmed Tel: to be confirmed Contact: to be confirmed	The Contractor Tel: to be confirmed Contact: to be confirmed
Project Supervisor Construction Stage (PSCS)	
The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed	

4.1. The Client/Employer

DLRCC will be responsible for ensuring that competent parties are appointed to undertake the construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

4.2. Environmental Manager

An Environmental Manager will be appointed by the Contractor to ensure that the CEMP is effectively implemented. The Environmental Manager will be a suitably qualified, competent, and experienced professional that would perform the necessary tasks, review environmental procedures, and consult with the members of the construction team and stakeholders as required. The Environmental Manager will be responsible for:

- Ensuring that the CEMP and all relevant documents such as environmental control plans are developed, implemented, and maintained on site;
- Updated the CEMP to address any subsequent planning conditions relevant to the proposed project;
- Ensuring compliance with the Conditions of the Planning Permission and any other relevant permits/ consents required;
- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;

- Conducting regular environmental inspections and compiling an environmental compliance report on a monthly basis;
- Attending site and stakeholder meetings as required;
- Keeping up to date with relevant environmental best practice and legislative changes;
- Ensuring all staff have undertaken adequate environmental inductions, awareness briefings and training;
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

4.3. Construction Director

The Construction Director will be responsible for the overall execution and organisation of all environmental related activities, as appropriate. Some responsibilities of the Construction Director will comprise the following:

- Overall responsibility for the implementation of the CEMP;
- Allocating the correct resources in order to ensure the successful implementation of the CEMP; and,
- Assisting in the management review of the CEMP for suitability and effectiveness.

4.4. Construction Manager

The Construction Manager is directly responsible to the Construction Director in assisting with the successful execution of the proposed project. The responsibilities of the construction manager in respect of the CEMP comprise the following:

- To report to the Construction Director on the on-going performance and development of the CEMP;
- To discharge his/her responsibilities as per the CEMP; and,
- To support and augment the Construction Management Team through the provision of adequate resources and facilities for the duration of the implementation of the CEMP.

5. Environmental Management Procedures

5.1. General

The works Contractor will undertake the works in accordance with the provisions of the CEMP. The CEMP will be updated by the Contractor to produce a Detailed CEMP in order to address any subsequent planning conditions relevant to the proposed project, and to provide further detail on proposed programme and methodologies etc. once confirmed, and the Detailed CEMP will then be reviewed by the Employer and/or the Employer's Representative. The Contractor will review and update the CEMP as appropriate and shall issue an updated CEMP. A record of the review and any recommendations will also provide (for review and approval by the Employer and/or the Employer's Representative) Environmental Control Plans (ECPs), which will be maintained and updated in accordance with the CEMP. ECPs will include (if applicable), but will not be restricted to:

- Air Quality Control Plan;
- Construction Noise and Vibration Control Plan;
- Pollution Prevention Control Plan;
- Water Resources and Energy Use Control Plan;
- Ecological Control Plan;
- Light Pollution Control Plan;
- Archaeological and Cultural Control Plan;
- Traffic Management Control Plan;
- Contamination Land Control Plan; and,
- Soil Erosion and Sedimentation Control Plan.

Guidance on the development of the Control Plans is located in Section 7 of this document.

5.2. Environmental Policy

Contractors shall have an environmental policy dated and signed by the most senior person in the company. The policy shall:

- Be appropriate to the nature, scale and environmental impacts of the organisation's activities, products and services;
- Include a commitment to continual improvement in environmental performance;
- Include a commitment to comply with all applicable legislation and with other requirements to which the organisation subscribes which relate to its environmental aspects;
- Provide a framework for setting and reviewing objectives and targets;
- Be documented, implemented, and maintained;
- Be communicated to all persons working for or on behalf of the organisation; and
- Be available to the public.

5.3. Environmental Aspects

Contractors are expected to use a qualitative approach to identify and evaluate potential environmental aspects along with any controls to prevent or mitigate environmental damage. A simple risk matrix (as follows) facilitates quick reference and assignment of risk levels for each environmental aspect:

- Extreme/serious risk;
- High risk;
- Moderate risk; and,
- Low risk.

All environmental aspects rated as High or Extreme/Serious will be classified as significant and will require control or mitigation measures to manage the risk. All environmental aspects covered by a legal requirement, for example an Environmental Permit condition will also be classified as significant even if the risk is low or moderate.

Table 5.1 – Example of Qualitative Risk Matrix

					Probability				
Severity	**People**	**Assets**	**Environment**	**Reputation**	**Impossible / Rare**	**Improbable / Possible**	**Probable / Likely**	**Very Likely / Often**	**Certainty/ Frequent**
Catastrophic	Multiple fatalities or permanent total disabilities	Extensive damage	Massive effects	International impact				Extreme / Serious Risk	
Severe / Major	Single fatality or permanent total disability	Major damage	Major effect	National impact		High Risk			
Critical / Moderate	Major injury or health effects	Local damage	Localized effect	Considerable impact					
Marginal / Minor	Minor injury or health effects	Minor damage	Minor effect	Minor impact		Moderate Risk			
Negligible / Insignificant	Slight injury or health effects	Slight damage	Slight effect	Slight impact	Low Risk				

The Contractor shall record the results of the qualitative risk analysis in an Aspects and Impacts Register (Table 5.2).

Table 5.2 – Example of Aspects and Impacts Register

Environmental Aspect	Environmental Impact	Risk Rating	Control / Mitigation Measures	Risk Rating After Control
Use of fuel storage tanks on site	Potential contamination of water and land	High Risk	Double skinned tank, bunding, location on hard standing, emergency spill procedure and equipment and training	Moderate Risk

5.4. Training, Awareness and Competence

The Contractor (and their sub-contractors) would be selected with due consideration of relevant qualifications and experience. The Contractor will be required to employ construction staff with appropriate skills, qualifications, and experience appropriate to the needs of the works to be carried out during construction.

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the Contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled. A baseline level of environmental awareness will be established though the site induction programme. Site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;

- The requirements of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Identification of environmental constraints and potential impacts of the work;
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment; and,
- The benefits of improved environmental and sustainability performance; and the potential consequences of departure from specified procedures, work instructions and method statements.

5.5. Meetings

The Environmental Manager will be responsible for arranging and holding monthly meetings with the Employer and/or the Employer's Representative. The Environmental Manager would develop and distribute minutes on monthly meetings accordingly.

5.6. Monitoring and Inspections

For the duration of the contract, the environmental performance of the Contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract. The Contractor shall develop, implement, and maintain an Environmental Inspections and Monitoring Plan.

Record of all inspections carried out should be recorded and all actions should be closed out in a reasonable time. If additional monitoring and inspections are required due to any subsequent planning conditions, these will be added to the CEMP.

5.6.1. Monitoring

Mitigation and monitoring will be carried out so that construction activities are undertaken in a manner that does not give rise to significant negative effects.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary.

5.6.2. Inspections

Inspections of construction activities will be carried out by the Environmental Manager on a daily basis to ensure all necessary environmental measures relevant to the construction activities are being effectively implanted by construction staff, ensuring legal and contractual conformity.

5.6.2.1. Daily Inspections:

The daily inspections should include, but not be limited to, checking that:

- The site boundary is marked out and respected;
- All waste is appropriately stored and segregated;
- Waste skips are covered to prevent wind-blown litter;
- Drip trays are in place for all stored equipment and plant;
- All chemicals/fuels are stored with appropriate containment/bunds/cover;
- Construction noise is within permitted limits and does not create a nuisance;
- Dust does not create a nuisance; and
- Fencing/hoarding is secure.

