

Phase 1 Corrib Causeway Dyke Road Development

Outline Resource & Waste Management Plan

Galway City Council

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Quality information

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1. Introduction

1.1 Background

AECOM Ireland Limited (hereafter referred to as "AECOM") was commissioned to prepare an outline Resource & Waste Management Plan (oRWMP) in support of the proposed works at Dyke Road, Terryland, Galway City.

This plan has been prepared to accompany the planning application for the Proposed Development. The proposed layout of the development is detailed in the planning drawings prepared by MOLA Architects and the development proposed is as described in section 2.2.

The purpose of this plan is to detail how the Contractor is required to manage waste during the construction phase of the proposed development. The objective of this plan is to ensure that the development's resources and construction & demolition (C&D) waste is managed in accordance with applicable legislation, local authority plans and policies and regional waste management targets. C&D wastes are defined as waste which arises from construction, renovation, and demolition activities. As per the EPA 'Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects', April 2021, this plan will be built upon by the design team and contractor following approval of the submission. A Construction and Environmental Management Plan (CEMP) has also been prepared to accompany this application.

The project lifecycle of the plan during the project is illustrated in **Figure 1-1**, taken from Section 3.1 of the EPA 'Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects'.



Figure 1-1: Project Life Cycle of the CDWMP / RWMP

1.2 Objectives

The objectives of the oRWMP are as follows:

- Promote an integrated approach to waste management throughout the project construction stage and to set out appropriate responsibilities;
- Promote sustainable waste management in line with the waste management hierarchy;
- Provide an outline plan for the management of wastes arising from construction works for the project in accordance with the relevant Irish and EU waste management legislation; and
- Provide a framework for the designers and the Principal Contractor to appropriately manage waste generated during the course of the project.

This plan outlines methods to achieve waste prevention, maximum recycling and recovery of waste and provides recommendations for the management of the various anticipated waste streams. This plan also provides guidance on collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g., contamination of soil or water resources).

As per Appendix C of the EPA 'Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects', this plan is to be updated to reflect the following at Construction Phase:

- A summary of any significant design changes imposed since the Design Stage RWMP through mechanisms such as value engineering or other.
- Details of planning permission (if relevant) and in particular any conditions imposed in relation to resource management.
- Any issues related to ground contamination which were identified during the construction phase.

2. Project Description

2.1 Location

The site, as shown in **Figure 2-1**, is located at Dyke Road Car Park on the edge of Galway City Centre, Galway Phase 1 lands are currently being used as a public car park. The existing site covers an area of approximately 1.144 ha. The total site area is outlined in red outlined in red in 2, where the phase 1 area is highlighted in yellow.



Figure 2-1: Site Location

2.2 **Proposed Development**

The proposed development will consist of the construction of a new residential development of 219 no. apartment units and a childcare facility (approx. 241 sq m) in the form of 1 no. new residential block (5 - 9 storeys over lower ground floor level) with associated car parking, bicycle parking, public and communal open spaces, and all ancillary works on a site area of 1.144 ha.

The proposed development will provide for:

- a) 219 no. residential apartment units (109 no. 1-bedroom units, 100 no. 2-bedroom units and 10 no. 3-bedroom units) each with an associated private open space area in the form of a balcony/terrace.
- b) A raised pedestrian boardwalk along the western elevation of the proposed building.
- c) Open Space (approx. 2,778 sq m) is proposed in the form of (a) public open space (approx. 1,183 sq m) to the west of the proposed building fronting on to Dyke Road accommodating outdoor seating, planting, a sunken garden and pedestrian pathways and connections; and (b) communal open space (approx. 1,605 sq m) to the east of the proposed building in the form of a courtyard including outdoor seating, planting, a children's play area and outdoor sports equipment.
- d) A childcare facility (approx. 241 sq m) at ground floor level with dedicated external play area (approx. 61 sqm) at surface level.

