Dun Laoghaire - Rathdown County Council

Kilbogget Park Sports Pavilion, Outline Construction Management Plan

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1 Introduction

Donnachadh O'Brien & Associates Consulting Engineers Ltd. (DOBA) have been instructed by the Client, Dun Laoghaire- Rathdown County Council, to prepare a Construction Management Plan (CMP) to accompany a Planning Application to Dun Laoghaire- Rathdown County Council (DLRCC) for the proposed development on Kilbogget Park, Co Dublin. This CMP address **Construction & Demolition Resource & Waste Management** (Section 4), **Construction Environmental Management** (Section 5 which includes a **Surface Water Management Plan**. Following appointment, the Contractor shall be responsible for detailing and maintaining this CMP and updating it as appropriate as the project progresses.

2 Existing Site

The existing Kilbogget Park complex consists of 12 soccer pitches, GAA pitches, all-weather facilities, running track and a sports pavilion and containers. For the purpose of this report, we are looking at a section to the south of Kilbogget park which includes the pavilion, temporary containers, a pitch and playgrounds. This is illustrated in **Figure 1** below. The local topography of the application lands is gently sloping from the north to the south. The existing site is illustrated on **Engineering drawing C-0001.**

Figure 1 Site location (site outlined in red)

3 Proposed Development Description

The development will consist of removing of the existing containers and replacing with a two-storey building. This structure will consist of 6 changing rooms, WCs, a gym on first floor, all associate ancillary site development works, including drainage, services, lighting and landscaping and amenity areas.

Figure 2 Proposed development (source: DLRCC)

4 Construction & Demolition Resource & Waste Management

The content and headings used in this section of the CMP comply with the Department of the Environment, Heritage and Local Government (DoEHLG) Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects, 2021.

4.1 Definition of Waste

Waste, as defined in Section 4(1) of the Waste Management Act 1996, as amended, means any substance or object which the holder discards or intends or is required to discard.

4.2 Waste Management Objectives

The principal objective of sustainable resource and Waste management is to use material resources more efficiently, where the value of products, materials and resources are maintained in the economy for as long as possible and the generation of Waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy as indicated in **Figure 3** below.

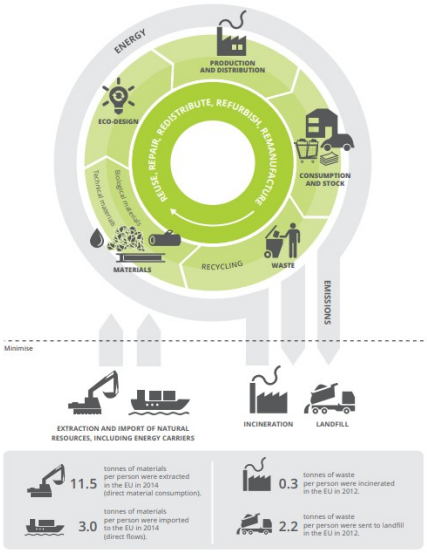

Figure 3 Circular Economy for Materials and Energy (source: European Environment Agency)

In December 2015, the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on Waste to stimulate Europe's transition towards a circular economy. However, where residual Waste is generated, it should be dealt with in a way that follows the Waste hierarchy as shown in **Figure 4** below and actively contributes to the economic, social and environmental goals of sustainable development.

Figure 4 EU Waste Hierarchy (source: European Commission)

The Waste management objectives for the proposed development are described in the following sections and will facilitate material reuse and recycling where possible and seek to divert Waste from landfill.

4.2.1 Prevention

The Contractor shall prevent and minimise Waste generation where possible by ensuring large surpluses of construction materials are not delivered to site through coordination with the suppliers, operate a just-in-time delivery system and ensure Sub-Contractors conform to the Construction Waste Management Plan (CWMP) for all operations on site.

4.2.2 Reuse

Reuse Wastes and surplus materials where feasible and in as many high-value uses as possible.

4.2.3 Recycle

Recycle Waste where possible such as introducing on-site crushers to produce Waste derived aggregates which may, subject to appropriate testing and approvals, may be re-used in the project.

4.2.4 Disposal

Where disposal of Waste is unavoidable this will be undertaken in accordance with the Waste Management Act 1996, as amended.

4.3 Waste Management Legislation & Policy

The key components of EU, national and local policy, legislation and guidance relevant to the proposed Construction works are summarised as follows:

- prevention and minimisation of Waste is the preferred option,
- where construction Waste is generated, it should be source separated to facilitate recycling and maximise diversion of Waste from landfill,
- where Waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution,
- Waste may only be transferred by a Waste collection permit holder and delivered to an authorised Waste facility.

4.3.1 Legislation

The following is a list of the legislation which governs Waste management in Ireland and are applicable to the proposed development: -

European

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and repealing certain Directives

National

- Waste Management Act 1996, as amended and Regulations Made under the Acts
- Waste Management (Collection Permit) Regulations, 2007, S.I. No 820 of 2008, as amended
- Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419 of 2007

4.3.2 Policy

The following is a list of the policy which governs Waste Management in Ireland and are applicable to the proposed development: -

European

- Circular Economy Package, European Commission (2018)
- Europe 2020 Strategy, European Commission (2010)
- Roadmap to a Resource Efficient Europe, European Commission (2011)
- 7th Environmental Action Programme, European Commission (2014)

National

- Department of the Environment, Heritage and Local Government (2012) A Resource Opportunity- Waste Management Policy in Ireland
- EPA National Waste Statistics and Bulletins

- EPA (2014) National Municipal Waste Recovery Capacity. An Assessment for the Department of the Environment, Community and Local Government
- Environmental Protection Agency (2014) National Hazardous Waste Management Plan, 2014-2020
- EPA (2015) Waste Classification – List of Waste and Determining if Waste is hazardous or Non Hazardous.
- EPA, "*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects*", 2021

Regional

- The Eastern Midlands Region Waste Management Plan 2015-2021

4.4 Roles & Responsibilities

4.4.1 Waste Producer

In accordance with the Waste Management 1996, as amended, the Waste producer is responsible for Waste from the time it is generated through until it is legally recycled, recovered or disposed of. Therefore, the onus lies with the producer, i.e. the Client, to ensure that Waste is correctly managed or can face prosecution as a result of incidents of pollution as a result of incorrect management of Waste produced. Contractors appointed by the Client must ensure that facilities receiving Waste hold either a Certificate of Registration (COR) or Waste permit (granted by the Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007) or Waste licence or Industrial Emissions licence (granted by the EPA) while transporters of Waste must hold a collection permit which is issued by a National Waste Collection Permit Office (NWCPO).

4.4.2 Contractor

The Contractor shall, prior to the commencement of the Works, nominate and appoint an adequately trained Construction Waste Manager (CWM) with overall responsibility for implementation of this CWMP. The Contractor's CWM shall be responsible for the following: -

- Instructing all site personnel to comply with the specific provisions of the CWMP, in particular the Objectives regarding the prevention, reduction, re-use and recycling.
- Ensuring that copies of the CWMP will be made available to all relevant personnel on site.
- Informing through regular training of all site personnel of the objectives of the plan and their responsibilities in relation to compliance with the plan.
- Ensuring that where training is required regarding the handling and management of Wastes on site that this is provided to staff as required to ensure they can: -
    - Distinguish reusable materials from materials suitable for recycling
    - Ensure maximum segregation at source

- Co-operate with the Contractor's management regarding stockpiling of reusable material and ensure separation of materials for recovery
- Identify and liaise with operates of recovery outlets

- Informing Contractor staff and Sub-Contractors of content of the plan and for maintaining and keeping detailed records.

In addition, an appropriate staff member from each Sub-Contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the CWMP are performed on an on-going basis. In the event of the CWM leaving the project team, the Contractor will nominate a suitable replacement.

4.5 Construction Waste Arising

Construction Waste is defined as Waste which arises from construction activities. The following sections analyse the wastes arising from construction activities on site and provides methods for management of waste through prevention, reuse and recycling.

4.5.1 Construction Hazardous & Non-Hazardous Wastes

The typical types of Construction Hazardous and Non-Hazardous Wastes that may be expected on a typical project are as per the EPA List of Wastes (LOW) codes outlined in the following table.

