AtkinsRéalis

Construction Environmental Management Plan (CEMP)

Aeval Unlimted Company

May 2026

DG0008

WOODBROOK DART GATEWAY RESIDENTIAL DEVELOPMENT

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1. Introduction

1.1 Overview

This Outline Construction Environmental Management Plan (hereafter referred to as the CEMP) has been prepared by AtkinsRéalis as part of the supporting documentation for the proposed residential development at Woodbrook DART Gateway, Shanganagh, Shankill, County Dublin.

The proposed development will comprise of 359 no. units consisting of 2 blocks, Block P: 154no units (consisting of 83no. 1-Bed, 18no. 2-Bed(3P), 46no. 2-Bed(4P), 4no. 3-Bed(4P) and 3no Duplexes (5P). Block Q: 205no units (consisting of 77no. 1-Bed, 34no. 2-Bed(3P), 91no. 2-Bed(4P) and 3no. 3- Bed(5P) Duplexes). Communal space of 2540sqm, Ground level comprising (a) ESB substation (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; (e) bus turning and taxi turning area; and (f) supporting mechanical, electrical and water infrastructure. Landscaping works including (a) Tree protection, tree removal and tree planting; (b) green roofs; (c)boundary treatment; (d) internal roads and footpaths; and (e) electrical services. All associated site development works including (a) provisions for water services; (b) foul and surface water drainage and connections; and (c) attenuation proposal.

The subject lands form part of the wider Woodbrook–Shanganagh Local Area Plan and are situated directly adjacent to the newly completed Woodbrook DART Station, which lies on the eastern boundary of the site. The lands were formerly part of the Woodbrook Golf Club and are now zoned and serviced for residential development in accordance with the Dún Laoghaire-Rathdown County Development Plan 2022–2028.

The site is bounded:

- North by Shanganagh Park and Cemetery,
- East by the Dublin–Rosslare rail line and Woodbrook DART Station,
- South by Woodbrook Golf Course, and
- West by recently permitted and constructed residential development forming phases of the Woodbrook Masterplan.

This CEMP has been prepared to support DLRCC's Part 8 application and sits within a wider established planning and infrastructural context, including:

- the permitted Woodbrook Phase 1 (ABP-305844-19) and Phase 2 (LRD24A/0382/WEB) masterplan developments,
- the delivery of Woodbrook Avenue and active travel infrastructure,
- the construction and opening of the Woodbrook DART Station, and
- the ongoing implementation of NTA BusConnects Corridor 13 along Dublin Road (R119).

This CEMP provides the environmental management framework for construction activities associated with this final phase of the Woodbrook Masterplan.

1.2 Purpose of CEMP

The purpose of this CEMP is to outline the measures necessary to avoid, minimise, manage and monitor potential environmental impacts arising during the construction of the Woodbrook DART Gateway development. It details the commitments, procedures, and mitigation measures that will be implemented by the Contractor to ensure compliance with:

- relevant environmental legislation,
- DLRCC planning and environmental protection requirements, and
- best-practice construction and environmental standards.

The CEMP provides a structured framework to:

- identify potential construction-phase environmental risks.
- set out practical, project-specific mitigation.
- assign responsibilities to the Contractor and project team.
- establish monitoring, reporting, and communication procedures; and
- ensure that construction works proceed in a manner that safeguards human health, residential amenity, biodiversity, soil, water, air quality, cultural heritage, and material assets.

The appointed Contractor will be required to adhere to the provisions of this Outline CEMP and update and expand it prior to construction works commencing on site. The contractor will also be required to incorporate any planning conditions attached to the Part 8 approval, and implement all relevant mitigation measures arising from environmental assessments accompanying this application.

This CEMP has been informed by the key environmental and technical assessments prepared for and submitted with the Part 8 application, including:

- EIAR Screening Report (Stephen Little & Associates)
- Traffic and Transport Assessment (TTA) (AtkinsRéalis)
- Site Investigation Report (Ground Investigations Ireland)
- Appropriate Assessment Screening Report (Brady Shipman Martin)
- Ecological Impact Assessment, Arboricultural Assessment, Landscape and Visual Impact Assessment, and
- All engineering, architectural and landscape drawings and reports submitted as part of the Part 8 package. and Jul

1.3 Structure

This CEMP has been structured as follows:

- **Section 1** outlines the purpose of the CEMP and introduces the proposed development/project;
- **Section 2** describes in detail the proposed development/project;
- **Section 3** outlines the minimum standards, legislation and guidance required of 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 would be managed;
- **Section 6** sets out the general requirements to of the CEMP.
- **Section 7** provides a summary of minimum requirements that should be implemented by the Contractor; and
- **Section 8** sets out the procedures for the Emergency Response Plan.

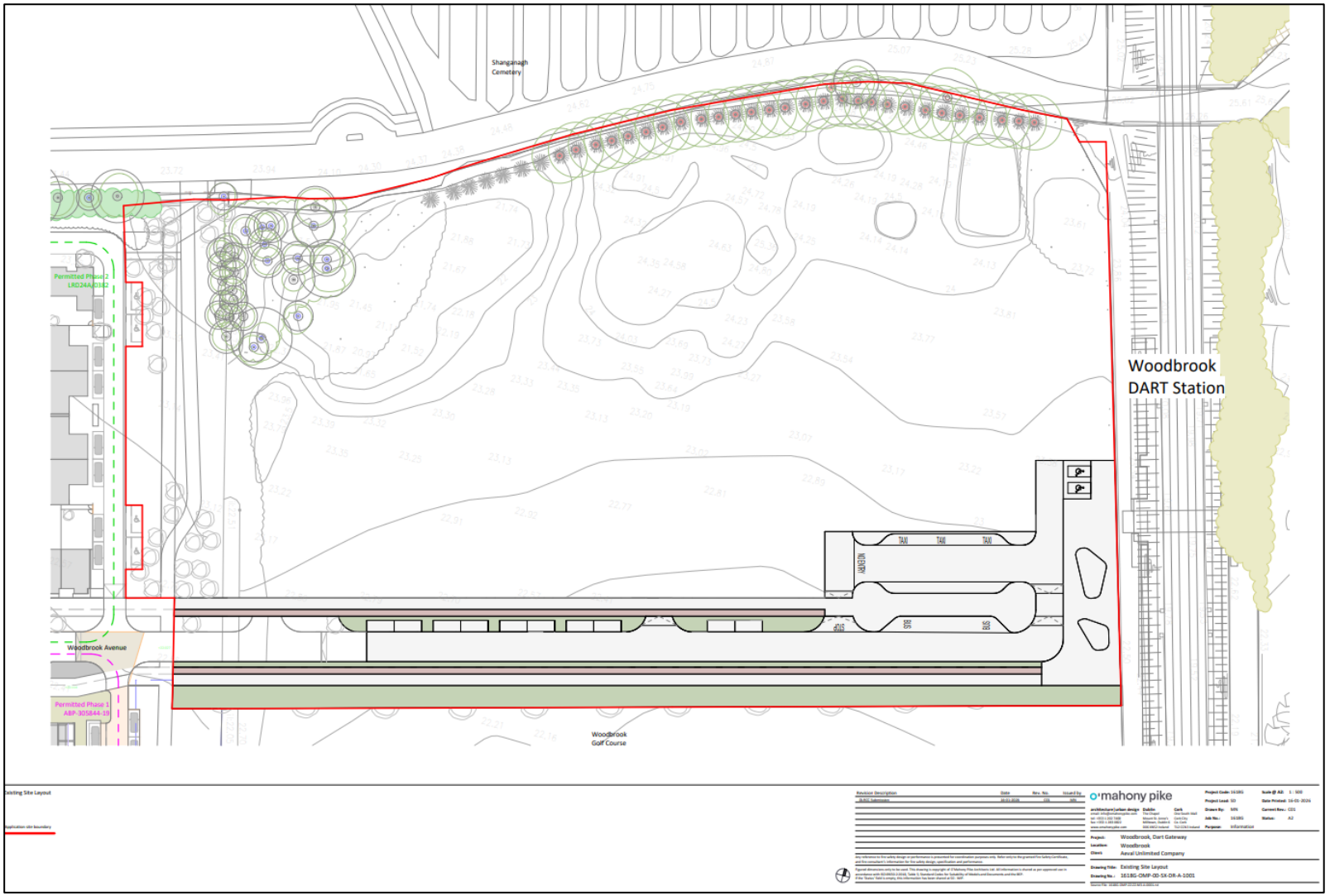

Figure 1.1 – Existing Site Layout

2. The Proposed Development

2.1 Site Location & Surrounding Land use

The proposed development site comprises approximately 2.63 hectares of lands formerly associated with the Woodbrook Golf Club and now located within the Woodbrook–Shanganagh Local Area Plan (LAP) area in Shanganagh, Shankill, County Dublin. The Site boundary is illustrated in the planning drawings accompanying the Part 8 application.