5.6.2.2. Weekly Inspections

The inspections should include, but not be limited to confirming that:

- Daily checklists have been completed;
- Waste storage areas have been checked and there is no build-up of waste materials;
- Spill kits have been checked and contain all relevant materials;
- The performance of all pollution control equipment has been checked and the equipment is working effectively;
- Noise reduction/monitoring equipment has been checked and is operating effectively;
- Temporary welfare facilities are not overfull/discharging; and
- Special control measures identified in Permit/Planning Conditions and CEMP are adhered to.

5.7. Nonconformity and Corrective and Preventative Action

The Contractor shall establish, implement and maintain procedures to deal with actual and potential non-conformities and for taking corrective and preventative action.

Non-conformities may be identified through:

- Internal contractor audits;
- Audits by the Employer and/or the Employer's Representative;
- Audits undertaken by external certification bodies;
- Audits undertaken by regulatory authorities; and
- General observations.

The Contractor procedures shall define the requirements for:

- Identifying and correcting non-conformities;
- Mitigating the environmental impacts of non-conformities;
- Investigating non-conformities including identify root causes and implementing appropriate actions to avoid their reoccurrence;
- Evaluating the need for actions to prevent non-conformities and implementing appropriate actions designed to avoid their reoccurrence;
- Setting realistic timeframes for undertaking effective corrective and preventative actions;
- Recording the results of corrective and preventative actions taken; and
- Reviewing the effectiveness of corrective and preventative actions.

All actions identified should be appropriate to the nature and magnitude of the issue and the environmental impacts encountered.

5.8. Reporting

The Contractor will be required to submit a report, the frequency to be agreed with the Contractor and Employer and/or the Employer's Representative to the Employer and/or the Employer's Representative for review and approval. The report shall address the following as minimum:

- Summary of compliance with the CEMP including identification of any non-conformances;
- Interpretation of the result of ongoing monitoring;
- Detailed description of any issues and/or non-conformances identified during inspections and/or audits;
- Record of incidents and corrective actions (including Corrective Actions Reports as appropriate);
- Synopsis of environmental complaints received/queries raised by stakeholders; and
- Records of environmental training undertaken (as appropriate).

5.9. Environmental Records

The Contractor shall maintain records of all environmental documentation including monitoring, test results, method statements and plans. All records will be kept up-to-date and be made available for audits, inspections and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that

will be made available for inspection to the Employer and/or the Employer's Representative and the relevant authorities if required:

- Management plans;
- Records of environmental incidents;
- Environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;
- All monitoring data;
- Waste and chemical inventories; and
- Health and Safety records.

6. General Requirements

The Contractor will be legally required to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified where practicable. Where the Contractor intends to vary the methodologies and working areas outlined herein and/or defined in the granted planning consent and associated conditions that may be granted, it would be the responsibility of the Contractor to obtain the relevant licenses, permits and consents prior to implementing any such changes.

6.1. Good Housekeeping

The Contractor will employ a 'good housekeeping' policy at all times. This will include, but not be restricted, to the following:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean and tidy;
- Keep construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding;
- Effective prevention of oil, grease or other objectionable matter being discharged from the working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soils shall be recovered or disposed of to a suitably authorised waste facility site;
- Effective prevention of infestation from pests or vermin;
- No discharge of site run-off or water discharge without agreement of the relevant authorities; and
- Maintenance of public rights of way, diversions and entry/exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access;

6.2. Site Compound

It will be the responsibility of the Contractor to determine a suitable location for the site compound within the proposed project site, but away from any identified environmental sensitive receptors (watercourses, designated sites etc.) so as to avoid potential impacts to the environment and the general public. The proposed project is remote from any designated conservation site. It is planned that existing Local Authority (Dún Laoghaire–Rathdown County Council) controlled material storage yards in the locality, currently used for the storage of inert materials, will be utilised during the construction phase to store similarly inert materials for incorporation in the proposed scheme. Materials will be brought to site on a periodic basis as required directly from suppliers. Parking for operatives will be at the main compound only. Operatives will be transported from the compound to the works area. No parking will be allowed within the temporary works area.

6.3. Hours of Working

6.3.1. Core Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant defects. Working hours during the construction period are expected to be normal construction hours.

The Contractor may require a period of up to one hour before and one hour after core working hours for start-up and shutdown activities in working areas. Activities permitted may include deliveries and unloading of materials,

movement of staff to their place of work, maintenance and general preparation works. The use of plant machinery likely to cause disturbance, will not be permitted outside of the core working hours.

6.3.2. Additional working hours

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the Contractor in advance with DLRCC and scheduling of such works shall have regard to nearby sensitive receptors.

In the case of work required in an emergency or which if not completed would be unsafe or harmful to workers, the public or local environment, DLRCC will be informed as soon as reasonably practicable of the reasons and likely duration and timing (outside of the core working hours).

6.4. Security

Security will be the responsibility of the Contractor who will provide adequate security to prevent unauthorised entry to or from the site. The following measures may be used to prevent unauthorised access:

- Install CCTV and security systems where required;
- Consult with neighbouring properties and local crime prevention officers including An Garda Síochána on site security matters where required;
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as ladders and scaffolding; and
- When there is no site activity, close and lock site gates and set appropriate site security provisions as required.

6.5. Hoarding and Fencing

A site boundary in the form of hoarding or fencing will be established around each of the working areas before any significant construction activities commences in that working area. The hoarding/fencing shall provide a secure boundary to what can be a dangerous environment for those that have not received the proper training and are unfamiliar with construction operations.

Site hoarding also performs am important function in relation to minimising nuisance and effects including:

- Noise emissions (by providing a buffer);
- Visual impact (by screening the working areas, plant and equipment); and
- Dust minimisation (by providing a buffer).

6.6. Services and Utility

Site services shall be installed as part of the works. Working areas will be powered by mains supplies or diesel generators where an electrical supply is not available.

The Contractor will be responsible for undertaking their own service to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications.

6.7. Welfare Facilities

Welfare facilities will be provided, as appropriate for construction staff and site personnel such as locker rooms, toilets, showers, etc.

6.8. Reinstatement of Working Areas on Completion

The Contractor will reinstate all working areas as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition.

On completion of construction works the Contractor will ensure that all waste and polluting material is removed from the site and is disposed of using appropriately authorised contractors as per a Resource Waste Management Plan (RWMP) which will be prepared by the Contractor. The Contractor shall, as appropriate, undertake visual and ecological rehabilitation of site compound and other areas no longer to be used by the Contractor. Following

site clearance and rehabilitation the Employer or Employer's Representative will undertake a final inspection of the site. Any environmental issues identified during the final inspection will be raised with the Contractor. Mitigation measures and timeframes for completion will be agreed between the Contractor and the Employer's Representative in line with agreed procedures prior to final sign off.

6.9. Health and safety

The Contractor will ensure all relevant health and safety, fire safety and security requirements are in place prior to the commencement of construction and in accordance with the relevant legislation requirements.

Relevant Irish and EU health and safety legislation would be complied with at all times by all construction staff and personnel during construction. Further, the Contractors would also have to ensure that all aspects of their works comply with good industry practice and all necessary consents, licenses and authorisations have been put in place for the proposed project.

7. Environmental Management and Controls

It should be noted that this section provides a summary of minimum requirements that will be developed by the Contractor when preparing the CEMP.

7.1. Waste Management

Construction activities produce a broad range of wastes, which will be outlined in a Resource Waste Management Plan (RWMP) to be prepared by the Contractor.

This section identifies the potential types of waste which may arise from construction and provides guidance on the management, control, and disposal of waste.