- e) A total of 33 no. new car parking spaces at surface level to serve the proposed residential development (including 2 no. accessible spaces). In addition, 2 no. set down / drop off spaces are proposed to serve the childcare facility.
- f) A total of 465 no. bicycle parking spaces to include 330 no. standard residential spaces, 100 no. visitor spaces, 25 no. cargo bicycle spaces and 10 no. bicycle parking spaces dedicated for the childcare facility staff, all at surface / lower ground floor level.
- g) Vehicular access to serve the development is proposed via Dyke Road at 2 no. new locations along the western site boundary (to the north west and south west of the main development site). Pedestrian and Cyclist access is also proposed throughout the site via Dyke Road and a new pedestrian crossing is also delivered at Dyke Road. The proposed development will extinguish the existing pedestrian connection between Galway Retail Park and the subject site as part of wider proposals for local improvements to permeability.
- h) The removal of 389 no. existing car parking spaces (311 no. from Car Park 1 and 78 no. from Car Park 2) is proposed to provide for the new development. An overall total of 165 no. existing car parking spaces will be maintained in Car Park 2.
- i) The extinguishment of the main existing vehicular entrance serving Car Park 1 and Car Park 2 at Dyke Road with provision made for a new vehicular access point (to the south of the main development site) to facilitate continued access to existing Car Park 2 and the remaining car parking spaces (165 no.).
- j) The removal of existing bring bank facilities including 2 no. clothing banks and 8 no. bottle banks from Dyke Road.
- k) 2 no. telecommunications lattice towers (overall height 6.45 m and 7.67 m) affixed to the rooftop supporting 9 no. 2m 2G/3G/4G antennas; 9 no. 0.8m 5G antennas; 6 no. 0.3m microwave transmission links; together with all associated telecommunications equipment and cabinets. The proposed overall building height including the telecommunications towers is approx. 38.18 m (+43.18 AOD).

The development will also provide for all associated site development works, infrastructure, excavation and clearance works including decommissioning the existing Black Box Theatre waste water pumping station, provision for a new pumping station complete with below ground emergency storage, all boundary treatment/retaining walls, public lighting, internal roads and pathways, ESB substations, switch rooms, water tank rooms, cleaner store and WC, meter rooms, facilities management office, parcel store, comms rooms, plant room, generator room / associated plant space, bin storage, bicycle stores, hard and soft landscaping, play equipment, below ground attenuation tanks, nature based SUDs features, green roofs, roof plant, new and replacement site services and connections for foul drainage, surface water drainage and water supply.

This planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement.

2.3 Intrusive Ground Investigation

An intrusive ground investigation has been carried out by Ground Investigations Ireland. The investigation's objective was to investigate the foundations of the existing structures, ground conditions and also ground contamination (if present). The Contractor's RWMP should take cognisance of the findings of the ground investigation exercise.

2.4 Construction Programme

It is anticipated that Construction of the Proposed Development will commence in Q1 of 2027, and finish Q1 2028. The construction period will take approximately 2 years.

2.5 Proposed Site Clearance and Ground Works

The macadam layers & road buildup will be stripped from the entire site. Approximated volume of material = cut: $3,037m^3$.

Site will be profiled to formation level (modelled as 300mm below proposed finished ground level). Approximated volume of material = cut: 2,219m³.

Once the site is at the required formation level, a ground improvement technique known as "rigid concrete inclusions" will be implemented to the site outside of the building footprint. Rigid concrete inclusion is a ground improvement method using high deformation modulus columns constructed through compressible soils to reduce settlement and increase bearing capacity. The precise design proposal will be confirmed by the Contractor. The outline design methodology assumes the works will be undertaken systematically an area at a time with earthworks supported locally. Ground water will also be managed locally and shallow recharge wells will be utilised.

- Removal of typically circa 1.1m of soil below formation level. Depth will be deeper locally to ensure support for below ground drainage. Volume of cut material approximately equal to 7,500m³
- Installation of piling matt, hardcore volume estimated as 3,750m³
- Driving precast concrete inclusions to competent ground. The inclusions will be placed at 2m centre in both directions and installed across the entire site excluding the building footprint.
- Installation of geogrid
- Backfill to formation level with competent hardcore, volume of hardcore estimated to be 3,750m³

Once the ground improvement works are completed, the building foundations will be installed. The outline design of the building foundations assumed 640mm diameter ODEX piles with reinforced insitu concrete ground beams between pile caps and suspended slab.