The Site is strategically positioned directly adjacent to the newly operational Woodbrook DART Station, which forms the eastern boundary of the lands. The surrounding land uses include:

- North: Shanganagh Park and Shanganagh Cemetery, with an established treeline along the shared boundary.
- East: The Dublin–Rosslare railway line and the station plaza and access areas associated with Woodbrook DART Station.
- South: Woodbrook Golf Course, with no existing built development.
- West: Recently permitted and emerging residential neighbourhoods forming part of the wider Woodbrook Masterplan (including permitted Blocks A, B, C and associated open spaces).

The Site sits within a fully urbanising context supported by major strategic transport investment, including:

- the operation of the Woodbrook DART Station,
- the upgraded R119 Dublin Road bus corridor forming part of the NTA BusConnects Corridor 13, and
- planned enhancements to cycling links via the Greater Dublin Area Cycle Network Plan.

The lands are entirely within the administrative area of Dún Laoghaire-Rathdown County Council.

2.2 Existing Site Setting

The topography of the Site is gently undulating, falling from east to west, with levels ranging from approximately 22.8m OD to 24.5m OD as recorded in the engineering and transport reports. Minor undulations attributable to the former golf course layout remain but do not represent natural geomorphological features.

Ground conditions recorded during the Site Investigation (Ground Investigations Ireland, 2018) indicate the following generalised stratigraphy:

- Topsoil (to approx. 0.35m depth)
- Cohesive deposits comprising sandy gravelly clays with occasional cobbles
- Granular deposits at depth, consisting of sandy, slightly clayey gravels with occasional cobbles/boulders

Groundwater monitoring wells installed at the Site confirmed variable groundwater levels influenced by local conditions and seasonal fluctuations. There are no watercourses within the Site itself, and the EIAR Screening confirms the absence of wetlands, riparian habitats, river mouths or coastal/marine environments within or directly connected to the Site.

The development lands are located approximately 400 metres west of the Irish Sea, with no direct hydrological link. The Site-Specific Flood Risk Assessment prepared by Atkins confirms the lands are located within Flood Zone C, indicating low flood risk.

According to the Appropriate Assessment Screening Report and EIAR Screening, the Site:

- is not located within any European site,
- does not support qualifying habitats or species,
- is not hydrologically connected to any Natura 2000 site, and
- is not within any nature reserve, protected wetland, or landscape of archaeological or cultural significance.

The nearest European site is located more than 1.7 km away, and the AA Screening concludes that no likely significant effects will occur, either individually or in combination with other plans or projects.

No protected structures, recorded monuments, or archaeological features are located within the Site boundary. The EIAR Screening confirms that the development will not give rise to significant effects on archaeological or cultural heritage.

The Site is serviced and capable of accommodating residential development as confirmed in:

- the Engineering Services Report (Atkins),
- Uisce Éireann Confirmation of Feasibility (7 July 2025), and
- previous infrastructure delivered under Phase 1 and Phase 2 planning permissions.
- public foul, surface water and potable water networks,
- Woodbrook Avenue, providing vehicular, pedestrian and cycle access to the R119, and
- the DART station access and plaza delivered under earlier phases.

There are no Uisce Éireann tanks, historic landfill features, or significant utilities crossing the Site beyond standard public service networks addressed in the engineering documentation.

2.3 Proposed Development

The proposed Woodbrook DART Gateway development comprises a high-quality residential scheme situated on approximately 2.63 hectares (gross) of serviced land within the Woodbrook–Shanganagh LAP area. The project provides 359 residential units (353 apartments and 6 duplex units) accommodated within two principal buildings, Block P and Block Q, positioned immediately adjacent to the newly operational Woodbrook DART Station.

The buildings range between two and eight storeys, responding to the emerging residential character of the wider Woodbrook Masterplan area and to the established pattern of development created under previous permissions for Woodbrook Phases 1 and 2. The architectural form and massing have been designed to integrate with the existing street structure, the DART station plaza to the east, and the adjoining open space network.

The proposed development includes all necessary supporting infrastructure, including internal access routes, shared surfaces, pedestrian footpaths, and cycle facilities that seamlessly connect with Woodbrook Avenue—the primary access route serving the wider masterplan—and onward to the R119 Dublin Road. Car parking and high-quality bicycle parking are provided in accordance with national guidelines and local policy, while ESB substations, plant areas, and waste storage are appropriately integrated within the scheme.

Figure 2.1 - Proposed Development Layout

2.4 Key Stages

The proposed development will involve the following key work phases:

- Tender Stage.
- Procurement and appointment of successful Tenderer(s) (hereafter referred to as The Contractor).
- Detailed Design Stage.
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents.
- Site mobilisation.
- Construction Stage.
- Completion 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.

2.5 Environmental Constraints

This section summarises the receiving environment along with key environmental factors (at this preliminary juncture) that should be considered during the construction phase.

2.5.1 Noise

The existing noise climate in the vicinity of the proposed development has been surveyed. Prevailing noise levels are typically dominated by train movements. Distant road traffic was also audible. The construction phase will involve site preparation, foundation construction, general construction works and landscaping. There is the potential for some temporary, potentially significant noise impacts when works are undertaken within 35m of the receptor locations. However, these occurrences will only be temporary, and the vast majority of the construction works will take place at distances of greater than 35m from the receptors where no significant impacts are predicted, and the construction criterion will be complied with. Additionally, a number of mitigation measures will be implemented during the construction and operational phases as set out in Section 7.7 of Chapter 7 – Noise & Vibration. Baseline noise surveys undertaken for the Woodbrook area confirm that the existing noise climate is dominated by rail activity from the Dublin–Rosslare line and by general urban background noise associated with surrounding residential and road infrastructure.

Construction activities—such as site preparation, excavation, structural works, and landscaping—have the potential to generate temporary increases in noise levels. The EIAR Screening Report notes that significant effects are not likely, given the urbanised setting, the separation distances between works and sensitive receptors, and the temporary nature of construction phases. Construction noise will be managed through standard best-practice measures, including adherence to working hours, equipment muffling, and the implementation of the project's Construction Environmental Management Plan (CEMP).

Noise mapping prepared by the EPA for the Dublin agglomeration identifies elevated noise levels along the adjacent transport corridors; however, the EIAR Screening confirms no long-term significant noise impacts arising from the proposed works once mitigation is applied.

2.5.2 Air Quality

> In terms of the existing air quality environment, data available from similar environments indicates that levels of nitrogen dioxide (NO2), particulate matter less than 10 microns and particulate matter less than 2.5 microns (PM10/PM2.5) are generally, well within the National and European Union (EU) ambient air quality standards.

The EIAR Screening Report states that the Woodbrook site is located within an area where ambient air quality is generally good, and no exceedances of EU or national air quality standards are identified for nitrogen dioxide (NO_2), PM_{10} or $PM_{2.5}$.

During construction, localised and temporary dust generation may occur from excavation, vehicle movements, stockpiling, and general construction activities. These emissions will be managed through standard dust-suppression and housekeeping practices identified in the CEMP. Given the limited scale of construction emissions and the absence of large combustion sources, no significant deterioration in air quality is predicted.

2.5.3 Soils and Geology

Ground conditions across the Woodbrook DART Gateway site were confirmed through detailed ground investigation works undertaken by Ground Investigations Ireland. These works identified:

- a thin layer of topsoil, typically 0.1–0.35 m depth;
- underlying cohesive deposits comprising sandy gravelly clays with occasional cobbles;
- deeper granular deposits of sandy, slightly clayey gravels with occasional cobble/boulder content.

No evidence of soil contamination was recorded at any exploratory location during the investigation, and the EIAR Screening Report similarly identifies no existing soil or groundwater contamination issues within the wider Woodbrook lands.

Infiltration testing was undertaken at multiple locations within the wider Woodbrook Lands, with calculated infiltration rates available to inform surface water design. Groundwater levels vary seasonally and have been recorded in purpose-installed monitoring wells.

The EIAR Screening confirms no sensitive geological or geomorphological features on the site, and the development is not underlain by karst terrain or any designated Geological Heritage Site.