Table 1 EPA Hazardous & Non-Hazardous EPA LoW & associated codes

Description	EPA LoW Codes
HAZARDOUS WASTE	
Wastes from Wood processing and the production of panels and furniture, pulp, paper and cardboard	**03**
Wastes from wood preservation	**03 02**
Non-halogenated organic wood preservatives	03 02 01
Organ chlorinated wood preservatives	03 02 02
Organometallic wood preservatives	03 02 03
Inorganic wood preservatives	03 02 04
Other wood preservatives containing hazardous substances	03 02 05
Wood preservatives not otherwise specified	03 02 09
Oil Wastes and Wastes of Liquid Fuels	**13**
Wastes of Liquid Fuels	**13 07**
Fuel oil and diesel	13 07 01
Petrol	13 07 02

Other fuels (including mixtures)	13 07 03
Wastes not otherwise specified in the list	**16**
Wastes from electrical and electronic equipment	**16 02**
Transformers and capacitors containing PCBs	16 02 09
Discarded equipment containing chlorofluorocarbons, HCFC, HFC	16 02 11
Discarded equipment containing free asbestos	16 02 12
Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	16 02 14
Hazardous components removed from discarded equipment	16 02 15
Batteries & Accumulators	**16 06**
Lead Batteries	16 06 01
Ni-Cd Batteries	16 06 02
Mercury-containing batteries	16 06 03
Alkaline batteries (except 16 06 03)	16 06 04
Other batteries and accumulators	16 06 05
Separately collected electrolyte from batteries and accumulators	16 06 06
Construction Wastes **(Including excavated soil from contaminated sites)**	**17**
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	17 01 06
Glass, plastic and wood containing or contaminated with hazardous substances	17 02 04
Metals (including their alloys)	**17 04**
Metal Waste contaminated with hazardous substance	17 04 09
Cables containing oil, coal tar and other hazardous substance	17 04 10
Soil (including excavated soil from contaminated sites), stones and dredging spoil	**17 05**
Soil and stones containing hazardous substances	17 05 03
Insulation materials and asbestos containing construction materials	**17 06**
Insulation materials containing asbestos	17 06 01
Other insulation materials consisting of or containing hazardous substances	17 06 03
Construction materials containing asbestos	17 06 05

Gypsum-based construction material	**17 08**
Gypsum-based construction materials contaminated with hazardous substances	17 08 01
Other construction Wastes	**17 09**
Construction Wastes containing mercury	17 09 01
Construction Wastes containing PCBs	17 09 02
Construction Wastes containing dangerous substances	17 09 03
Municipal Wastes (Household Waste & Similar Commercial Waste, Industrial & Institutional Waste) including separately collected fractions	**20**
Fluorescent tubes and other mercury containing Waste	20 01 21
Paint, inks, adhesives and resins containing hazardous substances	20 01 22
NON-HAZARDOUS WASTE	
Construction Wastes **(including excavated soil from contaminated sites)**	**17**
Concrete, bricks tiles and ceramics	**17 01**
Concrete	17 01 01
Bricks	17 01 02
Tiles and ceramics	17 01 03
Wood, glass & plastic	**17 02**
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and tarred products	**17 03**
Bituminous mixtures containing coal tar	17 03 01
Coal tar and tarred products	17 03 03
Metals (including their alloys)	**17 04**
Copper, bronze, brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and steel	17 04 05

Tin	17 04 06
Mixed metals	17 04 07
Municipal Wastes (Household Waste & Similar Commercial Waste, Industrial & Institutional Waste) including separately collected fractions	**20**
Separately collected fractions	**20 01**
Paper and cardboard	20 01 01
Glass	20 01 02
Biodegradable kitchen and canteen Waste	20 01 08
Textiles	20 01 11
Edible oil and fat	20 01 25

4.5.1.1 Asbestos

There are no existing buildings on site requiring an asbestos survey. The Contractor, should ACMs be uncovered during the works, shall handle ACMs in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, as amended and associated approved Codes of Practice. The Contractor shall be responsible for preparing specified Risk Assessment and Method Statements for the identification and removal of all ACMs on site.

4.5.1.2 Invasive Species

In order to identify and manage any invasive species, such as Japanese Knotweed, a site walk over will need to be carried out. (TBC by Ecologist)

4.5.2 Excavation Waste Management

A suite of ground investigations, refer to **Appendix A** of the Infrastructure Design Report (IDR), has been carried out on site which includes the following;

- Trial Pits & BRE365 soakaway tests
- Geotechnical Laboratory Testing
- Slit trenches
- CBR Plate Bearing tests
- Geo-environmental Testing

We have not received the report with the results of the ground investigations yet.

4.5.2.1 Landfill Disposal of Excavated Soils

Prior to commencement of the works on site, a RILTA Suite of Geo-Environmental Tests will be carried out and compared with the European limits for inert landfills as set out in the European

Council Decision 2003/33/EC Establishing Criteria and Procedures for the Acceptance of Waste at Landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC. The results of the WAC analyses will determine compliance with the inert landfill limits as stipulated in the European Landfill Directive and the excavated soils will be classified prior to removal from site.

4.5.2.2 Estimated Excavation Waste Arising

Any potentially contaminated material encountered during construction, will require testing and classification as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' 13 using the HazWasteOnline application. The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC. The Contractor will be responsible for determining how excavation material from the proposed development will be managed and a full list of all facilities to which hazardous and non-hazardous waste excavation soil and stones will be sent will be provided in the detailed CMP prepared by the Contractor.

The proposed development will require excavation for the following which is a non-exhaustive list:-

- Service trenches including storm water, waste water, water supply, SuDS features, ESB, telecoms, data, etc.
- Foundations and ground floor slabs for houses
- Boundary walls to residential units

The re-use of clean, inert / non-hazardous excavation material as landscaping or engineering fill will also be considered following appropriate material testing and risk assessment to ensure the material is suitable for its proposed end use. Where excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable or disposal to an appropriate licensed landfill in accordance with the Landfill Decretive. The above figures do not allow for bulking or for the additional dig required for temporary/construction slopes, services, utilities, etc.

4.5.2.3 Reuse

The reuse of excavated material must be certain. There must be no intention or requirement for it to be discarded. In addition, there must be no further processing required in order for it to be reused. Soil, rock and naturally occurring material excavated in the course of construction activities can be reused within the proposed development where feasible, subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use. Where naturally occurring, material is used for the purpose of construction in its natural state within the proposed development this material is not deemed to be a Waste in accordance with Article 2 of the Waste Directive 2008/98/EC, the European Communities (Waste Directive) Regulations, 2011 and Section 3 of the Waste Management Act 1996, as amended. Where a certificate of registration, Waste facility permit or Waste licence is required by the Contractor in order to reuse excavation material within the

proposed development this will be obtained from either the local authority or the EPA. Furter to rock reusability testing, the Ground Investigation notes that rock fill is suitable for use as 6F2 capping material across the development subject to appropriate material testing and grading on site.

4.5.2.4 Article 27

Article 27 of the EC Waste Directive Regulations 2011 permits surplus excavation material to be declared as a by-product for use in one of more known construction projects. An Article 27 notification to the EPA under Article 27 of the EC Waste Directive Regulations 2011 is required to achieve by-product status for soil and stones. By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil & stone material arising from construction activity which bring significant economic benefits while facilitating beneficial re-use of by-products. Prior to the commencement of construction, the CMP will be updated to reflect specific measures to minimise waste generation and resource consumption during construction, including providing details of proposed waste contractors and destinations of each waste stream while the CMP will be fully implemented during the proposed construction phase. This may include the importation/exportation of topsoil & sub soil while the Site Investigation (SI), Waste Acceptance Criteria Testing (WAC testing) and Soil Analysis will be used to classify and determine the suitability of soil. Any soil (topsoil & sub soil) identified as 'contaminated' or not equivalent to virgin greenfield for by-product soil and stone, will be treated as waste and will be segregated on-site, stored in skips or other suitable receptacles in designated areas and will be removed from site to a suitable waste facility by a registered waste contractor. All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities. Where soil and stone can be re-used as fill, and is considered to be a By-Product, it will be imported/ exported under notification of Article 27 to the EPA, in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a By-Product. Finally, a log of all By-Product material movements will be recorded and maintained.

4.5.2.5 Licenced Waste Facilities

Where removal of Wastes from the proposed development is unavoidable it will be delivered by the Contractor to licensed Waste facilities which are authorised under the Waste Management Act 1996, as amended, and which hold the appropriate certificate of registration, Waste facility permit or EPA licence. Activity in relation to soil recovery facilities described in Class 5 Third Schedule, Part 1 of the Waste Management (Facility Permit and Registration) Regulations 2007, as amended, notes

> "*Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert Waste, through deposition for the purposes of the improvement or development of land, where the total quantity of Waste recovered at the facility is less than 100,000 ton*nes."

EPA licensed Waste activities authorised to accept soil and stones for recovery and disposal include soil recovery sites, landfills, transfer stations and materials recovery facilities which typically handle a larger tonnage of Wastes than facilities holding certificates of registration of Waste facility permits.

Where the Contractor proposes to deliver excavated materials from the proposed development to facilities holding a certificate of registration, Waste facility permit or EPA Waste licence the Contractor is responsible for ensuring the authorisation is valid and allows acceptance of the relevant List of Waste Code. A copy of the authorisation will be included in the CWMP and evidence will be provided that the proposed facility will have capacity to accept the required quantity of Waste from the proposed development.