Imported general construction materials for ground slab and pavement is estimated to have a total volume of fill: 3,072m³.

3. Roles and Responsibilities

All parties involved in the Project will have responsibility for waste management. Responsibility will vary at different stages of the project lifecycle. Key responsibilities are set out in **Table 3-1**. The appointed Principal Contractor will be responsible for refining and implementing the findings of this oRWMP.

Table 3-1	Construction	Stage	Waste Ma	anagement	- Key	Res	nonsibilities
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Responsible party	Responsibility	Project Stage
Client	Establish ambition and performance targets for Project	Project initiation and subsequent
	Appointment of competent Principal Contractor and Design Team	tendering phases
	Responsibility of waste management from 'cradle to grave', including documentation of same.	All project stages
Principal	Refinement and implementation of the RWMP	Project Implementation
Contractor	Appoint competent and authorized waste management contractor(s)	Project tendering phase
	Appoint trained, competent Resource Manager ¹	Construction phase
Resource	RWMP implementation	Project implementation
Manager ¹	Ensure that the objectives of the RWMP are achieved.	Construction stage
	Waste characterisation. Selection of techniques and design to minimize waste and to maximize recovery and recycling of waste during the project.	Project Design Phase and during project implementation
	Maintenance of Waste Documentation for 3 years.	Post-construction stage
	Completion of Final Waste Management Report	Construction stage
	Educate colleagues, site staff, external contractors, and suppliers about alternatives to conventional construction waste disposal.	Project Design Phase and during project implementation
Design Team	Identification of Key Waste Streams	Project Design Phase
	Design to minimize waste generation in lifecycle of completed construction.	Project Design Phase
	Design of Soil Excavation Plan	Project Design Phase
	Adequately provide for waste management in tender	
	documents and declare all relevant information & data.	Project Procurement Phase
Subcontractors	Comply with RWMP	Project Implementation

¹ The Best Practice Guidelines on the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects (EPA, 2021) outline that a Resource Manager should be appointed. This Resource Manager may well be a number of different individuals over the life cycle of the Project, but in general is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the project Waste Management Plan are delivered and who is assigned the requisite authority to secure achievement of this purpose. The role will include the important activities of conducting waste checks/audits and adopting construction and demolition methodology that is designed to facilitate maximum reuse and/or recycling of waste.

4. General Waste Management Regulatory and Policy Requirements

Some specific points on waste management policy and regulatory requirements are set out as follows:

- Construction and Demolition (C&D) waste can be defined as all waste that arises from construction, renovation and demolition activities and includes all waste listed in Chapter 17 of the List of Waste (LoW), including hazardous and non-hazardous waste types.
- The EU Waste Framework Directive (2008/98/EC), enacted in Ireland under the Waste Directive Regulations, 2011 of the same title, requires Member States to take the necessary measures to achieve the minimum recycling/recovery target of 70% by weight for non-hazardous C&D waste, excluding naturally occurring materials, by 2020. The Directive specifies that such a target should be achieved by preparing for reuse, recycling, and other material recovery, including backfilling operations using waste to substitute other material.
- The Connacht Ulster Region Waste Management Plan 2015 2021 (CU-WMP) was published in May 2015 (no update available at time of writing this plan). Notable and relevant points are:
 - Approximately 76% of the C&D waste collected in the region was soil and stones. Traditionally the recovered material has been managed by placing it in in a variety of land use applications, including land reclamation & improvement of infill works. Given the sharp decrease in the number of operational landfills nationally, which have been a significant outlet for C&D waste in the past, alternative recovery options will be required to facilitate the recovery of C&D waste arising in future years. Therefore, there is a need to maximize diversion of infill of C&D waste and consider alternative uses, for example, concrete, stone and other masonry-type waste can be crushed and screened and used as a substitute for virgin quarried stone for re-use in a variety of engineering applications.
 - The need to progress towards a 'circular economy' whereby raw materials, traditionally almost entirely becoming waste in a linear life cycle, instead become a much smaller input into a circular approach to materials use from design through to production, through to consumption but then maximizing re-use and recycling to close the circle back to design. For example, C&D wastes can become raw materials in the design phase of a project.
 - The CU-WMP brings in the concept of 'upcycling' which is the re-purposing of items that otherwise are seen as waste or useless products. The process converts these waste materials into new material or products of higher value and quality, giving them a new purpose.