As a precautionary measure, the potential risk of encountering ground contamination should be addressed by the Contractor in the Detailed CEMP.

2.5.4 Ecology

An Appropriate Assessment (AA) Screening Report prepared for the project concludes that the proposed develop+ent will not result in likely significant effects on any European sites, either alone or in combination with other projects. This conclusion was reached without reliance on mitigation, confirming the low level of ecological sensitivity of the site.

The Site is currently characterised by modified grassland, hedgerows, scattered trees, and landscaped areas associated with the former golf course. The EIAR Screening notes the absence of protected habitats or species within the Site and confirms that the site is not within or directly connected to any Natura 2000 network site.

Tree surveys and ecological assessments were undertaken as part of the wider Woodbrook planning process. Retained trees have defined root protection zones and recommended management measures. The Site contains no bat roosts, and local bat activity is associated primarily with commuting along treelines and railway corridors. Sensitive construction-phase lighting design will prevent disturbance to bats and other nocturnal species.

No invasive species issues of significant concern are identified for the Woodbrook DART Gateway site.

2.5.5 Landscape and Visual Amenity

The EIAR Screening Report identifies the landscape character of the site as urban and capable of absorbing development, given its position within the Woodbrook Masterplan area and adjacency to existing residential neighbourhoods and transport infrastructure.

Construction activity will introduce temporary visual change, including cranes, construction plant, hoarding, and material stockpiles. These effects are short-term and localised and will diminish as works progress. The most noticeable visual effects will occur for pedestrians, cyclists and residents in the immediate vicinity, particularly along Woodbrook Avenue and near the DART station. However, the wider landscape is not expected to experience significant visual effects due to existing built form and vegetation screening.

2.5.6 Water Resources

The EIAR Screening confirms that the Woodbrook site is not within or directly connected to any rivers, riparian zones, wetlands or coastal features.

The Site lies approximately 400 m from the Irish Sea but has no hydrological connectivity that could give rise to significant environmental effects. Local groundwater conditions were assessed through boreholes and monitoring wells, and the site is serviced by public drainage networks with sufficient capacity for foul and surface water discharge.

No public drinking water protection zones or potable abstraction wells occur within or near the Site.

2.5.7 Flood Risk

A Site-Specific Flood Risk Assessment (FRA) prepared by Atkins confirms that the Woodbrook DART Gateway site lies within Flood Zone C, indicating low risk of fluvial, pluvial or coastal flooding.

The FRA demonstrates that the proposed development will not increase flood risk elsewhere, and all drainage systems have been designed in accordance with best practice and local authority standards. The EIAR Screening similarly notes that no significant flood-related impacts are expected.

2.5.8 Cultural Heritage

The EIAR Screening Report prepared for the Woodbrook DART Gateway Part 8 application confirms that the proposed development site contains no recorded archaeological monuments, no features listed in the Sites and Monuments Record (SMR) or the Record of Monuments and Places (RMP), and no protected structures. The site is not located within, or adjacent to, any Architectural Conservation Area (ACA) and does not form part of the curtilage or setting of any structure of architectural or historic significance.

The Screening Report identifies that the lands have been significantly altered through historical landscaping associated with their former use as part of Woodbrook Golf Club. As a result, the underlying ground profile comprises disturbed topsoil and made ground, conditions that are not conducive to the preservation of archaeological deposits. This is further supported by the findings of the Site Investigation Report, which recorded reworked cohesive material, granular deposits, and no evidence of anthropogenic or archaeological remains in any exploratory locations.

The Appropriate Assessment Screening Report and ecological walkovers similarly identify no cultural heritage constraints, and no buildings or features of architectural merit occur within the proposed development footprint. The surrounding built environment consists of modern residential development, Woodbrook DART Station, and planned streets and green infrastructure, none of which hold cultural heritage value requiring protection.

Given the absence of archaeological indicators, recorded monuments, or architectural heritage features, and considering the documented extent of prior ground disturbance, the EIAR Screening concludes that the proposed development is not likely to give rise to any significant effects on cultural heritage. Standard good-practice measures will be included within the Construction Environmental Management Plan, including the requirement to halt works and consult a licensed archaeologist should any unexpected finds arise.

2.5.8.1 Archaeological Test Trenching

No archaeological test trenching has been undertaken within the Woodbrook DART Gateway development lands, as there was no indication of archaeological potential that would necessitate intrusive archaeological investigation. This is supported by the environmental and planning assessments prepared for the project.

The EIAR Screening Report confirms that the application site does not contain any recorded archaeological monuments, protected structures, or culturally significant landscape features. The lands have been substantially modified through previous use as part of Woodbrook Golf Club along with areas constructed as part of the Woodbrook Avenue, train station and construction compound.

In addition, the site is not located within or directly adjacent to any designated heritage area, nor does it form the setting of any protected structure. The EIAR Screening Report notes that there is no known archaeological sensitivity associated with the proposed development footprint and identifies no constraints or indicators that would warrant test trenching in advance of works.

Given the absence of archaeological indicators, the history of land modification, and the findings within the project's environmental assessments, archaeological test trenching was not carried out for for this Part 8 development. However, as is standard practice for urban-edge sites undergoing ground disturbance, the Contractor will be required to maintain awareness of the possibility of unexpected discoveries. Should any potential archaeological material be encountered during construction, works will stop in that area, and an archaeologist will be consulted in accordance with statutory requirements and any conditions attached by Dún Laoghaire-Rathdown County Council.

2.5.9 Traffic & Transportation

In relation to transport, the Contractor will utilise the Traffic Management Control Plan , which shall be based on the Mobility Management Plan (Atkins, 2021) submitted to support the planning application in August 2021.

2.5.10 Population and Human Health

The primary human receptors in the vicinity of the proposed development include existing and emerging residential neighbourhoods within the wider Woodbrook–Shanganagh Local Area Plan (LAP) lands and recreational users of Shanganagh Park and the surrounding amenity network

As set out in the EIAR Screening Report, the proposed development forms part of a planned, phased residential expansion area served by significant new transport infrastructure including the Woodbrook DART Station. The surrounding environment is therefore characterised by a mix of established and planned residential, community and recreational land use.

3. Legislation and Guidance

All parties, contractors and consultants working on this project shall be subject to the laws of Ireland and the various international/regional protocols and agreements to which Ireland is a party. In the event that 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 where relevant.

The Contractor should set out the 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 development, 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, 2000, as amended 2017 (S.I. No. 20 of 2017), 2018 (S.I. No. 16 of 2018), 2020 (S.I. No. 92 of 2020), 2021 (S.I. No. 18 of 2021) and 2022 (S.I. No. 75 of 2022).

Planning and Development Regulations 2001 to 2022.

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 2021;

The Water Pollution Acts of 1977 & 1998;

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) and 2018 (S.I. No. 261 of 2018);

Water Conservation Regulations 2008, S.I. No. 527 of 2008;

European Communities (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended 2017 (S.I No. 464 of 2017) and 2020 (S.I. No. 2184 of 2020);

Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);

Litter Pollution Act of 1997, as amended, 2017 (Bill 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);

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, as amended, 2014 (S.I. No. 861 of 2014);

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. 96/2018);

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, SI 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) and (S.I. No. 51 of 2022);

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. 430 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);

Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990);

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), 2016 (S.I. No. 2016/1628);

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 or 2019);

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;

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 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000);

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);

Noxious Weed Act, 1936, S.I. No. 38 of 1936;

Noxious Weed Order, 1937, S.I. No. 103 of 1937;

Flora (Protection) Order, 2015, S.I. No 356 of 2015;

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, S.I. No. 191 of 2017, as amended 2020 (S.I. No. 32 of 2020);

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); and,

European Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018.