7.1.1. Risk Identification

Contractors shall undertake a qualitative waste management risk assessment or appraisal prior to the commencement of construction activities. An example assessment is shown is Table 7.1

Table 7.1 – Example of Waste Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all adjacent housing/commercial centers, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as waste storage areas.
02	Identify the construction activities and sources of that may result waste production and waste storage, segregation and disposal requirements.	These could include excavations, chemical and materials use etc., waste storage and bulking areas etc.
03	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage waste: 1. Prevent - Do not generate the waste in the first place. 2. Re-use – Can you re-use without treatment? 3. Recycle – Make sure that wastes are properly segregated to aid recycling. 4. Disposal with energy recovery 5. Disposal without energy recovery

7.1.2. Waste Management

Contractors should develop, implement and maintain a RWMP that is in compliance with DLRCC. This Plan will provide specific details in terms of proposed permitted haulage contractors, and permitted / licenced waste disposal / recovery facilities;

The plan should include but not be restricted to the mitigation measures below (Table 7.2).

Table 7.2 –Waste Management Mitigation Measures

Activity	Mitigation Measures
General	An approved person, such as a site/contract/resource manager, will be given responsibility for good site practices and control, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. Contractors will apply the waste prevention principles of the waste management hierarchy: 1. Prevent – Do not generate the waste in the first place. 2. Re-use – Can you re-use without treatment?

Activity	Mitigation Measures
	3. Recycle – Make sure that wastes are properly segregated to aid recycling. 4. Disposal with energy recovery 5. Disposal without energy recovery The Contractor will ensure that all construction staff are trained in good waste management practice and chemical handling procedures.
Collection and Storage of Waste	Contractors will provide designated waste storage areas for the bulk storage of waste prior to removal off-site. A site plan showing the designated site will be provided and approved by the Construction Manager. Only appropriately authorised contractors and sites will be used for the transport and disposal of waste. The Contractor will provide adequate facilities for the collection and storage of waste material including litterbins and waste skips. Waste containers/skips/bins will be provided with nets or lids to prevent waste being carried around by scavengers or by the wind. Waste containers will not be overfilled. Appropriate measures will be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. Industrial and construction waste including redundant hazardous equipment, tires, used oil cans/drums etc. will be separated and put into segregated bins for removal and disposal by an appropriately authorised contractor. All loaded trucks entering and exiting the work areas will be appropriately secured and covered;
Waste Reduction and Sustainability	Good management and control can prevent the generation of significant amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Purchase materials in the quantity required for the project to minimise unused leftovers. Scheduling and planning the delivery of materials will be carried out on an '*as needed'* basis to limit any surplus materials; Purchase materials that do not use excessive amounts of packaging to minimise the quantity of used packaging for subsequent disposal/processing. Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. Collect and segregate waste metals including redundant plant and equipment, metal construction materials and cans. Recycle unused chemicals or those with remaining functional capacity.
Disposal of Wastes	All waste will be disposed of at approved sites using appropriately approved contractors – The Contractor must provide copies of valid EPA Waste licenses and Local Authority Waste Permits (including those relating to their subcontractors or brokers, where applicable) for collection and waste treatment/disposal/export facilities. Records of waste disposal, recycling and recovery will be maintained. The contractor will provide sufficient secure waste disposal points and regular collection for disposal. No waste will be disposed of or buried on site. Dumping of waste, including roadside dumping and filling on land not within a registered landfill area is prohibited. Burning any waste on site is prohibited. Divert construction, demolition and land clearing debris from landfill disposal. Redirect recyclable recovered resources back to manufacturing process. Redirect reusable materials to appropriate sites. Waste will be segregated in an onsite recycling center and those components that are recyclable sent to appropriate facilities. Consider recycling cardboard, metal, brick, acoustic tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Identify approved haulers and recyclers to handle the designated materials.

Activity	Mitigation Measures
	All non-recyclable waste will be disposed of by an appropriately authorised waste contractor. The contractor will follow approved procedures for the classification, sampling, transport, and disposal of hazardous waste.
Storage and Stocking of Material	Temporary stockpiling of native soils and imported materials onsite will require careful management to prevent the release of sediment into drainage ditches (and receiving water courses, and any temporarily exposed groundwater (in the event that groundwater is encountered). Stockpiled materials will not be located immediately adjacent to or onsite drainage ditches, or any temporarily exposed groundwater (in the event that groundwater is encountered). Stockpiled materials will be covered as required to prevent it spilling over/blowing onto areas of environmental interest or semi-natural vegetation outside the agreed lands. Stockpile of materials will be kept to an absolute minimum, and where possible, stockpiled for as short a time as possible prior to use. Any stockpiled materials will be stored in low mounds where possible. Slopes of material will be stable, and the side slopes compacted down and stabilised, with regular checks by the Contractor; The Contractor will examine the risk arising from storage areas and identify as appropriate the need for mitigation measures at the toe of slopes to reduce silt transport from areas of stockpiled material. Stockpiles of materials not suitable for onsite re-use will be removed as soon as is practicable in accordance with applicable waste management legislation.

7.2. Air Quality

Construction activities have the potential to impact on air quality through the creation of dust and emissions to air from vehicles and plant, along with activities including infilling of soil, excavation of trenches, stockpiling and movement of materials may all contribute to generating ambient dust. This section identifies the potential causes of air pollution which may arise from construction and provides guidance on the management and control of emissions from site.

7.2.1. Risk Identification

Contractors shall undertake a qualitative risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.3.

Table 7.3 – Example of Air Quality Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all adjacent housing/commercial centers, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as material storage areas, refueling points and haul routes.
02	Identify the construction activities and sources of pollution that may result in emissions to air.	These could include excavations, concrete use, transport, materials storage, traffic management etc.
03	Evaluate the risk of the construction activities resulting in emissions to air.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular receptor. For example, the impact of dust in a populated urban area would be significantly greater than dust in an unpopulated rural area.

	Risk Assessment	Example Procedure
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, covers for storage areas). 3. Protect the receptor (provide hard standing and covering for compounds/storage areas, filter, control, contain emissions, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.2.2. Air Quality Management Plan

Contractors should develop, implement and maintain an Air Quality Management Plan. The plan should include but not be restricted to the mitigation measures below (Table 7.4).

Table 7.4 –Air Quality Mitigation Measures

Activity	Mitigation Measures
General	The Contractor is required to implement the 'standard mitigation', as stated in the Transport Infrastructure Ireland (TII), (formerly the NRA)) (2011). Guidelines for the Treatment of Air Quality during the Planning and Construction of National Roads Schemes. Standard measures should be taken which will minimise dust from demolition and construction activities, at a minimum adhering to standard good practice which includes the Building Research Establishment (BRE) document entitled 'Control of Dust from Construction and Demolition Activities' and Institute of Air Quality Management document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2014)
Dust Suppression and Odor Management	Minimise use of internal site roads to limit the ground area that is disturbed. Avoid excessive vehicular traffic and movement. Locate haul routes away from sensitive receptors. Pave heavily used areas. Plan vehicle movements to minimise duration of dust generation. Ensure that hard surface roads are swept to remove mud and aggregate materials from their surface and ensuring any un-surfaced roads will be restricted to essential site traffic. Ground protection mats and temporary soil surfaces will be placed within environmentally sensitive areas or poor ground conditions under the supervision of the Environmental Manager; these temporary access tracks will be inspected regularly by the Environmental Manager and / or Site Manager. Stockpiles of fine material such as sand, topsoil material, cement, excavated material etc. will be covered / protected from wind. During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads and private landholdings, trucks will be adequately inspected by the contractor to ensure no potential for dust emissions. Use dust suppression systems such as a rotary water atomizer (or equivalent) to damp down stockpiles and construction roads etc. during dusty conditions and to control dust from site-based activities. Due consideration should be given to use of appropriate water resources for use in dust suppression. Dust generating activities will cease during excessively windy periods. Construct dust screens/wind breaks as necessary. Fence off work areas with geotextile type liner. Excavated soils will be reused where suitable; Encourage progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation.