The Regional Waste Management Planning Offices (RWMPOs) have undertaken a study to quantify and analyse national capacity within the market for the management of soil and stone waste arisings, including hazardous, based on 2018 data. The findings are published in a report entitled "Construction & Demolition Waste Soil and Stone Recovery/ Disposal Capacity Update Report 2020". The report updates the Soil and Stone Recovery / Disposal Capacity report published in 2016. The report also documents data with respect to waste concrete and other CDW (construction and demolition waste).

The primary legislative instruments that govern waste management in Ireland and are applicable to this project are:

- Waste Management Act 1996 (S.I. No. 10 of 1996) (as amended) by the Waste Management (Amendment) Act 2001. Sub-ordinate legislation to this Act include:
 - European Communities (Waste Directive) Regulations 2011 (as amended)
 - Waste Management (Collection Permit) Regulations 2007 (S.I No 820 of 2007) (as amended)

- Waste Management (Facility Permit and Registration) Regulations, S.I No. 821 of 2007 (as amended)
- Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) (as amended)
- Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) (as amended)
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
- S.I. No. 194/2013 Waste Management (Landfill Levy) (Amendment) Regulations 2013) (as amended)
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. 113 of 2008); and
- Protection of the Environment Act 2003 (S.I. No. 413 of 2003).
- Litter Pollution Act 1997 (S.I. No. 12 of 1997).
- The Local Government (Water Pollution) Acts, 1977 & 1990
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
- Waste Management (Transfrontier Shipment of Waste) Regulations, 1998 (S.I. No. 149 of 1998)

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

4.1 Guidance Reference Documents

This plan adheres to the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects draft issued in April 2021 by the Environmental Protection Agency (EPA). These guidelines supersede the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects of 2006 and are hereafter referred to as the EPA Draft Guidelines. The RWMP is compiled prior to construction and documents the measures implemented at preliminary design stage and will be updated and finalised by the Contractor prior to the construction stage. Other guidance documents referenced include:

- HSE ENV EP006 Company Waste Management Procedure
- HSE EB 04 Waste Management on site
- HSE ENV GN01 Site Waste Management Plan Guidance
- A Resource Opportunity Waste Management Policy in Ireland (Department of the Environmental, Climate and Communications, 2012);
- National Hazardous Waste Management Plan 2021 2027 (EPA 2021);
- Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011, Version 3 (EPA 2019);
- A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020 2025, Department of Communications, Climate Action and Environment, 2020;
- Waste Minimisation in Construction (SPU SP 133), Construction Industry Research and Information Association (CIRIA) 1997;
- Waste Classification, List of Waste and Determining if Waste is Hazardous or Non-hazardous, (EPA 2018);

5. Waste Hierarchy

Beside the requirements that the off-site handling of waste generated by this project are subject to the required statutory authorisations under the Waste Management Act, there is also a necessity that it conforms to the Waste Hierarchy², **Figure 5-1**. This hierarchy outlines that waste prevention and minimisation are the priority in managing wastes, followed by waste reuse and recycling, with disposal to landfill being considered as a last resort.

The EU Waste Directive (2008/98/EC) also mandates that hazardous waste generation should be avoided or at least limited.