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;
- Environmental Protection Agency (2021). *'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects'*
- Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese knotweed;
- 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 & Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed development should be determined at the very outset of the Construction Stage of this project. Key roles are listed in Table 2.1. 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 2.1 - Roles and Responsibilities

Employer	**Planning Agents**
The Client: Castlethorn AEVAL Tel: 01 2164060 Contact: James Leonard	The Planner: Stephen Little & Assocaites Tel: 01 676 6500 Contact: Stephen Little
Design Team	**Design Team**
The Engineer: AtkinsRéalis Tel: 01 8108000 Contact: Garry Hanratty	The Architect: OMP Tel: 01 202 7400 Contact: Susan Dawson
Project Supervisor for the Design Process (PSDP)	**Environmental Team**
The Consultant: to be confirmed Tel: to be confirmed Contact: to be confirmed	AtkinsRéalis Tel: 01 8108000 Contact: Deirdre Larkin
Masterplan Architect	**Landscape Architect**
The Architect: OMP Tel: 01 202 7400 Contact: Susan Dawson	Brady Shipman Martin Tel: 01 208 1900 Contact: Wrish Sarkar
Project Supervisor Construction Stage (PSCS)	**Contractor**
The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed	The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed

4.1 The Client/Employer

Caslthorn AEVAL 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 is developed, implemented and maintained on site;
- Ensuring compliance with the Conditions of the Planning Permission;
- Ensuring the mitigation measures set out in the CEMP are implemented;
- 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,
- Assist 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 Development. 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 (CMT) 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 Contractor will be required to have a recognised environmental management system such as ISO 14001:2015 or be able to demonstrate that they are actively working towards implementing such a system.

The works Contractor will undertake the works in accordance with the provisions of the CEMP. The CEMP will be updated by the Contractor to address any subsequent planning conditions relevant to the proposed development and will 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 organisations 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.

5.2.1 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

5.3 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.

5.4 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.

5.5 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.

5.5.1 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. Suitable monitoring programmes will need to be developed, implemented, documented and assessed in accordance with the specification outlined in the CEMP.

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.

5.5.2 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.

5.5.2.1 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.

5.5.2.2 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;
- Septic tanks are not overfull/discharging; and
- Special control measures identified in Permit/Planning Conditions and CEMP are adhered to.

5.6 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.

5.7 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).

5.8 Environmental Records

The Contractor shall maintain records of all environmental documentation including monitoring, environmental compliance, 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

It is the responsibility of the Contractor to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified at this preliminary juncture where practicable. Where the Contractor diverts from 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 for 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

All C&D waste materials will be segregated onsite into the various waste streams, via. labelled dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. Each waste haulage contractor must hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO).

A proposed location of the Contractor Parking, Site Plan and proposed Phasing plans are indicated site compounds are shown on Figure 6.1 – 6.4. The locations of the site compounds are selected to avoid any potential impacts to environmental receptors and to reduce any potential for impact on sensitive human receptors. There will be no site compound or construction equipment located within Flood Zone A or Flood Zone B. The site compound will also act as a storage centre for construction materials. Storage of materials will be minimal. No large materials will be stored on site until such times as they are required. At no time during the project will materials or other items be placed outside the hoarding line. The exact locations of the compound areas will be agreed with the appointed contractor and Dún Laoghaire-Rathdown County Council prior to the commencement of development and will be used throughout the construction period.