4.5.3 Estimate of Construction Waste Arising

The Building Research Establishment (BRE) UK have produced benchmarks derived from data out of the BRE SMARTWaste Plan issued in June 2012 as outlined in **Figure 5** below.

Project Type	Number of projects data relates to	Average $m^3/100m^2$	Number of projects data relates to	Average m^3/£100K
Residential	677	18.1	669	12.3
Public Buildings	49	20.9	55	10.7
Leisure	71	14.4	69	9.2
Industrial Buildings	54	13.0	55	10.8
Healthcare	86	19.1	85	9.1
Education	263	20.7	272	10.0
Commercial Other	4	17.4	2	9.7
Commercial Offices	60	19.8	56	9.3
Commercial Retail	123	20.9	122	15.0
Total number of projects	1387		1385	

Figure 5 BRE SMARTWaste benchmark data by project type

The table below is a breakdown of the quantities of Construction Waste which will be produced based on the BRE data outlined above.

Table 2 Quantities of Proposed Construction Waste

Type	Proposed Gross Internal Floor Area (m^2)	Average m^3/ $100m^2$	Construction Waste (m^3)
Leisure	c. 630	14.4	90.7

Therefore, the total Waste from buildings to be generated during the construction phase of the project is estimated at c. $100m^3$. The Contractor will ensure that Waste generation on site is minimised and that Waste removed from site for recovery or disposal is reduced where feasible.

4.5.4 Construction Waste Management

The Contractor shall as a minimum implement the following measures to prevent Waste generation, facilitate Waste recycling and minimise Waste disposal during the construction phase:

4.5.4.1 Source Segregation

Metal, timber, glass and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation. Office and food Waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual Wastes. Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations. All hazardous Waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate Waste collection holder. Waste bins, containers, skip containers and storage areas will be clearly labelled with Waste types which they should contain, including photographs as appropriate. The site will be maintained to prevent litter and regular litter picking will take place throughout the site.

4.5.4.2 Material Management

"Just in time" delivery will be used so far as is reasonably practicable to minimise material wastage. Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised Waste facility. The Contractor will ensure that any off-site interim storage facilities for excavated material have the appropriate Waste licences or Waste facility permits in place.

4.5.4.3 Further Detailed Development of the CWMP by the Contractor

The Contractor will be required to further develop and detail this CWMP prior to commencement of the proposed works and, as a minimum, include the following: -

- Details of the Contractor including the nominated project manager,
- names, roles, responsibilities and authority of key personnel involved in Waste management in the design team and on site,
- Estimates of Waste generation including the types and quantity of Wastes generated,
- Types and quantities of excavation material, if any,
- Measures to reduce Waste generation,
- The amounts of material intended to be stored temporarily on site and the location of such storage,
- Measures to prevent nuisances etc.,
- Authorised Waste hauliers with appropriate and up to date Waste Collection Permits,
- Recycling and disposal sites, including copies of permits/licences for Waste facilities,
- Any other relevant item during the works, which may be brought to the attention of the design team or the Contractor which should be reasonably addressed and inserted into the detailed Construction Waste management Plan.

The following procedures, as a minimum, should be included in the plan where relevant: -

- Control of Sub-Contracts, if applicable, which must include the assessment of the sub-Contractor's Waste management policies and control capabilities, and the identification and

implementation of additional controls needed on such Sub-Contractors to fulfil the design teams and Contractor's obligations in respect of Waste management,

- Waste management including liaison with third parties, statutory bodies, Waste hauliers, Waste disposal facilities and other companies,
- Excavation and handling of Waste materials to prevent nuisance,
- Segregation and proper storage of materials on site to facilitate reuse and recycling,
- Management of any hazardous or contaminated Waste,
- Control of all documentation relating to the handling, transportation and disposal of Waste,
- Management review/audits to monitor and demonstrate control over the implementation of the detailed Construction Waste Management Plan.

4.6 Collection of Construction Waste

Waste from Construction will be transported by authorised Waste collectors in accordance with the Waste Management (Collection Permit) Regulations 2007, as amended. An up-to-date list of all Waste collectors used to transport Waste from site during the proposed development will be maintained on site and updated by the Contractor and be similar to the sample Waste Collection Permit table below. The Contractor shall hold valid Waste collection permits on site.

Table 3 Sample Waste Collection Permit Table (form is left blank intentionally)

Name of Authorised Waste Collector	Company Address	National Waste Collection Permit Number	Waste Types Collected (Text Description)	Waste Types Collected (EPA LoW Codes)

4.7 Offsite Disposal of Construction Waste

Waste from Construction will be delivered to authorised Waste facilities in accordance with the Waste Management Act 1996, as amended. The Contractor shall maintain an up-to-date list, similar to the sample Table below, of all Waste facilities to which Waste from the site will be delivered and copies of valid appropriate facility Certificates of Registration, Waste Facility Permits and Waste Licences.

Table 4 Sample Authorised Waste Facilities (form is left blank intentionally)

Name of Authorised Waste Facility	Waste Facility Address	Number of Waste Licence/ Waste Permit/ Certificate of Registration	Regulatory Authority	Waste Types to be delivered (Text Description)	Waste Types to be delivered (EPA LoW Coes

4.8 Construction Waste Management Costs

As required by the Department of the Environment, Heritage and Local Government Best Practice Guidelines on the Preparation of Waste Management Plans for Construction Projects this section addresses costs of Waste management. The total cost of implementation of the CWMP will be measured by the Contractor and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

4.8.1 Reuse/ Recovery

By reusing materials on site, there will be a reduction in the transport and disposal costs associated with the requirement for a Waste Contractor to take the material away to landfill. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be classified as a by-product (under Article 27 of the 2011 Waste Directive Regulations), used as capping material for landfill sites, or for the reinstatement of quarries etc. subject to approvals by EPA. This material is often taken free of charge for such purposes, or when used as capping in landfills will not attract the landfill tax levy, thereby reducing final Waste disposal costs.

4.8.2 Recycling

Salvageable metals will earn a rebate which can be offset against the cost of collection and transportation of the skips. Clean, uncontaminated cardboard and certain hard plastics can be

recycled. Waste Contractors will charge considerably less to take segregated Wastes such as recyclable Waste from a site than mixed Waste. Timber can be recycled as chipboard. Again, Waste Contractors will charge considerably less to take segregated Wastes, such as timber from a site than mixed Waste.

4.8.3 Disposal

Landfill charges are currently at approximately €160/tonne (includes a €75 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2012) for non-hazardous Waste and €25/tonne for inert Waste. In addition to disposal costs, Waste Contractors will also charge a collection fee for skips. Collection of segregated C&D Waste usually costs less than municipal Waste. Specific C&D Waste Contractors take the Waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the Waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material wherever possible.

4.9 CMWP Auditing

The Contractor's CWMP shall carry out regular Waste Audits in accordance with the Contractors Project Specific Waste Audit Plan which shall be a systematic study of the Waste management practices applied in the project to highlight the problems that Waste can cause and the benefits of prevention and minimisation. The CWMP's Audits shall allow the Contractor to monitor the quantity and type of Waste produced by different Sub-Contractors and identify opportunities for Waste reduction throughout each stage of the project. The Audit should identify details of raw material inputs and the quantity, type and composition of all Waste form the site. The Contractor will record the quantity in tonnes and types of Waste and materials leaving the site during the works. The name, address and authorisation details of all facilities and locations to which Waste and materials are delivered will be recorded along with the quantity of Waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of. The Audit shall highlight corrective actions that may be taken in relation to management policies or site practice in order to bring about further Waste reductions which shall be supplemented with a tracking system to determine the success or failure of the corrective actions. Finally, summary audit reports outlining types, quantities of Waste arising's and their final treatment method should be sent to the relevant Authority for their information.

4.10 References

- Department of the Environment, Heritage and Local Government (DoEHLG), 2006a. Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects (latest edition)
- Environmental Protection Agency (EPA), 2017. Construction and Demolition Waste Statistics for Ireland. Latest Reference Year: 2014
- EPA, 2016. Ireland's Environment 2016 – An Assessment. EPA, Wexford, Ireland

- EPA, 2015. Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-hazardous.
- EPA, 2014. National Waste Report 2012. EPA, Wexford, Ireland

5 Construction Environmental Management

5.1 General

The following section outline the Construction Environmental Management Plan (CEMP) which provides a framework that outlines how the appointed Contractor will manage and minimise, where possible, negative environmental effects during the construction of the proposed development where construction is considered to include all site preparation, enabling works, construction activities, materials delivery, materials and waste removal and associated engineering works. This CEMP;

- Outlines and indicative programme for Construction,
- Describes the land-use requirements of the construction phase,
- Outlines the employment requirements, roles and responsibilities associated with the construction phase of the proposed development,
- Outlines all the measures which shall be implemented by the appointed contractor to ensure that no significant effects on the environment occur during the construction phase of the proposed development.