Figure 5-1: EU Waste Hierarchy (EPA National Hazardous Waste Management Plan 2021 – 2027)

Definitions defined in the Waste Framework Directive of key terms indicated in are (in order of priority):

- **Prevention** includes measures taken before a substance, material or product has become waste, which reduce (a) the quantity of waste, including through the reuse of products or the extension of the lifespan of products, (b) the adverse impacts of the generated waste on the environment and human health or (c) the content of harmful substances in materials and products.
- **Reuse** is defined as any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.
- Recycling is any recovery operation by which waste materials are processed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.
- **Recovery** is defined as any operation, the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

The Waste Hierarchy only applies to material that is defined as "waste", so does not apply to the proportion of the spoil that is handled on-site in conformity with the statutory exclusions.

The Waste Management Hierarchy will be activated for any material which does not satisfy the exclusions; in this regard the contract documents for the detailed design/ construction project will clearly

² Waste Hierarchy as set out in Article 4 of the Waste Framework Directive (2008/98/EC) and transposed into Irish law via Section 21A of the Waste Management Act.

set out the staged approach which the contractor will be required to adhere to through the use of the Waste Hierarchy.

5.1 Waste Minimisation

The following waste limiting measures will be implemented during the course of the construction works:

- Facilitate recycling and appropriate disposal by on site segregation of all waste materials generated during construction into appropriate categories, including:
 - Topsoil, subsoil, gravel hard-core
 - Concrete, bricks, tile, ceramics, plasterboard
 - Asphalt, tar and tar products
 - Metals
 - Dry Recyclables e.g., cardboard, plastic, timber
- All waste assessed by the Resource Manager as 'not suitable for reuse' will be stored in skips or other suitable receptacles in a designated area of the site, to prevent cross contamination between waste streams, dispersion and leaching;
- Wherever possible, leftover materials (e.g., timber off cuts) and any suitable demolition materials will be reused on-site;
- Uncontaminated excavated material (topsoil, sub soil, etc.) will be segregated, stockpiled and reused on site in preference to importation of clean fill, where possible;
- If excavated material cannot be reused on site, the potential for its transfer to another site under, for example, Article 27 of the European Communities (Waste Directive) Regulations 2011 should be explored;
- Where possible, the Resource Manager will ensure that all waste leaving site will be recycled or recovered or as a last resort be disposed in a suitably licenced facility.

Possible methods of waste minimisation are set out in Table 5-1 below.

Туре	Waste Minimisation Decision Taken	Intended Results		
Demolition Methods	Segregate waste into separate skips for recycling	Increased recycling of materials, reduce material to landfill		
Materials	Provide segregated skips for material recycling: timber, metals, plastic, etc.	Increased recycling of materials, reduce material to landfill		
Materials	Request unpackaged materials from suppliers where applicable, e.g., palletised, skips, etc.	Reduced packaging waste		
Hazardous Materials	Any hazardous materials to be segregated in hazardous waste bin	Hazardous waste items removed from site are to be disposed of by licenced contractor/ company.		

Table 5-1: Waste Minimisation

6. Waste Identification, Classification, Quantification and Handling

6.1 Waste Identification, Classification and Quantification

The majority of waste generated will be associated with the removal of the carpark surfacing –wearing course and base courses; along soil excavated to achieve the proposed ground levels, to facilitate the ground improvement works and to facilitate construction of foundation. Should appropriate reuse be required, and practical, clean soil will be retained on site and reused in areas of soft landscaping, backfilling, etc. A record of the volumes and reuse requirements will be maintained by the Principal Contractor as part of the RWMP.

The Contractor's RWMP will identify suitability criteria for excavated soils to be reused on site or off site, as well as suitable recycling and/or recovery options where this is deemed a waste.

The presence of asbestos is unlikely and if present would be limited to redundant below ground pipework. If asbestos is identified it is to be removed by a specialist contractor. The asbestos removal works must include a management plan put in place for their safe removal and disposal before demolition takes place. Where required under the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, the works must be notified to the Health & Safety Authority at least 14 days in advance.