Figure 6.1 – Contractor Park & Site Plan

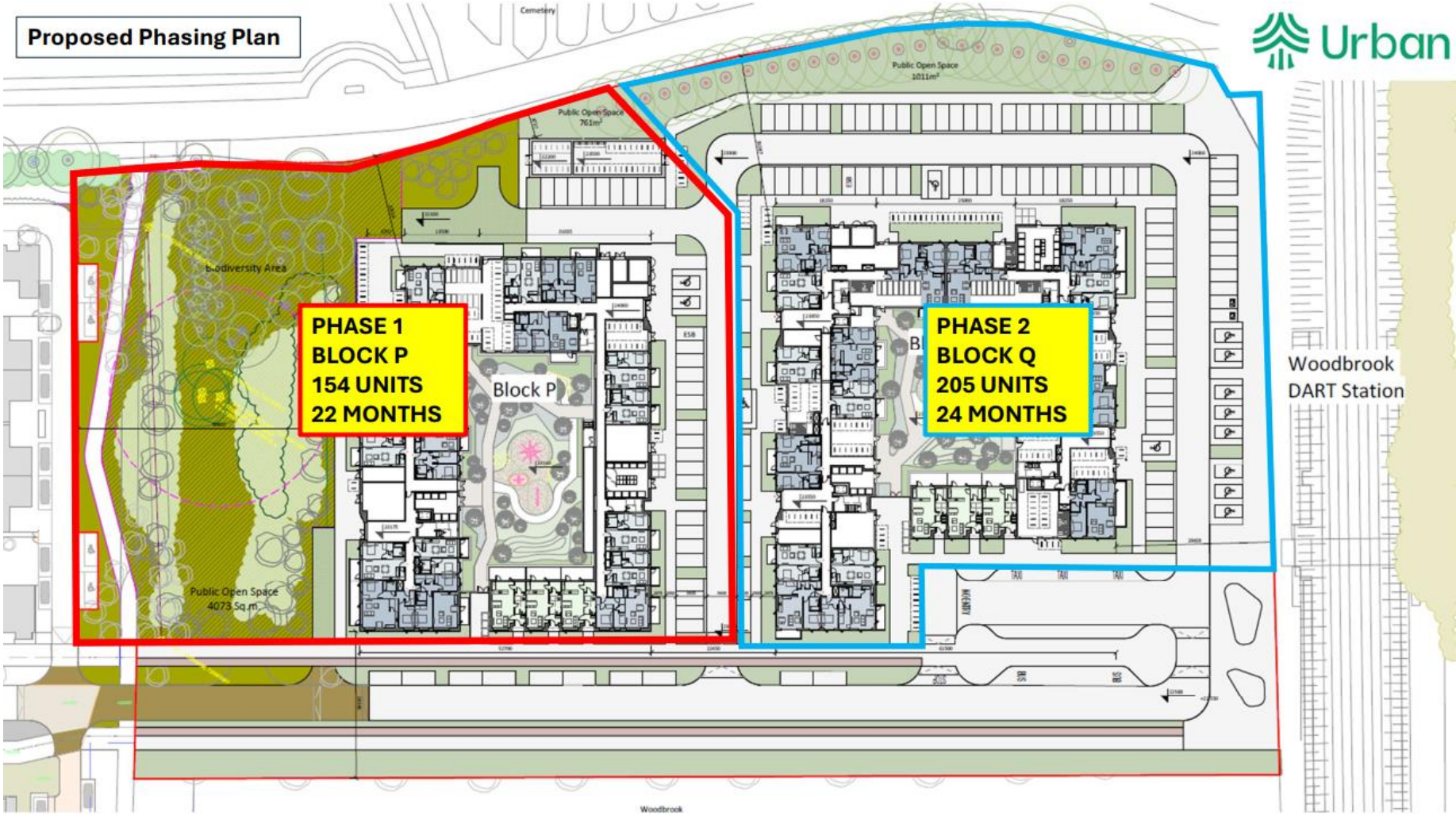

Figure 6.2 – Proposed Phasing Plan

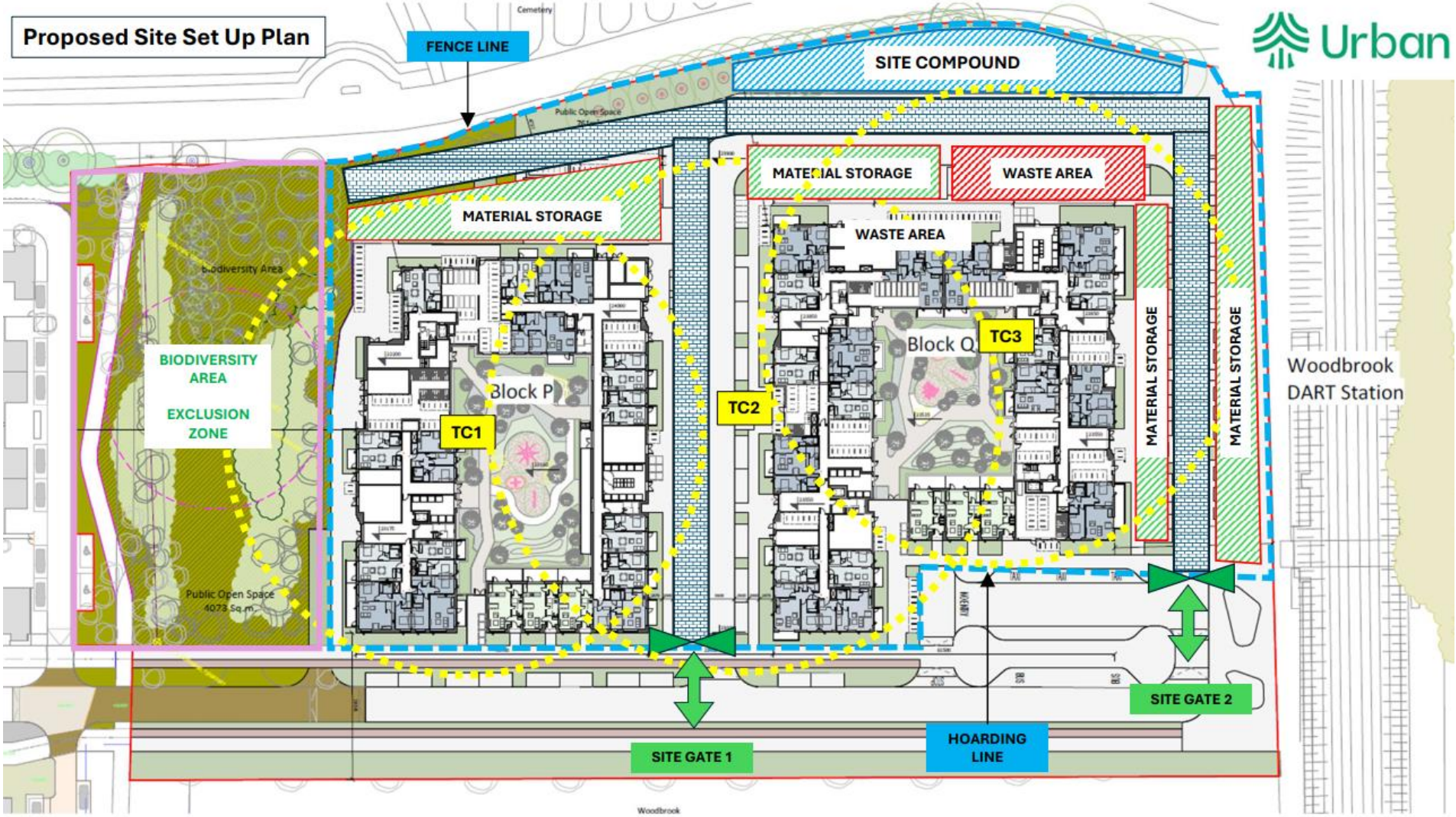

Figure 6.3 – Proposed Site Set Up Plan

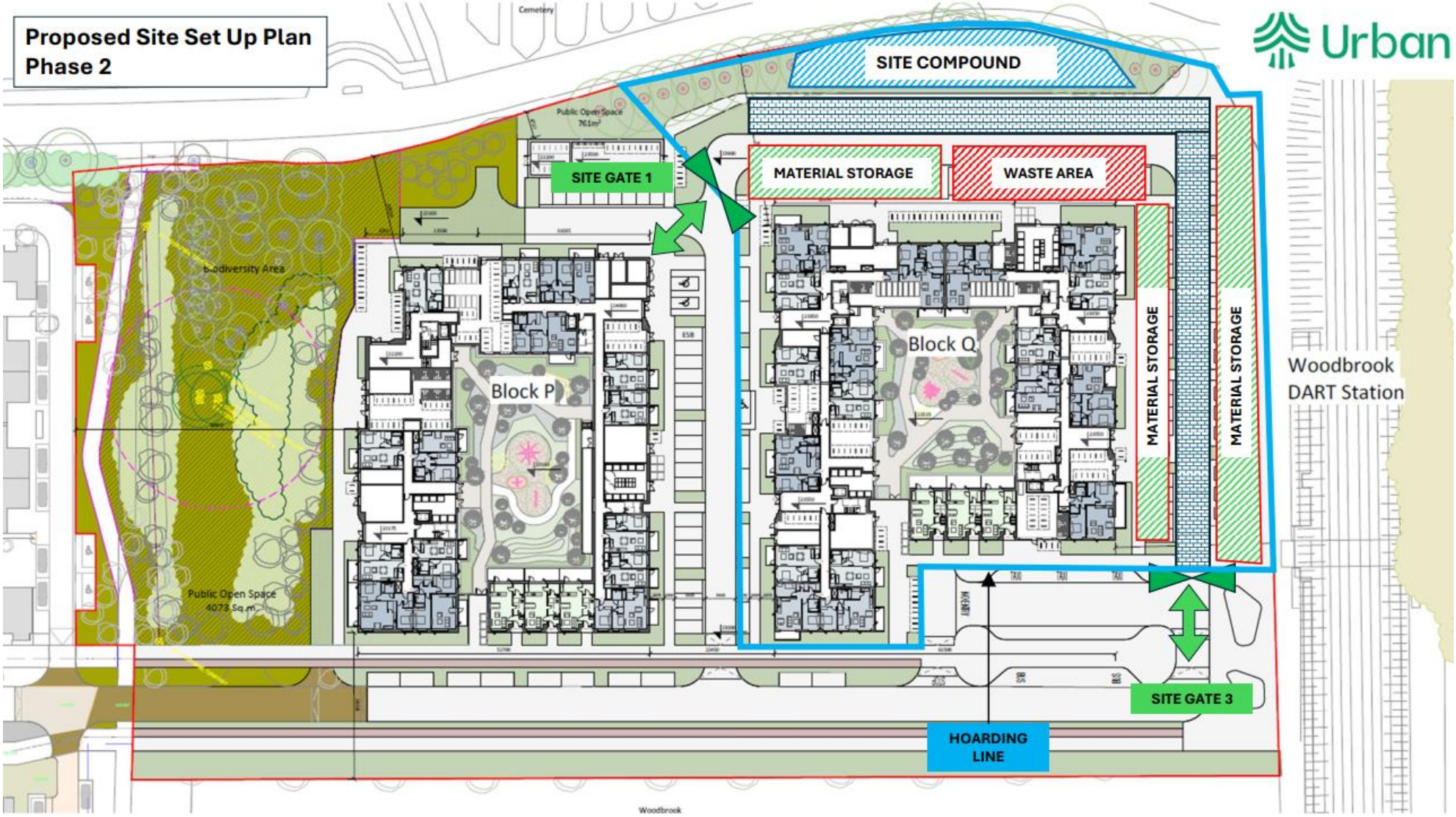

Figure 6.4 – Proposed Site Set Up Plan

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. The core construction working hours for the proposed development will be:

Monday to Friday: 07:00 to 19:00; and,

Saturdays: 08:00 to 14:00.

No working will be permitted on Sundays or Bank Holidays.

6.3.2 Start-up and shutdown

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.

6.3.3 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 the relevant local authority 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, the relevant local authority 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 the relevant local authorityDLRCC and An Garda Siochana 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 as outlined within the phasing drawings above before any significant construction activities commences in that working area. The hoarding/fencing shall be 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 an 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 Lighting

The following measures will be applied in relation to site lighting:

- Lighting will be provided with a minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption; and,
- To minimise disturbance to bats and other fauna that are roosting/resting or active at night, no construction operations will be undertaken during the hours of darkness. If constriction lighting is required during the bat activity period (dusk April to September), lighting shall be directed away from all hedgerow / treeline habitats to be retailed. This can be achieved by using directional lighting (i.e. lighting which only shines on the proposed works and not nearby countryside) to prevent overspill.

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 potentially polluting material is removed from the site and is disposed of using appropriately authorised contractors. 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 would be required to 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 in addition to the specifications of the relevant local authoritDLRCC.

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 development.

7. Environmental Management and Controls

7.1 Waste Management

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, waste storage and bulking areas etc, as described within the RWMP (Atkins, 2022).
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 Waste Management Plan that is in compliance with DLRCC requirements. 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 in accordance with EPA (2021) *'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects'*. 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? 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 to and approved by the client. 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, tyres, used oil cans/drums etc. will be separated and put into segregated bins for removal and disposal by an appropriately authorised contractor.
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. 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 licences 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.

Activity	Mitigation Measures
	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. Works that involve onsite filling with material other than virgin excavated natural material is encouraged where material is potentially suitable. 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. 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	Stockpiled materials will not be located immediately adjacent to watercourse (Rathmichael stream and River Dargle), 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. The Contractor will comply with best practice when sourcing imported materials for site works, including NRA (2006) A Guide to Landscape Treatments. Imported material will be from a reputable source who can confirm that it has been screened for potential presence of invasive species.

7.2 Air Quality, Greenhouse Gas and Odour

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.
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 & Greenhouse Gas 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. 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'.
Dust Suppression and Odour 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. Stockpiles of fine material such as sand, topsoil material, cement, excavated material etc. will be covered / protected from wind. Use dust suppression systems such as a rotary water atomizer (or equivalent) to damp down stock piles 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, see Section 7.4. Dust generating activities will cease during excessively windy periods. Construct dust screens/wind breaks as necessary. Fence off work areas with geotextile type liners. Encourage progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation. 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.
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.