Following appointment, the Contractor, as part of the CMP, shall be required to develop more specific Method Statements and submit a Project Specific CEMP that is cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the proposed development. This CEMP outlines the range of potential types of construction methods, plant and equipment which may be used by any Contractor appointed in order to enable their impacts to be assessed by the competent authority for the purposes of the environmental impact assessment and appropriate assessment prior to determining whether to grant planning permission. This CEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with this CEMP does not absolve the Contractor or its Sub-Contractors from compliance with all legislation and bylaws relating to their construction activities.

5.2 Duration and Sequencing

It is envisaged that the construction of the proposed development shall be as follows;

Table 5 Proposed Development Duration

Phase 1 Playground / Natural Play / Toddler	
Enabling Works & Site Set Up / Hoarding	Phase 1 will commence in Summer 2026 and will be completed by early Autumn of the same year. No builders compound is required for these works.
Installation of natural play area	
Installation of toddler area	
Installation of playground	
Installation of soft landscaping and permeability links	
Phase 2 & 3 MUGA / Teen Space	
Enabling Works & Site Set Up / Hoarding	Phases 2, 3, 4 and 5 will run concurrently and commence in late Spring / early Summer 2027. Phases 2, 3 and 5 will be complete by late Summer / early Autumn of the same year, at which point the hoarding around them will come down.
Construction of MUGA pitch and associated drainage	
Construction of teen space	
Installation of soft landscaping and permeability links	
Phase 4 Building Works	
Enabling Works & Site Set Up / Hoarding	The foundations and superstructure works for the building (Phase 4) will commence in late Spring / early Summer 2027 and be completed by early Autumn 2027. The internal fitout works will be completed by mid-Summer 2028 at which time the hoarding and builders' compound will be removed and the path re-instated.
Foundations, superstructure, external drainage connections	
Internal fitout	
External paths reinstatement	
Phase 5 Entrance Works	
Enabling Works & Site Set Up	Phases 5 will run concurrently with Phase 2 & 3 and will also commence in late Spring / early Summer 2027 and will be completed by late Summer / early Autumn of the same year, at which point the hoarding around these areas will be removed.
New entrance works	
Reinstatement of surfaces	

Figure 6 - Phasing Plan

Figure 6.1 Hoarding for Phase 1

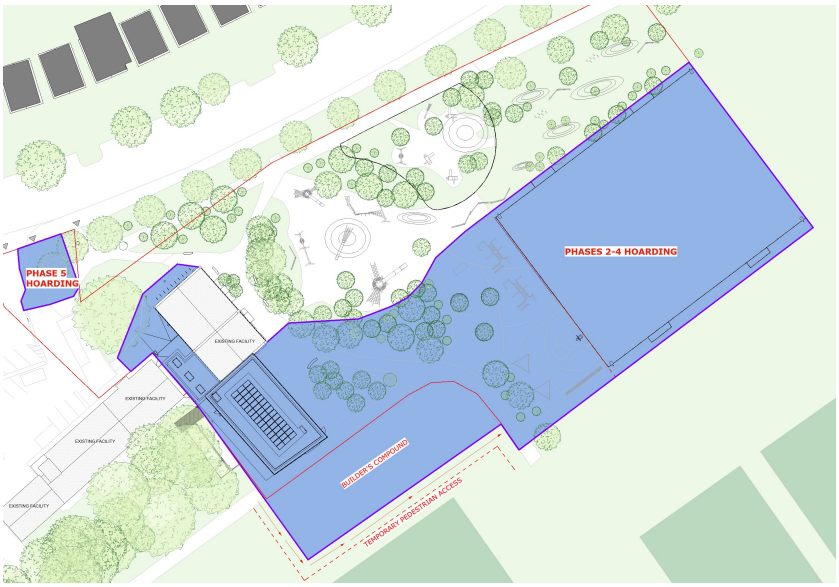

Figure 6.2 Hoarding for Phases 2-4

Figure 6.3 Hoarding for Phases 4

5.3 Construction Compound

The Contractor's construction compound will be located on site and shall primarily consist of

- Site Offices & associated welfare facilities,
- Materials drop-off and storage areas;
- Set down areas for HGVs
- Temporary car parking facilities
- Temporary fencing and hoarding

Materials to be stored on will be stored in a safe manner and will minimise the risk of any negative environmental effects and will be managed on a 'just-in-time' basis.

5.3.1 Fuel Storage

- All hydrocarbons used during the construction phase will be appropriately handled, stored, and disposed of in accordance with recognised standards as laid out by the EPA within the Guidance Note on Storage and Transfer of Materials for Scheduled Activities (EPA, 2004);
- All chemical and fuel filling locations will be contained within signposted, designated bunded areas, a minimum of 10m from any surface water drains;
- At the construction compound, where the site is pervious, an area of hard standing will be installed in a demarcated area for refuelling, and vehicle / plant cleaning and service areas. This area will be drained via a hydrocarbon interceptor trap to a soakaway if possible, or to local surface water drains, with the permission of the asset owner, under a permit or licence authorised by the relevant authority;
- The retained contents of the separators will be collected for disposal by a licensed operator to a licensed waste disposal / recovery facility;
- Suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans) including:
    - Each container or piece of equipment will be stored in its own drip tray made of a material suitable for the substance being handled;
    - Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed, and staff will be trained on the procedures to be followed; and
    - Containers and equipment will be stored on a firm, level surface.

- Procedures and contingency plans will be in place at each work area to address cleaning up small spillages as well as dealing with an emergency incident. A stock of absorbent materials such as sand, spill granules, absorbent pads and booms will be kept at the work site, on plant working near any surface water drains and particularly at refuelling areas and where fuel or oil is stored;
- The storage of fuels, other hydrocarbons and other chemicals within the construction compound shall be in accordance with relevant legislation and with best practice. In particular:
    - Fuel tanks, drums, and mobile bowsers (and any other equipment that contains oil and other fuels) will be housed within a bund of at least 110% capacity of the fuel tank itself or at least 25% of the total volume of the containers, whichever is greatest. The fuel tank will be double skinned. There will be no passive drainage from the bund; any water collected within it will be pumped out and removed off site for disposal; and
    - Any designated area or areas for oils, fuel, chemicals, hydraulic fluids, etc. storage and refuelling will be set up at least 10m from any surface water drains (C649 – CIRIA, 2006b) and the storage location within the construction compound shall be organised so as to be as far away from surface water drains as is practicable to minimise risks from leaks and spills.
- Storage areas will be covered, wherever possible, to prevent rainwater filling the bunded areas;
- Fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain;
- Where fuel is delivered through a pipe permanently attached to a tank or bowser:
    - The pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use;
    - The pump or valve will be fitted with a lock;
    - The pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser;
    - The pipework will pass over and not through bund walls;
    - Tanks and bunds will be protected from vehicle impact damage;
    - Tanks will be labelled with contents; capacity information and hazard warnings; and
    - All valves, pumps and trigger guns will be turned off and locked when not in use. All caps on fill pipes will be locked when not in use.

5.3.2 Fuel Spillage

Emergency procedures will be further developed by the contractor with either project-specific works, area-specific or activity-specific measures, and all personnel will be required to know these procedures.

Effective pollution control relies on the following elements, with regards to fuel, and chemical spillages:

- Identification of receptors / pathways (e.g. amenity grassland/surface water drains);
- Identification and clear marking of surface water drain locations within the construction compound and other work areas;
- Having designated re-fuelling areas;
- All hydrocarbons used during the construction phase will be appropriately handled, stored, and disposed of in accordance with recognised standards as laid out by the EPA;
- Identification of all possible emergency scenarios;
- Effective planning, e.g. oil booms and oil soakage pads will be maintained at appropriate locations on site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal;
- Identification and dissemination of contact numbers;
- Definition of personnel responsibilities;
- Assurance that all appropriate personnel are aware of the emergency procedure(s) (e.g. spillage, leakage, fire, explosion, and flooding), that drain covers and spill kits are available, and personnel know how to use them;
- Knowledge of incident scenarios, such as spill drills; and
- Implementation of lessons learnt from previous incidents.

In terms of pollution spill response procedures, these will vary depending on the sensitive receptor and nature of construction activities. However, the following information will be included as a minimum and displayed at appropriate locations within the proposed development, at re-fuelling locations, fuel storage areas etc.:

- Instructions on how to stop work and switch off sources of ignition;
- Instructions on how to contain the spill;
- Location of spill clean-up material;

- Name and contact details of responsible personnel (these personnel will assess the scale of the incident to determine whether the environmental regulator needs to be called); and
- Measures particular to that location or activity.