Activity	Mitigation Measures
	Contractors will regularly inspect stockpiles, exposed work areas and construction works practices to ensure compliance. Vehicle speeds will be restricted on un-surfaced roads and tracks to less than 30km/hr to minimise dust. Cover and/or maintain appropriate freeboard (+ 0.3m) on trucks hauling any loose material that could produce dust when travelling. Vehicles exiting the temporary compounds shall make use of a wheel wash facility prior to entering onto public roads and private landholdings.
Traffic, Vehicle, Plant and Equipment Emissions	Produce, implement and maintain a comprehensive Traffic Management Plan (TMP). Undertake regular construction vehicle, plant and equipment maintenance. Undertake regular maintenance on particulate traps/filters on trucks. Implement minimum exhaust requirements in line with national standards on equipment (including temporary power generators) and vehicles. Switch plant and vehicles off when not in use. Use public/shared transportation for workers.
Other emissions	No fires will be allowed on the construction site. Burning of waste materials on site will be prohibited. Limit volatile substance emissions/fine particle releases. Local sourcing of construction materials such as the recycling of material won on excavations for reuse on site. Reducing the idle times by providing an efficient material handling plan that minimises the waiting time for loads and unloads. Reducing idle times could save up to 10% of total emissions during construction phase. The use of diesel- or petrol-powered generators will be avoided, and electricity or battery powered equipment shall be used when practical. Turning off engines when not in use for more than five minutes. This restriction will be enforced strictly unless the idle function is necessary for security or functionality reasons; and, Regular maintenance of plant and equipment, and technical inspection of vehicles to ensure they will perform the most efficiently. In addition, relevant measures will be implemented to ensure that any emissions of engine generated pollutants will be kept to a minimum. These measures are detailed in *'Measures Against the Emission of Gaseous and Particulate Pollutants from Internal Combustion Engines to be Installed in Non-Road Mobile Machinery'* (2002/88/EC) and '*Emissions of Pollutants from Diesel Engines'* (2005/21/EC).

7.3. Construction Noise and Vibration

Construction activities can produce a significant amount of noise and vibration with the potential to impact adversely on a range of receptors. This section identifies the potential causes of noise and vibration which may arise from construction and provides guidance on management and control.

7.3.1. Risk Identification

An example risk assessment is shown in Table 7.5.

Table 7.5 – Example of Noise and Vibration Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan the location of all nursing homes, housing/commercial centers, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for noisy activities or activities likely to cause vibration such as generators, compressors, haul routes and drilling.
03	Identify the construction activities that may affect the receptors identified.	These could include excavations, dewatering, traffic movements, warning sirens, use of machinery and plant etc.

	Risk Assessment	Example Procedure
04	Evaluate the risk of the construction activities impact on receptors.	Assess the likelihood of an activity causing noise pollution. Assess the significance of the noise impact on particular receptors. For example, the impact of noise from construction activities adjacent to housing would be significantly greater than the impact of noise in an uninhabited rural area.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods, substitution of materials for less noisy options). 2. Control the source (modify construction methods, provide adequate baffling). 3. Protect the receptor using noise barriers, screening etc. 4. Put emergency procedures in place.

7.3.2. Noise and Vibration Management Plan

Contractors should develop, implement and maintain a Noise and Vibration Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.6).

Table 7.6 –Noise and Vibration Mitigation Measures

Activity	Mitigation Measures
General	The contractor shall also comply with the contents and recommendations of BS 5228 – 1:2009 + A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part 2: Vibration. The contractor shall also comply with the contents and recommendations of BS 6471:2008: Guide to Evaluation of Human Exposure to Vibration in Building, Part 1: Vibration Sources other than Blasting. The contractor shall comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006). The contractor shall ensure that each item of equipment complies with the noise limits quoted in the European Commission Directive 2000/14/EC. As far as practical construction methods that are likely to cause high levels of noise and vibration e.g., concrete and excavation work, will be restricted to daytime hours only. Approval from the local authority should be obtained prior to undertaking work at night. No plant used on site will be permitted to cause an ongoing public nuisance due to noise. Local residents and people likely to be affected by noise and vibration should be informed prior to the commencement of work. Access roads to the site will be positioned such that vehicular movements cause minimum disturbances to residential buildings (if possible). Replace noisy plant with less noisy alternatives, shield/screen noise making plant especially during the evening and night periods or provide plant which is specifically designed with noise inhibitors such as generators and compressors with silencers and muffled jackhammers. Construct a solid barrier around the generators. Use plant in accordance with manufacturer's specifications. Orientate machinery away from noise sensitive residential areas. Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. Ensure all stationary and mobile equipment, construction plant, machinery and vehicles are well maintained on a regular basis, and in good working order. Delivery routes used by trucks and lorries should avoid residential areas to prevent likely vibration impacts from construction traffic to and from the site.

Activity	Mitigation Measures
	Vibrations must be minimised at any neighboring premises. Residents of neighboring premises must be warned of possible vibrations prior to the commencing the activity. Complaints will be responded to within 24 hours and control measures checked and improved within 48 hours. Should a substantiated noise complaint be received by the Contractor, an appropriate noise monitoring campaign shall be instigated by the Contractor to determine the noise source. If necessary, appropriate noise mitigation measures, such as noise barriers, will be implemented. All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order. Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. Furthermore, a variety of practicable noise and vibration control measures will be employed. These will include: • Selection of plant with low inherent potential for generation of noise and/ or vibration; • Erection of good quality site hoarding to the site perimeters adjacent to sensitive receptors which will act as a noise barrier to general construction activity at ground level; • Erection of barriers as necessary around items such as generators or high duty compressors, and; • Situate any noisy plant as far away from sensitive properties as permitted by site constraints.

7.4. Prevention of Soil and Water Pollution

Construction activities have the potential to cause pollution to groundwater and/or soils and surface water. This section identifies the potential causes of pollution which may arise from construction and provides guidance on the management and control.

7.4.1. Risk Identification

Contractors shall undertake a qualitative pollution risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is presented in Table 7.7.

Table 7.7 – Example of Soil and Water Pollution Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas, surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as chemical/fuel storage areas, refueling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses, ecologically sensitive areas.	Establish monitoring regime during construction as appropriate.
03	Identify the construction activities and sources of pollution that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, chemical/fuel storage, wash down areas, fueling areas and concrete use.

	Risk Assessment	Example Procedure
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular water receptor. For example, the impact of polluting a water receptor used for potable water would be significantly greater than the pollution of a foul water system.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (change location, modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.4.2. Pollution Prevention Management Plan

Contractors should develop, implement and maintain a Pollution Prevention Management Plan (PPMP). The Plan should include but not be restricted to the mitigation measures below (Table 7.8).