Activity	Mitigation Measures
	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.
Ozone Depleting Substances	Ozone depleting substances will not be used on site. Fire protection products, refrigerants, coolants, degreasing agent should be based on non-ozone depleting alternatives. Any refrigerants used will be limited to R134a type (non-ozone depleting).
Indoor Air Quality (IAQ)	Adopt an IAQ management plan for the construction if appropriate: • Specify low-VOC materials during construction. • Specify low-VOC paints and coatings in construction documents. • Composite wood, agri-fiber products and laminating adhesives used on the interior of the building (defined as inside of the weatherproofing system) shall contain no added urea-formaldehyde resins.

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.
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 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 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 day time hours only. Approval from the local authority should be obtained prior to undertaking work at night. 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 jack-hammers. Construct a solid barrier around the generators. Use plant in accordance with manufacturer's specifications. Orientate machinery away from noise sensitive residential areas. Where machines are fitted with engine covers these shall be kept closed. 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. 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 mitigation 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.
	With regard to construction activities, best practice control measures from construction sites within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2 will be used to control noise and vibration impacts. The implementation of all best practice noise and vibration control methods will ensure potential impacts to nearby residential noise sensitive locations are not significant. This will be particularly important during excavation and foundation construction which are likely to be the activities to have the highest potential noise and vibration impact. Noise-related mitigation methods are described below and will be implemented for the project in accordance with best practice. These methods include: • No plant used on site will be permitted to cause an ongoing public nuisance due to noise; • The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations; • All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;

Activity	Mitigation Measures
	• 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; • Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use; • During construction, the contractor will manage the works to comply with noise limits outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise; • All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures; • Limiting the hours during which site activities which are likely to create high levels of noise or vibration are permitted; and, • Monitoring levels of noise and vibration during critical periods and at sensitive locations (i.e. at the boundary between the development site and the school and residential buildings. • Furthermore, it is envisaged that 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, refuelling 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.	Undertake baseline assessment of water ground and surface water quality prior to construction. 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, fuelling areas 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 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. 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	Ensure that appropriate permits/consents 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. 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: human excrement, 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. 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 refuelling and fuel drum loading operations will take place at a designated site and the ground under the refuelling 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 refuelling 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.

Activity	Mitigation Measures
	The contractor will ensure that there is adequate fire-fighting equipment at the fuel and hazardous materials storage area. Fire fighting 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.
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. 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.
Sanitary facilities	Adequate sanitary facilities including restrooms, showers, water tanks, cold drinking water facilities and sewage waste collection facilities will be provided as appropriate and will drain to a lined septic tank collection system to prevent leakage and infiltration to ground and groundwater. The siting of the facilities will be agreed with Irish Water (IW). Holding tanks will be fitted with overflow alarms and will be emptied on a regular basis at a frequency which ensures no overflow of sewage effluent by an approved waste disposal company to an approved site. It is prohibited to discharge sewage onto the open ground. It is prohibited to use open ground for sanitary purposes including bathing, defecating, urination, cooking, washing (dishes or clothing). Disposal of settled solids in accordance with permit conditions. Sludge will also be disposed of on a regular basis in accordance with regulations. Confirmation of underground infrastructure such as sewage lines prior to excavation.
Dewatering discharges	All dewatering activities will be agreed in advance with the EPA/ the relevant local authority. Prepare a Dewatering Management Plan (if required). Collect/submit representative dewatering discharge samples for laboratory analyses at prescribed intervals as required by the EPA/ the relevant local authority. Conduct visual inspections at the time of sample collection. Treat all discharges to remove sediments using filtration/settling tank.

Activity	Mitigation Measures
	The contractor will not discharge contaminated or potentially contaminated water to ground. The contractor will only use water of an appropriate quality for dust suppression, contaminated or potentially contaminated water will not be used. Where waste waters do not meet approved quality criteria they should be contained and disposed of via an approved disposal route. Determine most appropriate disposal option – onsite/offsite recycling/aquifer recharges etc. The contractor will undertake regular leak monitoring during dewatering.
	With regard to groundwater and surface water quality impacts the following mitigation measures are proposed. The Contractor will be responsible for ensuring these measures are fully implemented: ▪ In advance of commencement of the Construction Stage, all onsite monitoring wells (as identified in the Ground Investigation Report (IGSL, 2021) referenced in full in Appendix B, and the historic well located in the north eastern portion of the Site, will be fully decommissioned by an experienced borehole specialist in accordance with relevant guidelines, '*Good practice for decommissioning redundant boreholes and wells'* (UK Environment Agency, 2012); ▪ The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guidelines '*Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice*' and CIRIA 2010 '*Environmental Good Practice on Site'* to minimise as far as possible the risk of pollution. ▪ All of the mitigation measures (for the protection of soils and geology) listed in Section 6.11 of the 2021 EIAR will be implemented onsite during the construction phase. ▪ Any groundwater temporarily dewatered during the excavation works for the proposed attenuation tanks and for building foundations in the central and southern portions of the Site, and during piling (as required), will be treated via. the installation of a temporary in-situ water treatment system; ▫ This system should be designed and sized to ensure that all pumped groundwater water is treated via. a temporary attenuation pond, prior to discharge to a selected onsite location (via. a temporary soakaway). ▫ The Contractor will be required to provide a Site-specific dewatering plan, clearly setting out proposed excavation methodology, estimated dewatering rates, details of proposed treatment system, and discharge location. ▪ The Contractor will be responsible for ensuring that the existing drainage network, specifically along the existing road, and as required elsewhere across the site, will be suitably protected (via. the use of physical barriers and / or the implementation a Site-specific water run-off management plan as required). ▪ In order to prevent any potential surface water / groundwater impacts via. release of hydrocarbon / chemical contaminants the following standard measures will be implemented: ▫ Fuels, lubricants and hydraulic fluids for equipment used on the construction Site, as well as any solvents, oils, and paints 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; ▫ Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling; ▪ A response procedure will be put in place to deal with any accidental pollution events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of in accordance with all relevant waste management legislation; ▫ All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area. ▫ Strict supervision of contractors will be adhered to in order to 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 Site. This will minimise the risk of groundwater becoming contaminated through Site activity. ▫ All oil stored on Site for construction vehicles will be kept in a locked and bunded area; ▫ Generators, pumps and similar plant will be placed on drip-trays to prevent contamination;

Activity	Mitigation Measures
	▫ All Site vehicles used will be refuelled in bunded areas; ▫ All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on Site in close proximity to any fuel storage tanks or bowsers during proposed Site development works; and, ▫ All fuel / oil deliveries to on-Site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes. ▪ In order to prevent any potential surface water / groundwater impacts via. release of cementitious materials the following measures will be implemented where poured concrete is being used on Site; ▫ 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 on Site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed groundwater, the River Dargle or the Irish Sea; ▫ 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; ▫ Any spillages will be cleaned up and disposed of correctly; ▫ 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; ▫ Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; ▫ Mixer washings and excess concrete will not be discharged directly into the drainage network, or any drainage ditches, surface water bodies or exposed groundwater; and, ▫ Surplus concrete will be returned to batch plant after completion of a pour. ▪ Foul drainage from Site offices and Site compounds will be directed to the existing wastewater network or will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations. The above mitigation measures will be further developed by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase.

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.

Activity	Mitigation Measures
	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.