Emergency equipment will be obtained from a reputable supplier, and personnel will be trained in its correct use. Material safety data sheets and best practice assessments will be used for advice on appropriate spill measures. The type of equipment required will depend on the activity taking place. Every effort will be made to prevent an environmental incident during the construction phase of the proposed development. The objective of the surface water management measures is to prevent an incident arising in the first place. Oil / fuel spillages are one of the main environmental risks that will exist during the construction phase of the proposed development which will require an emergency response procedure. An example of the steps that will be followed in the event of a spillage to ensure that the environmental risk is reduced to as low as reasonably practical is provided in this section. This procedure can be tailored to be location / activity specific as required:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers;
- Notify the environmental manager immediately giving information on the location, type, and extent of the spill so that they can take appropriate action;
- If necessary, the environmental manager will inform the appropriate regulatory authority, including the Fire Services, depending on the size and nature of the spill - the appropriate regulatory authority will vary depending on the nature of the incident; and
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident; and
- Contain the spill using the spill control materials, track mats or other material as required. Do not use detergent or hoses to disperse spilled fuel.

If possible, cover or bund off any vulnerable areas where appropriate such as drains:

- Clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully-licensed waste contractor with the appropriate permits so that further contamination is limited. The details of the incident will be recorded on an Environmental Incident Form and follow set protocols (see Environmental Incidence Response section below).

5.3.3 Environmental Incidence Response

Environmental incidents are not limited to just fuel spillages. For example, other environmental incidents may include:

- Accidental stripping of a protected habitat or habitat to be retained;
- Accidental release from settlement pond / tank etc.; and
- Unplanned utility strikes, resulting in foul water releases, temporary loss of services etc.

Therefore, any environmental incident will be investigated in accordance with the following steps:

- Immediately notify the environmental manager, giving information on the location, type, and extent of the incident so that they can take appropriate action;
- In the very unlikely event of an incident occurring which may impact on a sensitive receptor, the environmental manager will inform the appropriate persons / regulatory authority. The appropriate persons / regulatory authority will vary depending on the nature of the incident;
- The details of the incident will be recorded on an Environmental Incident Form (identified by the appointed contractor) which will provide information such as the cause, extent, actions, and remedial measures used following the incident.

The form will also include any recommendations made to avoid the reoccurrence of the incident;

- A record of all environmental incidents will be kept on file by the environmental manager and the appointed contractor. These records will be made available to the relevant authorities if required; and
- The environmental manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the appointed contractor as appropriate.

By carrying out the above steps, a proper system will be in place to investigate, record and report any potential accidents or incidents.

5.3.4 Welfare and Sanitary Facilities

Temporary toilets and wash facilities will be provided for construction workers which may require periodic waste pumping and waste offsite haulage and shall be carried out by an authorised sanitary waste contractor. Alternatively, the Contractor may utilise an existing foul drainage connection for site welfare facilities, subject to agreement with Irish Water.

5.4 Site Management

5.4.1 Hoarding

The Contractor will establish a site boundary with the provision of appropriate signage, construction of hoarding, and welfare facilities, site office, and establishment of appropriate access and egress. The construction site hoarding will be provided as a secure site boundary to what can be a dangerous

environment for people who have not received the proper training and are unfamiliar with construction operations established around the work area before any significant construction activity commences. Site hoarding minimises some of the potential environmental impacts associated with construction, namely:

- Noise,
- Visual impact,
- Dust.

Controlled access points to the site, in the form of gates or doors, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). The hoarding shall be minimum 2m high, solid, painted, well maintained and contain graphics relating to the proposed development.

5.4.2 Security

The Contractor shall ensure that the site hoarding will avoid unauthorised entry to site and thus minimise the risk of vandalism.

5.4.3 Site Maintenance

The Contractor shall continuously maintain the site and its surround environs by carrying out the following: -

- Maintain work areas and ensure staff welfare facilities and material storage areas are kept clean,
- Provide site layout maps identifying key areas such as first aid posts, material storage, spill kits, material and waste storage and welfare facilities,
- Maintain all plant, material and equipment required to complete the construction work,
- Maintain construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times,
- Prevention of the discharge of fuel & oil from bunded areas,
- Provision of appropriate waste management at each working area,
- Prevention of infestation from pests or vermin,
- Maintenance of wheel washing facilities,
- Prevention of site runoff or surface water discharge,
- Maintenance of public rights of way, diversions and entry/ exit areas around working areas for pedestrians and cyclists where practicable,

- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

5.4.4 Site Lighting

The Contractor shall implement the following measures in relation to site lighting: -

- Site lighting will be provided with the minimum luminosity sufficient for safety and security purposes 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,
- Site lighting positioned and directed so as not to unnecessarily intrude on adjacent buildings and land uses, ecological receptors and to avoid causing distraction or confusion to passing motorists,
- Provide tower crane mounted 1000W metal halide floodlights which will be cowled and angled to minimise spillage to surrounding properties.

Site lighting required during construction stage will be installed in a manner that it is positioned, directed and cowled away from any dark corridors (e.g. neighbouring treelines) beyond the site boundary, therefore avoiding any unnecessary light spill and disturbance to bat activities. The site lux levels (i.e., within suitable foraging and commuting habitats for local bat species, such as the amenity grassland to the west of the site, and the treeline along the site's eastern border), will not be increased above baseline levels as a result of construction activities within the locality of the proposed development site. Furthermore, wherever reasonably possible, works will be carried out in daylight hours in order to reduce the need for lighting within the development site.

An appointed Ecological Clerk of Works (ECoW) will be present when site lighting is initially set up in a works area and will regularly monitor the lux levels to ensure that they are not impacting dark corridors or secondary foraging locations. The ECoW should be a bat specialist and will also familiarise themselves with the following best practice documentation in order to ensure that they are correctly fulfilling their role in respect to lighting mitigation:

- Bats and Artificial Lighting at Night – Guidance Note 08/23 (BCT, 2023);
- Bats & Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (BCI, 2010); and
- The reduction of Obstructive Light – Guidance Note GN01/21 (ILP, 2021).

5.4.5 Working Hours

The proposed normal working hours, subject to Planning Permission, during the construction phase are as follows: -

Start	Finish	Day(s)
08 00	18 00	Monday to Friday
08 00	13 00	Saturday

No works are proposed on Sundays or Bank Holidays or after the hours noted above, however, it may be necessary to work outside of these hours in exceptional circumstances such as Night Works or Weekend Works during certain construction activities.

5.4.6 Employment

It is anticipated that at the peak of the construction phase that there will be an average work force of 10-20 people.

5.4.7 Construction Health & Safety

The Contractor shall comply with the requirements of the Safety, Health and Welfare at Work Act 2005, the Safety, Health and Welfare at Work (Construction) Regulations, 2006 and other relevant Irish and EU safety legislation at all times. As required by the Regulations, a Health and Safety Plan will be formulated which will address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses. In accordance with the Regulations, a "Project Supervisor Construction Stage" will be appointed as appropriate. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

5.4.8 Emergency Response

The Contractor will maintain an Emergency Response Action Plan which will cover all foreseeable risks, i.e., fire, spill, flood, etc. and will be developed in accordance with the site emergency plan. Appropriate site personnel will be trained as first aiders and fire marshals and be trained in environmental issues and spill response procedures.

5.4.9 Construction Waste Management

The Contractor will be required to produce a CWMP for approval by Dun Laoghaire Rathdown County Council prior to commencing the Works. The Contractor shall refer to and expand on this Construction Waste Management Plan prepared by DOBA and shall include but not be limited to the following: -

- Description of the Project and details of the Contractor's Construction Waste Manager
- Construction Waste Arising and proposals for waste minimisation, reuse and recycling
- Procedures for waste prevention & management

- Estimated costs of waste management
- Training & education proposals for the workforce regarding Construction and Demolition Waste procedures
- Waste collection & disposal including licensing, permits and associated records
- CWMP Auditing

5.4.10 Construction Surface Water Run-off

The Contractor shall provide site drainage during the Construction Phase to collect surface runoff prior to discharge off site, the details of which shall be agreed with Irish Water.

5.5 Environmental Management

The final contractor's CEMP will include all of the mitigation measures described in the NIS / Ecology reports. The following section summarises a non-exhaustive list of construction related mitigation and monitoring measures that must be implemented by the appointed Contractor during the construction phase of the proposed development and should be read in conjunction with the NIS and Ecology reports.

5.5.1 Mitigation Measures

5.5.1.1 Traffic & Transport

The Contractor is required to develop a Site-Specific Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) in order to implement the requirements as outlined in this CEMP and shall be agreed with Dun Laoghaire Rathdown County Council and An Garda Síochána prior to commencement.