Table 7.8 –Soil and Water Mitigation Measures

Activity	Mitigation Measures
General	The time period that excavations are left uncovered will be reduced in so far as reasonably practical with impermeable coverings being used to cover excavations over night or in times of heavy rainfall during working hours. These coverings will be secured at night to prevent mammals becoming trapped; Excavations will not be carried out during or following times of prolonged rainfall. Ensure that appropriate permits/consents (if required) are in place prior to commencing dewatering activities. Sample collections as required, such as for wastewaters and discharges to the ground and surface waters to facilitate characterisation of contaminants in the event of a leakage or spill that may impact soil or groundwater quality. Appropriate sampling of discharges, to include key parameters to ensure discharges meet appropriate criteria. Carry out regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and sanitary/welfare facilities. Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the approved site boundary. The stockpiling of excavated materials will not be permitted on any vegetated surface or within proximity to any watercourses. Where waste waters do not meet approve quality criteria they should be contained and disposed of via an approved disposal route. Ensure regular and controlled disposal of waste using appropriately authorised contractors.
Storage and handling of hazardous substances	Hazardous substances include, but are not limited to: fuel, lubrication oils, hydraulic and brake fluid, acids, paints, anti-corrosives, pesticides, detergents, cement etc. All hazardous material, including chemicals and fuels, will be stored at a designated site. No fuel or oil will be stored outside of the site compound. Fuels, lubricants and hydraulic fluids for equipment used onsite, as well as any solvents, oils, etc. will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice

Activity	Mitigation Measures
	Contractors should minimise the amount of diesel, oil, paint, thinners, and other chemicals stored on site that pose potential spillage environmental hazards and use materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. Contractors will keep a list of all hazardous substances present on site and the MSDS for these substances shall be readily available. Hazardous wastes are the by-products and wastes associated with the use of hazardous substances as well as potentially hazardous items such as spent batteries, used oil filters, light bulbs, circuit boards, sharp objects etc. which require special collection and handling. Each receptacle containing dangerous goods will be marked with the correct technical name of the substance it contains. All markings shall be legible and in appropriate language. Incompatible materials will not be placed in common containment. All refueling and fuel drum loading operations will take place at a designated site and the ground under the refueling and fuel drum loading areas will be protected against pollution caused by spills and/or tank overfills. Fill nozzles will be kept within the bunded area when not in use and padlocked. Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances. Bunds should typically be provided at refueling stations, under any container with hazardous substances (oil, fuel, paints, solvents etc.) or any piece of machinery (i.e., generators) which may leak fuel, lubricants or hydraulic fluids. It is good practice to provide drip trays under construction vehicles prone to leaking lubricants/and oil. Locate storage areas away from drains/trenches/wastewater collection devices. All hazardous liquids will be stored in an impervious bund area where the volume of the storage bund is >110% of the largest storage tank contained within the bund until collected for off-site disposal by an approved waste contractor at an approved site. All flammable liquids will be stored under cover and in well ventilated areas. No electrical equipment will be used within 10 metres of the storage area. Cylinders of compressed gas or flammable gases will be stored upright in secure racks and out of direct sunlight or heat source. The contractor will ensure that there is adequate fire-fighting equipment at the fuel and hazardous materials storage area. Firefighting equipment should be well maintained and tested periodically in line with manufacturers recommendations. All contractors handling hazardous materials will keep appropriate spill cleanup material/spill kits adjacent to storage and maintenance areas and take immediate action to contain/clean up the spill using sand/suitable absorbent material. Contaminated soil, rags and other clean up material will be disposed of via an approved waste contractor at an approved site. Spill kits will be inspected on a regular basis. Used or waste fuel or other waste chemicals will be stored in a bunded area until collected for off-site disposal by an approved waste contractor at an approved site. Waste material or water containing waste chemicals such as thinners, oil, and mineral spirits will not be pumped or disposed of into storm water drains, sanitary sewers or into the ground. The contractor will comply with all permit conditions, environmental regulations and legislation with regards to the safe storage and handling of hazardous substances. The contractor is responsible for the training of all personnel on site who will be handling hazardous materials about its proper use, handling, disposal and spills procedures and to provide all staff with appropriate personal protective equipment. All plant and machinery will be serviced before being mobilised to each work areas; No plant maintenance will be completed at work areas, any broken-down plant will be removed from proposed project to be fixed;
Maintenance and wash down of vehicles and machinery	Ensure all equipment is well maintained and in good working order. A collection system shall be provided (i.e. trays or impervious linings) under machinery or equipment that may leak hydrocarbons/hazardous substances (e.g. generator and pumps). All routine truck and plant maintenance to be carried out off site at contractor depot.

Activity	Mitigation Measures
	Vehicle/machinery repair whether minor or major on open ground or at the side of roads is forbidden. Emergency repairs, mechanical servicing and maintenance of Vehicles/equipment/site plant to be undertaken at designated workshop area designed to contain any spillage. Oil or lubricants only to be changed at designated workshops. The ground under the servicing areas shall be constructed of an impervious material and bunded as necessary. It is prohibited to allow wash water to cause pollution of the ground, surface water or ground water. Vehicle and equipment wash down shall only be undertaken at designated areas. The ground under the wash down area shall be impervious and designed to collect wash water. Install oil interceptors and silt traps where wastewater may be contaminated. Wash water will be re-used where possible (such as vehicle washing, dust suppression) and excess water collected and disposed of by an approved contractor to an approved site. Refueling of equipment (e.g., generators) will be completed in a controlled manner using drip trays at all times; Fuel containers will be stored within a secondary containment system, e.g., drip tray for mobile stores; Procedures and contingency plans will be set up to deal with emergency accidents or spills; An emergency spill kit with oil boom, absorbers etc. will be kept within vehicles for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment; The highest standards of Site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to land and surrounding environment during construction activities. The Environmental Manager will be given the task of overseeing the pollution prevention measures to ensure that they are operating safely and effectively. The contractor will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the work areas. This will minimise the risk of surface water becoming contaminated through Site activity.
Sanitary facilities	Adequate sanitary facilities including temporary welfare facilities and drinking water facilities will be provided as appropriate and will be self-contained. Waste from the temporary self-contained welfare facilities will be disposed of on a regular basis in accordance with waste regulations.
Dewatering discharges	Dewatering of the excavation may be required. In the event that this is required, it will form part of the temporary works design to be undertaken by the Contractor during the construction phase. The contractor will not discharge contaminated or potentially contaminated water to ground. No water discharge will be permitted to the Priory Stream;
Cementitious materials	The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out within works areas. Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed. For bore holes, concrete will be contained within the guide casings within the bore holes. Any spillages will be cleaned up and disposed of immediately. Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening. Concrete skips, pumps and machine buckets will be prevented from slewing when placing concrete. Mixer washings and excess concrete will not be discharged directly into any drainage ditches, surface water bodies or exposed groundwater. Surplus concrete will be returned to batch plant after completion of a pour.

7.5. Water Resources and Energy Use

Construction activities have the potential to use significant volumes of water and energy. This section identifies the potential impacts associated with water and energy use which may arise from construction and provides guidance on the management and control of water and energy on site.

7.5.1. Risk Identification

Contractors shall undertake a qualitative water resources and energy use assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.9.

Table 7.9 – Example of Water Resources and Energy Use Risk Assessment

	Risk Assessment	Example Procedure
01	Identify all items and activities on the construction site with high water and/or energy demands.	Mark up on a site plan with the location of all items and activities with high water and/or energy demands. This will help the planning of the overall layout of the construction site and enable the identification of efficiency opportunities.
02	Implement mitigation to eliminate or reduce water and/or energy demand.	Use the following hierarchy promote water and energy efficiency: 1. Remove the requirement (different construction methods, substitution of materials for that require less water and/or energy). 2. Control the use (modify construction methods, monitoring, target setting, procedures, switch off, training).

7.5.2. Water Resources and Energy Use Management Plan

Contractors should develop, implement and maintain a Water Resources and Energy Use Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.10).