During the construction phase, there will be some building material and packaging waste generated. This will mainly include excess ready-mix concrete and mortar, timber off cuts, plastics, metal off cuts, cladding and tile offcuts, as well as plastic and cardboard waste from packaging and potential oversupply of materials.

Where possible, individual waste arisings shall be identified, classified, and quantified (volume, weight) as early in the project lifecycle as possible but, inevitably, unanticipated waste arisings may occur as site work progresses, necessitating the need for a procedure to provide for waste classification as the site work proceeds.

It is anticipated that the majority of non-hazardous and inert waste generated will be suitable for reuse, recovery or recycling and will be segregated to facilitate the reuse, recovery and/or recycling, as appropriate.

7. Excavated Material Management

The material to be excavated will be associated with the removal of the carpark surfacing – wearing course and base courses; along soil excavated to achieve the proposed ground levels, to facilitate the ground improvement works and to facilitate construction of foundation.

Ground investigation was undertaken by Ground Investigation Ireland in May 2024. Laboratory testing was carried out on representative samples. The soil to be excavated is typically very poor, with significant peat & silt content limiting the reuse of the material

The Principal Contractor will, as part of their RWMP, prepare a project-specific Excavated Material Management Plan, which will detail the following as a minimum:

- Detail in-situ (prior to excavation) and ex-situ (post excavation) methodologies to classify waste soil for appropriate disposal, in accordance with relevant Irish and EU legislation and guidance,
- Identify reuse requirements and soils suitable for reuse on site in consultation with the design team, including assessment methodology to determine which soils are suitable for re-use onsite,
- Site management procedures, including waste minimisation, stockpile management, temporary storage procedures, waste license requirements, and Waste Management documentation, including waste generation record keeping, waste transfer notes, confirmation of appropriate disposal and details of any rejected consignments.

7.1 Excavated Soil & Materials

The Contractor's RWMP will detail relevant procedures including further environmental sampling, testing and assessment requirements, sampling protocols and sample density targets to supplement any existing soil data.

Where any hotspots of potential contamination are encountered, and prior to disposal, further assessment will be undertaken by a suitably qualified environmental scientist to determine the nature and extent of remediation required.

Relevant guidance should be followed, for example but not limited to the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009).

7.1.1 Soil and Crushed Road for reuse on site

Where the Principal Contractor proposes to reuse excavated soil within the works, e.g., as backfill, and where reuse is permitted in accordance with the relevant legislation, the Principal Contractor shall set out their proposal for its management, documentation and reuse. This shall include:

- Define the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits), the engineering requirements such as geotechnical parameters for the material to be used within the works;
- Delineation of areas where excavated soil is intended for disposal off-site as waste, and where it is intended for reuse on site;
- Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function;
- Engineering assessment to confirm its suitability for reuse; and
- Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required.

7.1.2 Soil for removal from site

Where appropriate, excavated soil and material intended for recovery or disposal offsite shall require appropriate waste classification in order to select an appropriate receiving facility for the waste.

Assessment of the excavated material shall be carried out with due regard to the following guidance and legislation:

- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002);
- Regulation (EC) No. 1272/2008: the classification, labelling and packaging of substances and mixtures (CLP);
- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous;
- Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities;
- UK Environment Agency Technical Guidance WM3: Waste Classification Guidance on the classification and assessment of waste; and
- Any other that might be applicable or relevant at the time of disposal.

Waste soil and material intended for offsite disposal, recycling or recovery shall not be removed from site prior to appropriate waste classification and receiving written confirmation of acceptance from the selected waste receiving facility.

7.1.3 Bituminous Road Surfacing

The majority of the waste generated during site clearance will be the carpark wearing course and base course. The materials arising will be removed and disposed of by contractors licensed under the Waste Management Act of 1996, the Waste Management (Permit) Regulations of 1998 and the Waste Management (Collection Permit) Regulations of 2001. The material shall be reused / upcycled. One such use is in reclaimed asphalt (RAP) which is a fully approved as a constituent material by EN 13108.