5.5.1.2 Air Quality

The following are the Air Quality mitigation measures which are deemed appropriate to the proposed development:

- Spraying of exposed earthwork activities and site haul roads during dry weather;
- Provision of wheel washes,
- Covering of stockpiles,
- Control of vehicle speeds, speed restrictions and vehicle access;
- Sweeping of hard surface roads.

In addition, the following measures will be implemented for during the construction phase of the proposed development:

- A min. 2m hoarding will be provided around the site works to minimise the dispersion of dust from the working areas,
- Any generators will be located away from sensitive receptors in so far as practicable,

Any asbestos discovered during construction will be removed by a Specialist Contractor in accordance with Safety, Health, and Welfare at Work (exposure to Asbestos) Regulations 2006/20137, and disposed of by specialist contractors to an appropriately licensed facility. Traceable records of this activity, including the disposal licence, will be kept.

5.5.1.3 Dust Management

The following dust management mitigations provide the strategy to be adopted in order to manage dust during construction. These mitigation measures are in accordance with the IAQM Guidance (IAQM, 2024), with the mitigation measures proposed in accordance with the determination that the highest risk category should be applied to the construction phase of the proposed development.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager; and
- Display the head or regional office contact information.

Dust Management

The dust management mitigations within the CEMP will be updated by the construction contractor prior to the commencement of the construction phase, so as to include any additional measures required pursuant to conditions attached to any decision to grant approval. The mitigations may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and will include as a minimum the recommended dust mitigation measures outlined below. The recommended construction dust mitigation measures will be implemented as appropriate for the site. The dust management strategy will also include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and visual inspections.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked; and

- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in the logbook.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary;
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked; and
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, such as any surface water drains, as far as possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas; and
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

The IAQM Guidance (IAQM, 2024) Mitigation Measures applicable to the specific works to be undertaken as part of the proposed project are as follows:

Measures specific to earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

Measures specific to construction

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures specific to trackout

- Use water-assisted dust sweeper(s) on the access and local roads, i.e. Churchview Road, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); and
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

5.5.1.4 Concrete Management

The following measures will be implemented to prevent liquid concrete/ cement-based dust entering the adjacent habitats of ecological value.

- Wherever reasonably possible, pre-cast concrete features will be utilised to minimise the risk of a concrete-based pollution event.
- Concrete delivery, concrete pours and related construction methodologies will be part of the procedure agreed with the contractor to mitigate any possibility of spillage or contamination of the local environment. Particular attention will be paid during the pouring process in order to avoid leakages or spills of concrete.
- Washout of concrete plant will occur off site at a designated impermeable area with waste control facilities.
- Raw, uncured or waste concrete will be stored appropriately prior to disposal by licenced contractor.
- The contractor's construction methodology will require the use of precast elements where practical; the use of secondary protection shuttering for concrete pours; all pours to be carried out in dry weather conditions; and that all trucks be cleaned prior to leaving respective depots.

The contractor will be required to use experienced operators for the work; provide an appropriate level of continuous monitoring during any concrete pours by experienced management; and have method statements approved by the client prior to commencing works. Works will be carried out using recommendations from current guidance and relevant codes of practise as outlined in EA (2011) - Managing concrete wash waters on construction sites: good practice and temporary discharges to ground or to surface waters.

5.5.1.5 Climate

As no significant impacts are predicted during the construction phase, no mitigation measures are proposed.

5.5.1.6 Noise & Vibration

The construction of the development will largely be limited to daylight hours where possible, ensuring minimum disturbance to commuting and foraging activities of local wildlife. The works will also be temporary. With regard to construction activities, reference will be made to BS 5228- 1, which offers detailed guidance on the control of noise from demolition and construction activities. A variety of practicable noise control measures will be employed. These include:

- Limiting the hours during which site activities likely to create high levels of noise are permitted. Construction activities will take place Monday to Friday, between 07:00 and 18:00, and on Saturdays, between 08:00 and 13:00.
- A site representative responsible for matters relating to noise will be appointed to liaise with DLRCC

Additional guidance relevant to acceptable vibration and noise levels will be followed and is

contained in the following documents:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- British Standard BS 5228-2: 2009: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Vibration.
- NRA: 2014: Guidelines for the Treatment of Noise and Vibration in National Road Schemes.

The Contractor shall implement the following mitigation measures during construction activities in order to reduce the noise and vibration impact to nearby noise sensitive areas.

  - Site compounds will be located away from noise sensitive receptors within the site constraints.
  - The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
  - For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
  - For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.

- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- Demountable enclosures to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant will be subject to regular maintenance to prolong the effectiveness of noise control measures.
- Construction site hoarding to be constructed around the site boundaries of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.
- Construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion and be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- The following noise conditions shall be adhered to (subject to DLRCC conditions):
  - 70dB(A) (LAeq 1 hour) between 0800 hours and 1800 hours Monday to Friday inclusive (excluding bank holidays) and between 0800 hours and 1300 hours on Saturdays when measured at any noise sensitive location in the vicinity of the site. Sound levels shall not exceed 45dB(A) (LAeq 1 hour) at any other time following completion of the site development works.

5.5.1.7 Vibration

Vibration Limits to be applied for the duration of construction works are as set out in BS 5228-2:2009+A1:2014 (Code of Practice for Vibration Control on Construction and Open Sites) and BS 7385: 1993 (Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration). Allowable vibration during the construction phase is summarised below in **Table 6.**

Table 6 Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive properties to the source of vibration

Allowable vibration at the closest part of sensitive properties adjacent		
Less than 4Hz	15 to 40 Hz	40Hz (and above)
12mm/so	12.5mm/so	50mm/so

5.5.1.8 Construction Timing Restrictions

It is critical that the construction phase adheres to the timeline outlined under the proposed hoarding plans. To further reduce potential audible based disturbance on wintering birds foraging within the amenity grassland areas adjacent to the site, it is recommended that the following activities be undertaken outside the wintering bird season (October – February inclusive);

- Removal of the storage containers from site; and
- Removal of trees onsite – this should be undertaken in September to avoid being conducted within the breeding bird season (March – August Inclusive). This is addressed further in sub-section 5.5.1.9 below.

5.5.1.9 Mitigation for Tree Clearance

As mentioned in sub-section 5.5.1.8, the clearance of the 10 trees on site should also be undertaken outside the wintering bird season (October – February inclusive). The clearance of the ten trees from site should also be conducted outside of the breeding bird season (March – August inclusive), in September. In particular, the Elm tree adjacent to the storage unit should be removed in September due to its canopy complexity, which may obscure nests from construction personal or an ecologist. For the remainder of the trees, if it is not possible to clear them outside the breeding bird window, a breeding bird survey by an appropriately qualified ecologist will be undertaken in advance of the works to ensure that there will be no impacts on nesting birds. If nests are found, they will be safeguarded, with an appropriate buffer, until the chicks have successfully fledged.

5.5.1.10 Root Compaction and Limb Damage Avoidance

In order to avoid the damage and compaction of the roots of the retained trees:

- Machinery will avoid areas in rooting zones or by areas occupied by the parkland or standalone trees.
- An appropriate buffer zone around trees and vulnerable vegetation will be implemented using heras fencing in order to reduce the risk of accidental root or limb damage.
- In order to mitigate for dry, windy days, exposed soil will be dampened down during periods of dry weather in order to minimise the generation of dust that would damage local vegetation

5.5.1.11 Light Bellied Brent Geese Monitoring

A monitoring programme of human disturbance and lighting impacts on LBBG will be carried out by a bird specialist for agreement with DLRCC Biodiversity Officer.

5.5.1.12 General Avoidance Measures

Although it has been identified that there will be no permanent impact through disturbance to wildlife during the work, it is advised that general avoidance measures be undertaken to protect wildlife while the works are being carried out.

General avoidance measures that should be incorporated by the contractors working on site include:

- Limit the hours of working to daylight hours, to limit disturbance to nocturnal and crepuscular animals;
- Due to the presence of bat species, the use of lighting at night should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from all treelines / wooded areas.
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled; and
- Any pipes should be capped when not in use (especially at night) to prevent local fauna becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape.

5.5.1.13 Biodiversity

The measures outlined below will ensure the protection of ecological sensitivities at the site and around the site. The mitigation measures outlined below should be applied during the construction and operational phases of the development to protect against potential negative impacts on designated conservation sites or species of conservation importance.

Measures to be carried out to prevent impacts on Habitats, Botany and Avian Ecology include the following:

- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August).
- Replanting of the perimeter treelines, hedgerows and wildflower meadows should be carried out with native species.
- Construction operations outside of daylight hours should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species.
- Where possible, treelines and mature trees that are located immediately adjacent to planned construction areas or are not directly impacted should be avoided and retained intact. Overall

impacts on these sites should be reduced through modified design and sensitivity during construction. Retained trees should be protected from root damage by machinery by an exclusion zone of at least 5 metres or equivalent to canopy height. Such protected trees should be fenced off by adequate temporary fencing prior to other works commencing.