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, 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, refuelling 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.	Undertake baseline assessment of water quality prior to construction. 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. Minimise the impact of erosion and sedimentation by the management strategies described in the Erosion and Sedimentation Management Plan. Wildlife awareness talk to staff if in /near to sensitive areas.
	Bat Protection Measures The Biodiversity assessment (Refer to Chapter 4 – Biodiversity of the EIAR) provides a number of measures to ensure protection of bat species as follows: **Loss of Foraging and Commuting Habitat** Loss of commuting and foraging habitat at the Site will be mitigated by the landscaping proposals, which include hedgerow planting, wildflower and woodland planting. Planting schemes should ensure connectivity to linear/ woodland habitats in the wider landscape. It is noted that the landscaping proposals also include retention of hedgerow and boundary treeline and the planting of hedgerow where none is currently in situ. Trees that are being retained in the Site shall be protected during clearance and construction works in line with current guidelines e.g. British Standard 5837:2012 and National Roads Authority 2006a. **Lighting** To minimise disturbance to bats and other fauna that are roosting/resting or active at night, no construction operations will be undertaken during the hours of darkness. If construction lighting is required during the bat activity period (dusk April to September), lighting shall be directed away from all hedgerow/ treeline habitats to be retained. This can be achieved by using directional lighting (i.e. lighting which only shines on the proposed works and not nearby countryside) to prevent overspill. **Bat Roosts** Whilst there will be a loss of a number of trees which have the potential to have bat roosts, the design of the development includes for the installation of a large number of bat boxes to act as summer and winter roosting sites. The landscape design also includes for the planting of native tree species which will in time provide for further potential roosting site habitat. All trees noted to have potential as bat roosting habitat will be surveyed by a bat specialist prior to Site clearance works and if roosts are found the appointed bat specialist will develop a method statement for the tree / roost clearance in consultation with the planning authority and NPWS and will seek the necessary derogation licence from local NPWS staff (if required). The Bat Assessment (as referenced in full in Appendix B) recommends the following mitigation measures to reduce the potential impact of the proposed development on local bat populations, to protect local bat populations during proposed works and to conserve local bat populations post residential development. **Tree Roosts & PBRs**

Activity	Mitigation Measures
	It is recommended that the two trees identified as tree roosts and the group of mature trees in vicinity of these trees are retained and incorporated into the landscape plan for Phase 2, River Quarter. It is recommended that treeline boundaries are retained throughout the proposed development site to ensure that there is landscape connectivity for local bat populations. It is recommended that as many of the trees identified as Potential Bat Roosts (PBRs) are retained, where possible, and incorporated into the landscape plans for both phases. **Tree Felling** A Phase Two PBR survey is required for all trees proposed to be felled. This should be undertaken at least one month prior to tree felling in order to propose a tree felling plan in conjunction with tree contractors. i) Erection of an alternative roosting sites will be required prior to removal of trees. These should be erected 6 months prior to tree felling to allow local bat populations to become aware of it prior to removal of the structure. a. Rocket Bat Box (x4) – free-standing chamber on free standing pole (See appendices – Habibat Box). Location of rocket box will be in dark zones within woodland and treeline habitats. Such areas will need to be confirmed with Atkins Ireland and marked up on the final landscape plans for both Phase 1 (x2 boxes) and Phase 2 (x2 boxes). b. Summer Bat Boxes (1FF Schwegler woodcrete or similar design) – at least 10 bat boxes should also be erected on mature trees within the proposed development site (5 boxes in each phase of development). Bat boxes will be erected prior to tree felling. Some general points that will be follow include: ▪ Straight limb trees (or telegraph pole) with no crowding branches or other obstructions for at least 3 metres above and below position of bat box. ▪ Diameter of tree should be wide and strong enough to hold the required number of boxes. Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations should be sheltered from prevailing winds. ▪ Bat boxes should be erected at a height of 4-5 metres to reduce the potential of vandalism and predation of resident bats. ▪ It is recommended to erect a number of bat boxes on one tree at an array of aspects. South facing boxes will receive the warmth of the sun, which is necessary for maternity colonies. In large bat box scheme it is generally recommended to have three bat boxes arranged at the same height facing North, South-East and South-West. This ensures a range of temperatures are available all day. If the South facing boxes become warm, bats can safely remove to the cooler North facing box. ▪ Locations for bat boxes should be selected to ensure that the lighting plan for the proposed site does not impact on the bat boxes. Trees proposed to be removed, should be felled on mild days during the autumn months of September, October or November or Spring months of February and March (felling during the spring or autumn months avoids the periods when the bats are most active). An assessment of trees according to their PBR value determines the methodology of felling. Trees with PBR Category 1 are highly suitable for roosting bats and require more intensive procedures prior to felling. The trees identified within the survey area are PBR Category 1 and 2. The procedure to fell these is as follows: ▪ Category 1 & 2: Trees with roosting features (dead wood, tree holes etc.) should be checked prior to felling. It is recommended that they are physically checked (using an endoscope and high power torch) or a dusk/dawn surveys are completed to determine if bats are roosting within. A tree felling plan will be required in consultation with the tree surgeons. A bat box scheme will need to be erected prior to felling and in consultation with the bat specialist. Any trees showing crevices, hollows, etc., should be removed while a bat specialist is present to deal with any bats found. Such animals should be retained in a box until dusk and released on-site. Large mature trees will be

Activity	Mitigation Measures
	felled carefully, essentially by gradual dismantling by tree surgeons, under supervision of a bat specialist. Care will be taken when removing branches as removal of loads may cause cracks or crevices to close, crushing any animals within. ▪ Category 2: Any ivy covered trees which require felling will be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape. A felling strategy for all other trees identified as Category 2 trees shall be discussed with the tree felling contractors. Depending on the felling strategy, if maybe required to undertaken dusk and dawn surveys to determine if bats are present prior to felling. **Marine Mammal Protection Measures** A hydrological pathway exists between the proposed development and Rockabill to Dalkey Island SAC (003000) which is located ca. 4.1km from the Site. This SAC has 2no. Qualifying Interests; reef habitat and Harbour Porpoise. The following measures will be taken in order to prevent potential surface water quality impacts from proposed construction works: • The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guidelines 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' and CIRIA 2010 'Environmental Good Practice on Site' to minimise as far as possible the risk of pollution. • Works will follow best practice guidance as outlined in Guidelines on the Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). • The existing drainage network, specifically along the existing road, and as required elsewhere across the site, will be suitably protected (via. the use of physical barriers and / or the implementation a Site-specific water run-off management plan as required). • A response procedure will be put in place to deal with any accidental pollution events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of in accordance with all relevant waste management legislation: - ▪ All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area; ▪ All oil stored on Site for construction vehicles will be kept in a locked and bunded area; ▪ Generators, pumps and similar plant will be placed on drip-trays to prevent contamination; ▪ All Site vehicles used will be refuelled in bunded areas; ▪ All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on Site in close proximity to any fuel storage tanks or bowsers during proposed Site development works; and, ▪ All fuel / oil deliveries to on-Site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes. • In order to prevent any potential surface water impacts via release of cementitious materials the following measures will be implemented where poured concrete is being used on Site; • 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 on Site and therefore these aspects will not pose a risk to the waterbodies present, namely the River Dargle or the Irish Sea; ▪ 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; ▪ Any spillages will be cleaned up and disposed of correctly; ▪ 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;

Activity	Mitigation Measures
	▪ Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; ▪ Mixer washings and excess concrete will not be discharged directly into the drainage network, or any drainage ditches, surface water bodies or exposed groundwater; and, ▪ Surplus concrete will be returned to batch plant after completion of a pour. • No fuels, chemicals, oils or hazardous materials shall be stored adjacent to or within 100m of the River Dargle. **Protection of Habitats** Hedgerows, treelines and boundary woodland areas are to be retained on-site; Site boundaries will be protected from any accidental damage during construction by means of exclusion through use of fencing. This is set out in full in the accompanying Tree Survey Report and Landscape Planting Plan, which form appendices to Volume 2 of the EIAR. Measures will be taken to ensure that trees and hedges being retained are incorporated into the development without being impacted upon. Protective fencing will be provided around retained trees and hedgerows and fencing will be erected so as to encompass the Root Protection areas (RPAs) of trees and hedgerows. The fencing will be at least 2m high and constructed in accordance with the RPA outlines in the Tree Survey Reportreferenced in full . Similarly, a buffer is to be maintained between the Site, **Birds** Removal of nesting habitat (hedgerows, scattered trees and woodland utilised by local and common passerine species) 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 the NPWS will be consulted in advance and if, in consultation, it is deemed necessary then a suitably qualified ecologist will be appointed by the Contractor to oversee clearance of nesting habitat and ensure the area is free of nesting birds. The appointed ecologist will develop a method statement for the nesting habitat clearance in consultation with local NPWS staff. The comprehensive landscaping design calls for the planting of native trees and plant species suitable for pollinating insect species. This should provide for a net gain in suitable bird nesting and foraging habitat. The landscaping design has followed the principles outlined in the All-Ireland Pollinator Plan 2021-2025. **Terrestrial mammals** The Site will be resurveyed for badger activity and the presence of setts by a suitably qualified ecologist (appointed by the Contractor) prior to the commencement of the development. The creation of an ecological buffer zone along the eastern boundary of the Site will allow for connectivity of habitats and the continuance of the site to be used as a badger foraging area. The buffer zone allows for connectivity between Rathmichael woodlands/stream and the railway underpass which leads to scrub habitat and Woodbrook golf club lands which are known to be badger foraging territory. During the construction phase no works will be undertaken during night time hours and as such the construction activities will not take place whilst local badgers are foraging. During the construction phase an access track will be in situ along the northern and eastern boundaries which will allow for continued connectivity from Rathmichael woodlands to the railway underpass and to the important foraging habitats to the east of the railway line.