Table 7.10 –Water Resources and Energy Use Mitigation Measures

Activity	Mitigation Measures
General	Reduce water consumption through recovery strategies. Conserve water by maximising opportunities for infiltration runoff. Conserve water by matching water quality with its intended use and using water saving devices. Contractors will carry out regular inspections/audits of water resource and energy use. In the event of excessive water use/leaking pipes etc., immediate action will be taken to repair equipment or reassess water needs. Use an irrigation system which utilises cooling water, condensate, TSE or other wastewater. Water arising from vehicle and equipment wash-down will be treated to remove silt and reused where possible. For example, wetting down roads and stockpiles. Turn out the lights at night and only light areas as required for safety and comfort (employment of lighting sensors). Ensure that the light source is the minimum intensity for the required purpose. Ensure that fittings are chosen that direct light accurately to where it is needed. Vehicles will not be allowed to idle for long periods. Machinery and generators shall be regularly maintained and operated in an efficient manner. The use of solar powered instruments/machines should be considered. Temporary site offices should be well insulated to retain heat or cool, utilise energy efficient bulbs and energy efficient cooling systems. Choose locally sourced building materials and products thereby reducing the environmental impacts from transportation. Choose rapidly renewable materials over finite raw and long cycle renewable materials. Use timber and wood, including that used in construction, from a certified sustainable source, or be postconsumer re-used timber, or similar.
Stage 2A Flood Risk Assessment	Design for proposed storm-water drainage must consider all other standards for drainage design, from the 'Greater Dublin Strategic Drainage Study Volume 2 – New Developments.'

Activity	Mitigation Measures
(AtkinsRealis, 2023)	Suitable Sustainable Urban Drainage systems (SUDs) must be used to reduce surface water runoff where feasible and designed in accordance with CIRIA report C753 'The SuDS Manual V-6'.

7.6. Ecology – Natural Habitats, Flora and Fauna

Construction activities can have adverse impacts on natural habitats, flora and fauna. This section identifies potential adverse impacts which may arise from construction and provides guidance on management and control.

7.6.1. Risk Identification

Contractors shall undertake a qualitative ecology risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.11.

Table 7.11 – Example of Ecology Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive ecological receptors within or adjacent to the construction site.	Mark on the site plan the location of all water courses, surface water features, ecologically sensitive areas and habitats and other potential receptors including key wildlife populations. Particular attention should be paid to existing ecological features within the project area. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as chemical/fuel storage areas, refueling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses, ecologically sensitive areas and habitats.	Establish monitoring regime during and post construction.
03	Identify the construction activities and sources of pollution that may affect the water/ecological receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, fuel storage and concrete use.
04	Evaluate the risk of the construction activities polluting the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.6.2. Ecology Management Plan

Contractors should develop, implement and maintain an Ecology Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.12).

Table 7.12 – Ecology Mitigation Measures

Activity	Mitigation Measures
General	Where practicable maintain areas of natural vegetation. Maintain good water quality as outlined in the Pollution Prevention Plan. No disposal of waste on site - adhere to the Waste Management Plan. Wildlife awareness talk to staff if in /near to sensitive areas. Do not handle or kill any animal on the site. The following activities shall be prohibited: • Disposal or burial of waste on site. • Illegal dumping, including roadside dumping and illegal land filling. • Burning of waste on site.
Environmental Impact Assessment Screening (Atkins, 2024)	Undertake vegetation clearance outside the nesting season, if this is not possible, an ecologist must survey the vegetation for breeding birds no longer than 24 hours before clearance.
Appropriate Assessment Screening (AtkinsRéalis 2024)	Construction Phase mitigation measures shall also include the following; Removal of nesting habitat i.e. the treeline and ornamental planting ibn the residential garden, will be carried out outside the breeding bird season from 1st March to 31st August inclusive. Where nesting habitat clearance cannot be avoided during this period then a suitably qualified ecologist will oversee clearance of nesting habitat and ensure the area is free of nesting birds. Should nests be found clearance will not be undertaken until chicks have fledged or the nest is no longer in use. Ecological surveys will be undertaken within the Site prior to any Site clearance or construction activities to assess the Site for the presence of protected species which may have moved into the Site.
Ecological Impact Assessment (AtkinsRéalis 2024)	Removal of nesting habitat i.e. the treeline and ornamental planting in the residential garden, will be carried out outside the breeding bird season from 1st March to 31st August inclusive. Where nesting habitat clearance cannot be avoided during this period then a suitably qualified ecologist will oversee clearance of nesting habitat and ensure the area is free of nesting birds. Should nests be found clearance will not be undertaken until chicks have fledged or the nest is no longer in use. Ecological surveys will be undertaken within the Site prior to any Site clearance or construction activities to assess the Site for the presence of protected species which may have moved into the Site
Biodiversity Enhancement	The proposed project will result in the loss of habitats of local ecological value within the footprint of the proposed project. Habitat loss will be within the residential garden area consisting of a treeline with 31 no. trees and surrounding ornamental shrub planting. In line with Dun Laoghaire Rathdown County Biodiversity Action Plan (BAP) 2021-2025 to 'develop ecologically resilient and varied landscapes and integrate adaptation and mitigation measures into management, planning and decision-making', a landscaping design will be developed at the detailed design stage of the proposed scheme. The landscaping design will outline specimen trees and shrubs suitable for a coastal location, wildflower meadow underplanting within a grass verge bordering the new cycleway and footpath. Given the maturity of the habitats within the residential garden to be lost and given the inclusion of the hardstanding surfaces of a new cycleway and footpath, the proposed Active Travel Scheme will result in a net loss of local ecological value habitats within the footprint of the project Site. The proposed Active Travel Scheme project can be considered to facilitate certain elements of the Blackrock Park Masterplan. The Masterplan includes for biodiversity enhancement measures within the neighbouring park including an increase in tree canopy along coastal edge using evergreen species, the planting of groves of small trees and meadow planting and planting a large scale high quality herbaceous display suitable for coastal conditions. As such, the Masterplan proffers the opportunity for the two projects to act in combination to provide ecological enhancement to the surrounding environment which will offset the loss of habitats within the residential garden.

7.7. Light Pollution

Obtrusive light from a construction site is a form of pollution. Construction lights can cause glare and light trespass. These are forms of obtrusive light which may cause nuisance to others.

7.7.1. Risk Identification

Contractors shall undertake a qualitative light pollution risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.13.

Table 7.13 – Example of Light Pollution Risk Assessment

	Risk Assessment	Example procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including housing, schools, hospitals, roads and key wildlife populations. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for lighting.
02	Identify the construction activities and sources of light pollution that may affect the receptors identified.	These could include depots, storage areas, night working activities etc.
03	Evaluate the risk of the construction activities creating light pollution for the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods; provide adequate screening, directional light). 3. Protect the receptor (screens). 4. Put emergency procedures in place.

7.7.2. Light Pollution Control Plan

Contractors should develop, implement and maintain a Light Pollution Control Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.14).

Table 7.14 –Light Pollution Mitigation Measures

Activity	Mitigation Measures
General	Maintain levels of lighting acceptable for health and safety and avoid over lighting areas. Dim or switch off lights when task is finished. Minimise the spread/glare of light by assessing/managing direction. Lower the height of lights to minimise glare. Use screens, shields, baffles and louvers to help reduce light spill. Use specifically designed lighting equipment to minimise the upward spread of light near to and above the horizontal.
EIA Screening Report	Design lighting to minimize the effects of light pollution on neighboring properties. Use low LED light to highlight areas.

7.8. Archaeology and Cultural Heritage

Heritage is an irreplaceable resource, so it is recognised that cultural resources must be safeguarded for future generations. Construction activities have the potential to impact on archaeology and heritage through the destruction or disturbance of sites or artefacts.