- Boundary vegetation. Linear features such as hedgerows and treelines may serve as commuting corridors for bats (and other wildlife) and the onsite boundary vegetation should be retained and/or replaced once construction ends. Native species should be chosen in all landscaping schemes. Planting schemes should attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development.
- Lighting restrictions. In general, artificial light creates a barrier to bats so lighting should be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) should be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Mature trees should not be directly lit during construction or operation of the proposed development.
- During the enabling works all surface water from site will go to foul following desilting. All surface/pumped water will go to foul until the surface water infrastructure is complete, flow controls installed and inspected.
- Desilting and petrochemical interception of all surface runoff/pumped water will take place for the length of the construction project.
- A petrochemical interceptor will be placed on the surface water network prior to discharge.
- Local silt traps established throughout site.
- Mitigation measures on site include dust control, stockpiling away from watercourse and drains
- Stockpiling of loose materials will be a minimum of 20m from drains.
- Stockpiles and runoff areas following clearance will have suitable silt barriers to prevent runoff of fines into the drainage system.
- Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, excavations and other locations where it may cause pollution.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the surface water

network. Prior to discharge of water from excavations adequate filtration and petrochemical interception will be provided to ensure no deterioration of water quality and ensure compliance with the Water Pollution Acts.

- Site layout during excavation works will be designed to ensure vehicles do not enter the works area unless necessary for the excavation and soil removal processes. All machinery leaving the works area will be thoroughly cleaned before being allowed on to public roads. A road sweeper (including vacuum) will be in place (as required) to unsure cleanliness of nearby and haul roads (where necessary), particularly during enabling works.
- Dust may deposit on surrounding roads thus entering into the surface water network. Effective site management regarding dust emissions will be carried out.

5.5.1.14 Land & Soils

Precautionary measures will be taken to contain any areas within the planning boundary at risk of contaminated run-off. A minimum stock of spill kits will be maintained at all times and site foremen's vehicles will carry large spill kits at all times. Absorbent material will be used with pumps and generators at all times and used material disposed of in accordance with the Waste Management Plan. Regular inspections and maintenance of plant and machinery checking for leaks, damage or

vandalism will be made on all plant and equipment. In the event of a spill the Contractor will ensure that the following procedure are in place:

- Emergency response awareness training for all project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site.
- All potentially polluting substances such as oils and chemicals used during construction will be stored in containers clearly labelled and stored with suitable precautionary measures such as bunding within the site compound.
- Oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal.
- Damaged or leaking containers will be removed from use and replaced immediately.

The Contractors CEMP shall also include the following measures: -

- Provide adequate security to potential pollutants against vandalism,

- Provide procedures to ensure that any spillages will be immediately contained, and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility,
- Minimise dust generation by wetting down haul roads,
- Store stockpiles of earthworks and site clearance material on impermeable surfaces and covered with appropriate materials,
- Place silt traps in road gullies to capture any excess silt in the run-off from working areas,
- Carry out earthworks operations such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding,
- Control runoff will be controlled erosion and sediment control structures appropriate to minimise the possible impacts.

The Contractors CEMP shall include a plan for responding to emergencies and shall include actions for dealing with potential pollution incidents such as: -

- Containment measures;
- Emergency discharge routes;
- List of appropriate equipment and clean-up materials;
- Maintenance schedule for equipment;
- Details of trained staff, location and provision for 24-hour cover;
- Details of staff responsibilities;
- Notification procedures to inform the EPA or the Environmental Department in Dun Laoghaire Rathdown County Council
- Audit and review schedule;
- Telephone numbers of statutory water consultees; and
- List of specialist pollution clean-up companies and their telephone numbers.

5.5.1.15 Hydrogeology

The Contractor's CEMP will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors to minimise the risk of soil, groundwater and surface water contamination. In addition, Groundwater Monitoring shall be carried out by the Contractor, throughout the Construction Phase of the Project and for a minimum of one full hydrological year following completion or such time as approved by Dun Laoghaire Rathdown Co. Co. and/ or as specified in the planning decision. The Contractor shall appoint a

suitably qualified professional to monitor ground water during and after construction and shall install a minimum of 2 no. boreholes with standpipes to monitor groundwater at locations to be agreed with the Engineer prior to the commencement of construction. The Contractor shall implement the following measures to minimise the risk of spills and contamination of soils and waters: -

- Treat all excavated spoil to remove excess fluid prior to stockpiling and transportation where possible,
- Transfer excess soil materials from stockpile areas off-site during dry periods where feasible,
- Restrict stockpile and transfer of excess soil material to specified and impermeable areas that are isolated from the surrounding environment,
- Provide wheel washes at site entrances and exit points,
- Train staff to follow vehicle cleaning procedures.
- Train site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures,
- Bund all fuel storage facilities away
- Implement a regular vehicle inspection plan for fuel, oil and hydraulic fluid leaks.
- Provide suitable equipment to deal with spills on site;
- Minimise the use of cleaning chemicals; and

5.5.1.16 Waste Management

As noted previously, the Contractor will be required to produce a Construction Waste Management Plan (CWMP) for approval by Dun Loaghaire Rathdown County Council prior to commencing the Works.

5.5.1.17 Material Assets

The Contractor shall put measures in place to ensure that there are no interruptions to existing services and that all services and utilities are maintained, unless this has been agreed in advance with the relevant service provider and local authority. Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

5.5.1.18 Major Accidents & Incidents

The construction phase of the proposed development will be carried out by the Contractor in compliance with best practice construction measures. Asbestos, where identified, shall be removed from site and disposed of prior to construction in accordance with statutory requirements.

5.5.1.19 Operational Mitigation

Tree Planting

The proposed landscape plan include the planting of trees within the existing treeline adjacent to the play space and within the proposed natural play area to the east of the MUGA pitch. Tree species used should be native and suitable for parkland environments. Recommended tree species include Alder Alnus glutinosa, Bird Cherry Prunus padus, Rowan Sorbus aucuparia, and Silver Birch Betula pendula, which are all native species and/or found within the locality of the development.

Bats

Lighting Design

Site lighting should adhere to the proposed lighting plan, which minimises light spillage within the area surrounding the proposed MUGA pitch. This can be re-checked with a biodiversity officer from DLRCC pre-construction.

Floodlight Schedule

The lux map for the proposed floodlighting (Appendix G) indicates that horizontal and vertical lux levels will exceed three lux for the treelines to the north and east of the MUGA pitch. lux levels within the amenity grassland area adjacent to the MUGA pitch will also exceed three lux, although these levels drop off quickly.

In order to prevent operational lighting impacts on the foraging and commuting habitat within the site, flood lights will be operated on a scheduled basis during the seasons of bat activity (April - September). It is recommended that the site will follow a lighting schedule as outlined in the table below, where the floodlights will be turned off during the months of Apil, May, August, and September. Outside of these windows, floodlighting will be limited to between 06:00 and 08:00, and 17:00 until 22:00. The scheduled limitations of will contribute to maintaining a dark environment within the amenity grassland habitat to the west and south of the site, as well as the treeline along the site's eastern boundary.

Month	Lighting Schedules
January	06:00-08:00 and 17:00 until 22:00
February	06:00-08:00 and 17:00 until 22:00
March	06:00-08:00 and 17:00 until 22:00
April	No floodlighting allowed
May	No floodlighting allowed
June	06:00-08:00 and 17:00 until 22:00
July	06:00-08:00 and 17:00 until 22:00
August	No floodlighting allowed
September	No floodlighting allowed
October	06:00-08:00 and 17:00 until 22:00
November	06:00-08:00 and 17:00 until 22:00
December	06:00-08:00 and 17:00 until 22:00

5.5.1.20 Bat Boxes

The removal of the low potential PRFs identified within the hazel and elm trees on site will reduce the number of features on site that could later produce PRFs for local bat species. It is recommended that a minimum of three bat boxes should be installed on site to compensate for the loss of trees.

Example of suitable bat boxes include the 1FF Schwegler Bat Box with Built-in Wooden Rear Panel and the 2F Schwegler Bat Box (General Purpose).

Simple bat boxes suitable for pipistrelle's and Leisler's bats can be bought online or constructed by local community groups e.g. Men's Sheds. Note that some bat box designs (that are enclosed at the base) require annual cleaning out, which must be carried out by a Bat Specialist or NPWS Ranger.

Guidance on installing bat boxes is detailed in the following resource document:

http://www.batcon.org/images/InstallingYourBatHouse_Building.pdf

The approach for installing bat boxes can be summarised as:

- Suggested locations include areas with mature trees within treelines.
- All bat boxes should be mounted at least 4 metres above the ground.
- Mount on the south facing side of the tree where the box exposed to the sun for part of the day.
- Do not install bat boxes on a tree that is near any lighting column.