Activity	Mitigation Measures
	During the construction phase the following standard management and protection measures will be implemented during the construction works and monitored by the project ecologist: ▪ No excavations are to be left uncovered overnight or without a means of egress (e.g. a ramp or sloped plank) to prevent badgers from falling in or entering in search of food and becoming trapped; ▪ No buildings or storage units are to be left open overnight to prevent badgers from entering in search of food and becoming trapped; ▪ All food waste is to be properly secured and disposed of to avoid attracting badgers to the Site; ▪ No toxic, poisonous or potentially harmful substances or materials are to be left unsecured overnight; and, ▪ Should any new badger setts or mammal burrows be discovered within the Site or immediately adjoining areas the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS as necessary. **Prevention of pollution to surface waters** Mitigation measures as set out in Section 6.10.2 Marine Mammal Protection Measures, Section 6.11 Ground Conditions of the 2021 EIAR and Section 6.16 Water Mitigation of the 2021 EIAR will be implemented during the Construction phase. **Disturbance of faunal species mitigation** Removal of nesting habitat (hedgerows, scattered trees and woodland) 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 the NPWS will be consulted in advance and if, in consultation, it is deemed necessary then a suitably qualified ecologist will be appointed by the Contractor to oversee clearance of nesting habitat and ensure the area is free of nesting birds. The appointed ecologist will develop a method statement for the nesting habitat clearance in consultation with local NPWS staff. **Additional Construction Phase Ecological Mitigation Measures** With regard to potential impacts on ecological features the following measures are proposed: ▪ The Contractor shall engage a suitably experienced and qualified ecologist and/or specialist ecologist to undertake the required ecological surveying prior to construction activities. Pre-construction ecological surveys should include; terrestrial mammal surveys, bat roost surveys and breeding bird surveys (breeding bird surveys will be required if vegetation clearance is to be undertaken within nesting season 1st March – 31st August); ▪ The Contractor shall employ good practice environmental and pollution control measures with regard to current best practice guidance such as Environmental Good Practice On-site Guide (CIRIA, 2018); ▪ The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' to minimise as far as possible the risk of pollution; ▪ All of the mitigation measures for the protection of soils listed in Section 6.11 of the 2021 EIAR will be implemented onsite during the construction phase; ▪ The Contractor shall take all necessary precautions to potential impact upon aquatic species of the River Dargle from construction activities. The mitigation measures for

Activity	Mitigation Measures
	prevention of potential surface water impacts as detailed in Section 6.16 of the 2021 EIAR shall be implemented; ▪ The Contractor shall take all necessary precautions to prevent potential impact upon aquatic species of the River Dargle via the local groundwater body. All groundwater mitigation measures as outlined in Section 6.16 of the 2021 EIAR shall be implemented; and, ▪ The Contractor shall take all necessary precautions to prevent potential impact upon habitats and species from dust generated during the construction phase. All air quality mitigation measures as outlined in Section 6.14 Dust of the 2021 EIAR shall be implemented. **Invasive Species** Regulations 49 and 50 of Part 6 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) outlines the legal context for the prohibition of the introduction and dispersal of certain plant and animal species. Specifically, Section 49, paragraph 2 states that any person without the required licence "who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow" any plant species listed in Part 1 of the Third Schedule within the State shall be guilty of an offence. Under Section 50 paragraph 1, a person without the required licence "shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release" of any plant species listed in Part 1 of the Third Schedule or anything from which a plant referred to in Part 1 of the Third Schedule can be reproduced or propagated or "a vector material listed in Part 3 of the Third Schedule". No 3rd Schedule invasive species, such as Japanese knotweed, were found onsite. Mitigation measures will be implemented to ensure: • Strict bio-security protocols will be implemented during the construction phase so as to ensure no imported materials potentially contaminated with invasive plant species are brought to Site. All imported soil materials will be visually inspected for signs of invasive plant contamination (such as root fragments, rhizome material) prior to arrival on Site.

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.

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. 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	In the event that intact and/or important archaeological or cultural items are identified during construction activities, work must stop and the Dún Laoghaire-Rathdown County Council 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 Wicklow County Council and the Department of Arts, Heritage and the Gaeltacht and the National Museum of Ireland. Records should be maintained of all finds. Where practicable remains should be preserved in situ using appropriate engineering methods: 1. Raising ground levels 2. Using suitable materials and loading 3. Maintenance of Hydrological regimes.

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 Traffic Management Control Plan / which shall be based on the Mobility Management Plan (Atkins, 2021) submitted to support the planning application in August 2021. 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 if 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.

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 based studies of relevant documents - EIA etc.	Mark a site plan with the location of all potential contamination risks including waste deposits, petrol stations, oil stores 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 Atkins immediately if contaminated land is discovered or suspected. The contractor will work with Atkins 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 (wadis), 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.

	Risk Assessment	Example Procedure
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. Possible 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. • Consider covering temporary roads and routes within site with either asphalt or stone. Appropriate rehabilitation will need to be applied. • Undertake regular leak monitoring and maintenance of dewatering pipes. • 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.
Sediment Control	Possible sedimentation control measures may include but are not limited to the following: • 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 nay 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 Dún-Laoghaire Rathdown County Council and Wicklow County Council, 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 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, Wicklow County Council 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.

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 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.

9. References

Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016);

Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990);

Any additional information as determined at the detailed design and tender stages.

BS 3998; 2010. Tree Work. Recommendations.

BS 5837/2012. Trees in relation to design, demolition and construction.

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. Updated in 2014;

CIRIA (2015). C741. Environmental Good Practice on Site;

CIRIA (2015). C753. The SuDS Manual;

DoEHLG (2006). Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects;

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), 2016 (S.I. No. 2016/1628);

Environment (Miscellaneous Provisions) Act 2011, as amended 2015;

Environmental Noise Regulations 2006, S.I. No. 140 of 2006;

Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994;

EU F Gas Regulations 2006, as amended, 2014, S.I. No. 517 of 2014;

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);

European Communities (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended 2017 (S.I No. 464 of 2017);

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);

European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018;

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 (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);

European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended 2016 (S.I. No. 315 of 2016);

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);

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 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 Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018.

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).

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);

European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014);

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);

European Waste Catalogue (EWC) and Hazardous Waste List 2002;

Flora (Protection) Order, 2015, S.I. No 356 of 2015;

Forestry Regulations, S.I. No. 191 of 2017;

Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);

Inland Fisheries Act 2019, as amended 2017;

Inland Fisheries Ireland (2016). Guidelines on protection of fisheries during construction works in and adjacent to waters;

Inland Fisheries Ireland IFI, Jan. 2011. Biosecurity Protocol for Field Survey Work;

Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese Knotweed;

Litter Pollution Act of 1997, as amended, 2017 (Bill 58 of 2017);

Litter Pollution Regulations 1999, S.I. No. 359 of 1999);

Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);

Noxious Weed Act, 1936, S.I. No. 38 of 1936;

Noxious Weed Act, 1937, S.I. No. 103 of 1937:

NRA (2005a). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;

NRA (2005b). Guidelines for the Treatment of Badger 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 (2008). Guidelines for the Treatment of Otters prior to the 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).

Planning and Development Act, 2000, as amended 2017 (S.I. No. 20 of 2017) and 2018 (S.I. No. 16 of 2018);

Planning and Development Regulations 2001 to 2021, as amended 2018 (S.I. No. 20 of 2018)

Protection of the Environment Act 2003;

The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;

The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC);

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);

The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015);

The Fisheries (Consolidation) Acts 1959 & 2001

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;

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 National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004); and,

The Salmonid Regulations 1988, S.I. No. 293 of 1988;

The Water Pollution Acts of 1977 & 1990;

The Wildlife Act 1976 & Wildlife (Amendment) Acts, 2000 and 2010;

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 (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);

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)

Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015);

Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);

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 (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);

Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);

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);

Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;

Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);

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. 96/2018);

Waste Management Acts of 1996 to 2019;

Waste Management Shipment of Waste Regulations 2007, S.I. No. 419 of 2007;

Water Conservation Regulations 2008, S.I. No. 527 of 2008;

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;

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);

Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, S.I. No. 112 of 1990 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000);

APPENDICES

Appendix A. Design Drawings. Refer to Design Drawings submitted as part of the Planning Application (May 2026).

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