7.8.1. Risk Identification

Contractors shall undertake a qualitative archaeological and heritage risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.15.

Table 7.15 – Example of Archaeology and Cultural Heritage Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including villages, forts, palaces, houses, and towers. The site plan must be updated and approved by the appointed project archaeologist. This will help the planning of the overall layout of the construction site.
02	Identify the construction activities that may affect the receptors identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities damaging the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods or operations - alternative haul roads). 3. Protect the receptor (screens). 4. Put emergency procedures in place.

7.8.2. Archaeology and Cultural Heritage Management Plan

Contractors should develop, implement and maintain an Archaeology and Heritage Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.16).

Table 7.16 – Example of Archaeology and Cultural Heritage Mitigation Measures

Activity	Mitigation Measures
General	An experienced archaeologist must be appointed by the contractor as needed prior to the commencement of the construction stage. The project archaeologist will ensure that all proposed works are carried out appropriately and that any potential risk to archaeological / architectural features are minimised. In the event that intact and/or important archaeological or cultural items are identified during construction activities, work must stop and DLRCC and the Department of Arts, Heritage and the Gaeltacht and the National Museum of Ireland should be notified immediately. Work should not recommence until authorised by DLRCC and the Department of Housing, Local Government and Heritage and the National Museum of Ireland. Demarcation and monitoring of access will be provided to prevent accidental damage in areas where gaining access for construction is deemed to have potential to impact the archaeological, architectural or cultural integrity of the site. Prior to commencement of construction works in the area, a buffer area will be demarcated by a suitably qualified archaeologist or architectural heritage specialist, and it shall

	be maintained throughout the construction phase. A specialist may be required to oversee the works as determined by the Project Archaeologist, to ensure protection for all features is maintained.
Architectural Impact Assessment	Mitigation in the form of retention and/or relocation will be implemented for features of architectural and cultural heritage (see Deaton Lysaght Architects Architectural Heritage Impact Assessment 2024). The original cast and wrought iron features of the existing bridge will be retained/relocated. Additionally, the folly of Deepwell House will be relocated.

7.9. Traffic Management

Accidents involving construction vehicles and/or mobile equipment have the potential to cause serious injury or death and damage to the environment. Work zones on construction sites are used to move traffic in an approved direction and are typically identified by signs, cones, barrels, and barriers.

7.9.1. Risk identification

Contractors shall undertake a traffic management risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.17.

Table 7.17 – Example of Traffic Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all traffic sensitive areas within or adjacent to the construction site.	Mark a site plan with the location of all potential traffic sensitive areas including villages, forts, palaces, houses, schools, shopping districts, commercial/leisure areas roads and other rights of way. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for vehicle/pedestrian entrances, storage areas etc.
02	Identify the construction activities may affect the traffic sensitive areas identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities impacting on traffic sensitive areas.	Assess the likelihood of an activity causing harm or obstruction.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods or operations - alternative haul roads). 3. Protect the receptor (screens, signs, barriers). 4. Put emergency procedures in place.

7.9.2. Traffic Management Control Plan

Contractors should develop, implement and maintain a construction stage Traffic Management Control Plan. The Plan forms an important management tool that acts as the catalyst for reducing the negative transport effects of construction work (e.g., congestion, air pollution and noise) on local communities, residents, businesses and the environment. By promoting efficient working practices, shorter haulage routes and reducing deliveries, the implementation of the Plan not only gives rise to the above benefits, but also helps saves costs.

The Plan should include but not be restricted to the mitigation measures below (Table 7.18):

Table 7.18 –Traffic Management Mitigation Measures

Activity	Mitigation Measures

General	Contractors will ensure that all operators are fit and competent to operate vehicles, machines and attachments by: • Undertaking checks when recruiting drivers/operators or hiring contractors. • Providing appropriate training for drivers and operators. • Managing the activities of visiting drivers. • Ensuring that signallers, flag men and bank men are appropriately trained and authorised. Access to vehicles will be restricted to prevent unauthorised access. Routes will be clearly marked and where practicable turning circles will be provided to prevent reversing. Contractors will ensure that all roads and footpaths are maintained free of mud and debris. All visitors to the site will be required to undertake a site induction and wear high visibility clothing/PPE. All roads and footpaths affected by construction activity will be appropriately reinstated/repaired.
Travel Plan	The plan will be prepared to ensure access to the site by sustainable travel modes is encouraged. The following measures should be considered where relevant: • The provision of showers/change rooms for construction staff; • The provision of cycle parking for staff; • The promotion of car sharing among staff, including van pooling travel between different work sites.
Pedestrian Safety	Contractors will provide clear warning signage, lighting and barriers at construction works. Where practicable the contractor will provide separate entrances and exits for vehicles and pedestrians in work areas. Contractors will ensure that drivers driving onto public roads can see and be seen before moving on to it. Appropriately trained signallers/flag man/banks men will be used to control vehicle and plant movement on public roads. Contractors will ensure that, as far as practicable, construction works do not block/obstruct walkways and roads.
Construction Traffic	The appointed contractor(s) will develop and finalise a Construction Stage TMP in consultation with the local road's authorities, as well as Transport Infrastructure Ireland and the Emergency Services. The contractor will, during the development and adoption of the Construction Stage TMP, agree and implement an appropriate way of monitoring the effectiveness of the plan.

7.10. Contaminated Land

The term 'land contamination' covers a wide range of situations where land is contaminated in some way by previous use. This is often associated with industrial processes or activities that have now ceased, but where waste products or remaining residues present a hazard to the general environment.

7.10.1. Risk Identification

Contractors shall undertake a contaminated land risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.19.

Table 7.19 – Example of Contaminated Land Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of contamination risks by undertaking site visits and desk	Mark a site plan with the location of all potential contamination risks including waste deposits, petrol stations, oil stores etc.

	Risk Assessment	Example Procedure
	based studies of relevant documents - EIA etc.	
02	Identify the construction activities may create ground contamination.	These could include depots, storage areas, waste storage, etc.
03	Evaluate the risk of the construction activities leading to ground contamination.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods or operations) 3. Protect the ground (screens). 4. Put emergency procedures in place.

7.10.2. Contaminated Land Control Plan

Contractors should develop, implement and maintain a Contaminated Land Control Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.20).

Table 7.20 – Example of Contaminated Land Mitigation Measures

Activity	Mitigation Measures
General	The contractor will manage and control the potential contamination of land from construction activities through the implementation of the CEMP and method statements as appropriate. The contractor will notify employers representative immediately if contaminated land is discovered or suspected. Any contaminated material will be fully characterised by an appropriately qualified and experienced environmental consultant in terms of lateral and vertical extent, and a detailed assessment of the potential environmental and human health impacts will be undertaken in accordance with industry standard best practice. All soil requiring disposal offsite will require waste classification in accordance with Environmental Protection Agency (EPA) requirements as set out in the documents 'Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous' (EPA, 2015), and 'Determining if waste is hazardous or non-hazardous' (EPA, 2018), and all relevant waste management legislation. In addition to screening against relevant Waste Acceptance Criteria (WAC), the preparation of a waste classification tool (hazwaste online / EPA paper tool or similar etc.) will be required to be carried out in order to determine the relevant LoW / EWC code for the transport of any waste soils which require offsite removal and disposal The contractor will work with employers representative to: • Undertake a risk assessment of the potential contamination. • Evaluate options for remediation including: ○ Containment ○ Monitoring ○ Treatment ○ Removal/Disposal The contractor will implement remediation strategy and monitor as appropriate.