- If erecting a bat box on a building, erect as close as possible to the eaves of the building, and if possible, on building located adjacent or close to a treeline.
- If erecting on a mature tree, the placement must be free from ivy with no branches within a 1m radius around the location of the box.

These suggestions are generalised for the improvement of a site to become more bat friendly. As such, it is recommended that if there are intended to be bat enhancements on site, that a bat specialist provides more definitive advice on how and where to appropriately facilitate bat boxes.

5.5.1.21 Terrestrial Invertebrates

It is recommended that actions from the All-Ireland Pollinator Plan be implemented through the operation and management of the site, specifically for the Natural Play area and other grass areas around the site. Measures outlining pollinator-friendly management for councils to implement within parkland areas are detailed in the guidance document: Councils » All-Ireland Pollinator Plan (NBDC, 2016). The document outlines actions that can help enhance pollinator diversity within parkland areas where feasible, such as:

- Suitable mowing regimes for grassland areas;
- Native meadow planting and management;
- Provision of nesting places for wild bees.

5.5.2 Monitoring Measures

5.5.2.1 Traffic & Transportation

Refer to Section 6 of this document.

5.5.2.2 Air Quality

The Contractor shall undertake dust monitoring at a range of nearest sensitive receptors during the construction phases with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m^2/day, averaged over one year and applied as a 30-day average.

5.5.2.3 Climate

As no significant impact is predicted to occur during the construction phase of the proposed development, no monitoring measures are required.

5.5.2.4 Noise & Vibration

The Contractor shall carry out noise monitoring in accordance with the International Standard ISO 1996: 2017: Acoustics - Description, measurement and assessment of environmental noise and vibration in accordance with BS 7385-2 (1993)

5.5.2.5 Biodiversity

The Contractor shall ensure that the discharge of treated surface water from dewatering activities will be monitored to ensure that the discharged treated water will be in accordance with the Irish Water agreed Discharge Licence. The Contractor shall employ a suitably qualified Site Environmental Manager to oversee the control of settlement and advise of silt bag replacement where required.

5.5.2.6 Archaeology

Archaeological monitoring of groundworks during the construction phase is recommended in order to establish if any subsurface archaeological features or deposits are present within the site.

5.5.2.7 Water

In addition to those measures noted in Section 5.4 of this CMP, the Contractor shall carry out visual monitoring of the proposed development to ensure existing surface water runoff is draining from the site and is not exposed to any contaminants. In addition, the contractor is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials.

5.5.2.8 Land & Soils

The Contractor shall employ a suitably qualified person to monitor excavations in made ground to ensure that any contaminated material is identified, segregated and disposed of appropriately. The Contractor shall monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations. Any identified hotspots shall be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. In addition, care shall be taken to ensure that the hotspots do not cross contaminate clean soils elsewhere.

5.5.2.9 Hydrogeology

The Contractor shall carry out visual monitoring to ensure the groundwater resource is not impacted by the proposed development.

5.5.2.10 Waste Management

The Contractor shall manage waste during the construction phase in accordance with the Contractors CWMP. The data will be maintained to advise on future projects.

5.5.2.11 Material Assets

Construction phase mitigation measures have been proposed to ensure that significant negative effects on material assets will be avoided, prevented or reduced during the construction of the proposed development. As such, no monitoring measures are proposed during the construction phase.

5.5.2.12 Major Accidents & Incidents

No monitoring is proposed specific to reducing the risk of major accidents/ disasters during construction.

5.6 Surface Water Management Plan

The main Contractor shall prepare a site-specific Surface Water Management Plan as part of the Construction Management Plan and apply best practice standards which will follow the guidance set out in the following CIRIA documents: -

- CIRIA Guidance C532 Control of Water Pollution from Construction Sites
- CIRIA Guidance C741: Environmental good practice on site guide (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org).
- CIRIA Guidance C750D: Groundwater control: design and practice (Preene et al., 2016; CIRIA, 2019 - www.ciria.org).
- C692 Environmental Good Practice on Site
- Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland, 2003);
- PUB C811 Environmental Good Practice on Site, 5th Edition (CIRIA, 2023);
- Safety, Health and Welfare at Work (Construction) Regulations 2013 – S.I. No. 291 of 2013; and
- Road Drainage and the Water Environment DN-DNG-03065 (TII, 2015).
- ICE Earthworks, A Guide
- TII Specification for Road Works Series 600 – Earthworks
- IFI Publication 2016, "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*"

In order to safeguard the local surface water network, and in turn the local groundwater network, from surface water-based pollution events, the following must be strictly adhered to:

- The contractor will ensure compliance with environmental quality standards specified in the relevant legislation, namely European Communities (Environmental Objectives (Surface Waters)) Regulations, 2009 (S.I. No. 272 of 2009 and amendments);
- Management of silt-laden water on-site, including procedures for accidental leaks / spills to ground, as well as water quality monitoring to ensure compliance with environmental quality standards specified above;

- At no point during the construction phase will untreated-water be discharged to local surface water drainage network without the water quality meeting the statutory limits as set under the environmental quality standards specified above, or limits imposed by a relevant authority;
- Fail-safe site drainage and bunding, e.g. drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water;
- To prevent the spread of any accidental discharge into the surface water drainage network, oil retention booms will be on hand when construction activities are located beside aquatic habitats in order to control and minimise the spread of the spill;
- Washout of concrete plant will occur at a designated impermeable area with waste control facilities (C649 – CIRIA, 2006b);
- Concrete delivery, concrete pours and related construction methodologies will be part of the procedure agreed with the contractor to mitigate any possibility of spillage or contamination of the local environment. Particular attention will be paid during the pouring process in order to avoid leakages or spills of concrete; and
- Temporary stockpiles will be monitored for leachate generation. These stockpiles will be placed within designated areas (C649 – CIRIA, 2006b) and be located a minimum of 10m from any surface water drains The plan shall be focused around water quality protection and water quality monitoring.

In addition, the following sub-sections outline the minimum requirements of the Contractor's Surface Water Management Plan.

5.6.1 Water Quality Protection

The following site-specific measures are proposed for all phases of the project with respect to the protection of the quality of groundwater;

- Excavation works will be in accordance with the requirements of the Office of Public Works (OPW).
- No direct discharges made to waters where there is potential for cement or residues in discharge.
- Designated impermeable cement washout areas must be provided and which are to drain into the designated settlement tank on-site.
- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.
- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.

- All surface water infrastructure is to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements.
- Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning.
- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall surface water quality.
- Potential issues can be mitigated against by ensuring that the development's environmental management plan is adhered to prevent accidental on-site oil spillages and the regular maintenance of on-site plant to eliminate potential risks.
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will also be taken account of when planning excavations, with an objective of minimizing soil erosion.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- Discharge from any vehicle wheel wash areas is to be directed to the onsite settlement tank for discharge to the IW foul network.
- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.
- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.
- As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in the dedicated site compound. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.
- Hazardous construction materials shall be stored appropriately to prevent contamination of watercourses or groundwater.
- Dewatering measures should only be employed where necessary.

- In respect of surface water networks, during the construction period the system and traps are to be inspected a minimum 4 times a year as the accumulation of silt is prevalent during this period. The number of inspections should be pro-active and if silting is found to be excessive in any of the apparatus the number of inspections should be raised accordingly and continually monitored and reviewed.
- Pipe ends associated with the surface water network should be blocked/capped off with proprietary fittings until connected to the completed storm-water system.
- Where there is a risk or threat of pollution arising from the construction works, works shall cease on-site pending remediation measures. The full scope of monitoring and site management particulars in this regard to be agreed with the Planning Authority in conjunction with a site management plan prior to commencement of works.
- In respect of disposal of any wastewater from the site, discharge from any vehicle wheel wash areas is to be directed to designated on-site settlement ponds; and any debris or sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility. In terms of activities associated with concrete deliveries/pours, all 'wash out' of concrete trucks will take place off site and any excess concrete is not to be disposed of on site.

5.6.2 Water Quality Monitoring

- water samples taken at the commencement of works to establish the baseline scenario.
- visual inspection and water samples of the watercourse daily to ensure no sediment/pollutant deposits are evident.
- water samples will be taken once a month during the construction phase to demonstrate compliance with surface water regulation EQS standards.
- The proposed surface water monitoring suite will include the following parameters: pH, electrical conductivity, total suspended solids, Total Petroleum Hydrocarbons, nitrate, ammonia, & COD
- Following the construction phase, in addition to the regular maintenance and cleaning of the SUDs features it is proposed to conduct surface water quality monitoring in the outlet to the existing public surface water sewer biannually (twice a year) for a period of 2 years following completion of the construction phase of the proposed development in order to ensure that the discharge is meeting all the relevant EQS limits.