7.11. Soil Erosion and Sedimentation

Soil eroded during land disturbance can wash away and contaminate storm water drains and nearby water bodies. The plan establishes a series of mitigation and management measures to control and minimise these

issues if required. Water erosion potential depends on the intensity of the rainfall and/or construction discharges, the soil type and topography. This section identifies the potential causes of erosion and sedimentation which may arise from construction and provides guidance on the management, control and disposal of waste.

7.11.1. Risk Identification

Contractors shall undertake a qualitative soil erosion and sedimentation risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.21.

Table 7.21 – Example of Soil Erosion and Sedimentation Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all activities that could result in erosion and sedimentation, for example dewatering, and sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas including surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as dewatering, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example water courses and ecologically sensitive areas/nature reserves.	Mark a site plan with sensitive receptors outside the site boundary. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as dewatering, haul routes and wash out areas.
03	Identify the construction activities and sources of sedimentation/erosion that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff and concrete use.
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm sedimentation/erosion would cause to a particular water receptor.
05	Evaluate the risk of the construction activities contributing to and/or being affected by the groundwater table.	Assess the likelihood of an activity contributing to raised groundwater levels or being affected by these. Assess the significance of the harm additional water would cause to groundwater or other projects/receptors and the significance of the high water table on construction.
06	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.11.2. Soil Erosion and Sedimentation Management Plan

Contractors should develop, implement and maintain an Erosion and Sedimentation Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.22).

Table 7.22 –Soil Erosion and Sedimentation Mitigation Measures

Activity	Mitigation Measures

Soil Erosion	Methods to control erosion need to take into account the factors causing erosion – rainfall discharge intensity, soil type and topography. Erosion control measures may include, but are not limited to the following: • Avoid the creation of steep slopes. Consider implementing terraces instead of long steep slopes to avoid runoff from precipitation. • Do not release heavy discharges of water onto the soil. • Prevent over-watering of loose areas for dust suppression. • Keep site traffic to designated routes. • Excavators and vehicles delivering construction materials to the Structures will be confined to predetermined access routes to each works area; • Use of wide tracked machinery will be implemented for the project so as to minimise impact on existing ground conditions. • Where surface vegetation is being removed for excavation of holes of polesets / foundations, it shall be removed in layers with vegetation and soil intact and stored with the vegetation side up for later reinstatement in order to encourage vegetation regrowth. • All excavated materials will be stored away from excavations on the temporary works area, to protect the grounds condition in an appropriate manner at a safe and stable location. The maximum height of temporary stockpiles will be 3m. • All excavations will be carefully backfilled with the excavated material; • Consider covering temporary roads and routes within site with either asphalt or stone. Appropriate rehabilitation will need to be applied. • Maintain recommended maximum vehicle weightings to avoid destabilization and subsequent erosion of soil surface. • Progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation supported by irrigation. • Cover excess work areas with geotextile type liners. • Provide collection systems under machinery or equipment during wash down to prevent erosion from runoff. • Flow attenuation - Employ mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff. • A monitoring and supervisory regime including, where required, monitoring of excavations and stability assessments will be put in place to ensure that the proposed construction works do not constitute a ground stability risk;
Sediment Control	• Place sediment traps on all drainage lines such as geotextile lining. • Construct collection channels capable of collecting all runoff water during storms if it contains fine clay particles. • Use contained concrete washout control facility. • Treat and discharge runoff water from retention basin at controlled flow rate through storm water discharge network. • Inspect and clean the collection channels and retention basin on regular basis to prevent sediment build up. • Stabilise the site as soon as possible after construction

8. Emergency Response Plan

The Contractor shall establish, implement and maintain procedures to identify and manage potential environmental emergency situations and potential accidents. The contractor shall respond to actual emergency situations and prevent and mitigate adverse environmental impacts.

The Contractor should periodically test, review and update emergency preparedness and response procedures.

8.1. Key Requirements

During construction accidents, incidents and emergencies that have an environmental impact may occur. In the event of an emergency, the first response is to locate the source of that which is giving rise to the environmental impact where appropriate and stop continuation of the situation, followed by the containment, control and mitigation of the situation.

For the construction site The Emergency Response Procedure will be displayed within the Site Office / compound.

A copy of the Material Safety Data Sheets for all the chemicals used on the project site will also be kept at the site office.

The main objectives of the Emergency Response Plan are to:

- Ensure that all means are available to contain the consequences of an accidental spill, fire or release of oil/fuel;
- Ensure that employees are suitably trained to respond to fire and spill;
- Ensure that proper reporting takes place; and
- Ensure that proper investigation is undertaken.

All Contractor personnel and sub-contractors will be instructed and rehearsed, as appropriate, in the requirements of the emergency response procedure. Following control of an incident or emergency, an investigation will be conducted, and corrective actions identified and addressed. The Contractor's Environmental Manager will verify the close out of environmental related actions and notify the Employer and/or the Employer's Representative of any emergency.

8.2. Emergency Incidents

Emergency incidents are those occurring that rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with requirements of the contract and relevant licenses/permits;
- Any circumstance with potential environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

8.3. Spill Contingency Plan

The main causes of contamination can occur through:

- Spillage of hazardous material including fuel oils, waste materials or chemicals;
- Spillage of wastewater sewage and other liquid effluents; and
- Spillage of contaminated wash down water with oils, chemicals etc from vehicles, equipment and machinery.

Prior to commencing activities on site, Contractors should develop, implement and maintain a Spill Contingency Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 8.1).

Table 8.1 –Spill Mitigation Measures

Activity	Mitigation Measures
Mitigation Actions /Emergency Response	Contractors will carry out regular inspections/ audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal.

All contractors handling hazardous materials will keep appropriate spill cleanup material adjacent to storage and maintenance areas.

Minimise the amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards and use materials that minimize environmental impact such as lead free paints, asbestos free materials etc.

Storage areas will be located away from drains/trenches/wastewater collection devices in an impervious bund area (volume of the storage bund >110% of the largest storage tank contained within the bund).

Collection systems will be provided/bunded if necessary under machinery or equipment that may leak hydrocarbons/hazardous substances.

The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment.

The contractor shall provide all staff with appropriate personal protective equipment.

Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary.

In the event of a spill:

- Identify and stop the source of the spill and alert people working in the vicinity;
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using spill control materials, track mats or other materials 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 and/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 appropriate permits so that further contamination is limited;
- The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The Environmental Manager will notify the appropriate stakeholders such as DLRCC, National Parks and Wildlife Service and/or the EPA.

8.4. Emergency Incident Response Plan

The Contractor will be required to detail emergency incident procedures in the detailed CEMP and develop an Emergency Incident Response Plan. The Plan will contain emergency phone numbers and method of notifying local authorities, statutory authorities and stakeholder. The Plan will include contact numbers for key personnel. The Contractor will ensure that all staff and personnel on site are familiar with the emergency requirements.

In the case of work required in an emergency, or which if not completed would be harmful or unsafe to workers, the public to local environment, DLRCC will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include: where the ground needs stabilising if unexpected ground conditions are encountered or equipment failure.

In the event of an emergency incident occurring, the Contractor will be required to investigate and provide a report to include the following, as a minimum:

- A description of the incident, including location, type of incident and the likely receptor;
- Contributory causes;
- Negative effects;
- Measures implemented to mitigate adverse effects; and
- Any recommendations to reduce the risk of similar incidents occurring.

Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan (EIRP).

8.5. Emergency Access

The Contractor will be required to maintain emergency access routes throughout construction and identify site access points for the working area.

8.6. Extreme Weather Events

The Contractor will consider the impacts of extreme weather events and related conditions during construction. The Detailed CEMP should consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements should also consider extreme weather events where risks have been identified.

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