7.1.4 Transport of waste soils

In order to minimise potential traffic impacts of excavation activities, truck movements will be limited to designated routes and movements during peak hours will be avoided as far as possible. Details of such provisions will be included in the Traffic Management Plan (TMP) for the proposed works.

7.1.5 Stockpile Management

Stockpiles of material (soil, concrete, asphalt etc) might be generated as part of the operations, for example while classification and acceptance at a waste facility is pending or awaiting reuse. The contractor should consider the following measures to ensure that stockpiles are managed in an appropriate manner:

- A suitable temporary storage area shall be identified and designated;
- All stockpiles shall be assigned a stockpile number;
- Stockpiles shall not be positioned adjacent to ditches, watercourses or existing or future excavations;

- Contaminated or potentially contaminated soil shall be stockpiled only on hardstanding or high-grade polythene sheeting to prevent cross-contamination of the soil below;
- Soil stockpiles shall be covered with high-grade polythene sheeting to prevent runoff of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust; and
- Mixing of unclassified stockpiles of different origin, or of stockpiles having different classification, should not be carried out. When a stockpile has been sampled for classification purposes, it shall be considered to be complete, and no more soil shall be added to that stockpile prior to disposal.

An excavation/ stockpile register shall be maintained on site showing at least the following information:

- Stockpile number;
- Origin (i.e., location and depth of excavation);
- Approximate volume of stockpile;
- Date of creation;
- Description and Classification of material;
- Date sampled;
- Date removed from site;
- Disposal/recovery destination; and
- Photograph.

8. Hazardous Materials Waste Management

A minor volume of hazardous waste may be generated during the course of the construction stage, see Section **Error! Reference source not found.** for anticipated material types.

Where hazardous waste is generated, the Principal Contractor will undertake the following:

- Immediate notification of the nature of the hazardous waste to the Design Team in writing;
- Submission of a revised RWMP detailing the nature and management of the hazardous waste prior to off-site waste disposal; and
- The Principal Contractor shall establish a specific procedure for the management of asbestos wastes that may arise during the construction works. The management of such wastes shall be co-ordinated with the Client representative and in accordance with the Safety and Health Plan for the overall works, in order to ensure that personnel within the construction site and the local residents and/or students/ staff are protected against exposure to asbestos. Prior to commencement of any asbestos removal works, the Principal Contractor shall identify a suitable Waste Collection Contractor with a Waste Collection Permit for the transfer of asbestos wastes from the site.

9. Waste Management Documentation

A Waste Documentation System will be prepared by the Principal Contractor and included in the RWMP.

The Principal Contractor will be responsible for implementation and auditing the Waste Documentation System on a regular basis. The Client's Representative may also undertake verification auditing.

The documentation to be maintained, as a minimum, shall be the following:

- The names of the agent(s) and transporter(s) of the wastes;
- The name(s) of the person(s) responsible for the ultimate recycling, recovery or disposal of the wastes;
- The ultimate destination(s) of the wastes;
- Written confirmation of the acceptance and recovery, recycling or disposal of any waste consignments;
- The tonnages and LoW code for all waste materials;
- Details of any rejected waste consignments;
- Waste Transfer Forms (WTF) for hazardous wastes transferred from site and associated appendices;
- Completed Transfrontier Shipment Forms (TFS) for hazardous wastes transferred abroad;
- Written documentation of waste classifications, including any related analyses; and
- Certificates of Recycling, Recovery, Reuse or Disposal for all wastes transferred from the site.

All waste records will be maintained for at least a period of 3 years and must be subject to verification and validation.

All waste documentation will be maintained by the Principal Contractor and made available for inspection. This will be stored in a safe place, preferably on site, during the project implementation phase. Electronic records will be placed on a secure server that is backed up regularly.

Allowance of time and resources will be made to collate outstanding waste records once the project implementation phase has been completed.

10. Financial Issues of Waste

An outline of the cost issues that should be considered associated with different aspects of waste management is provided below.

10.1 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.

Rock excavated on the site could be used as granular fill within crib retaining walls if crushed and graded to form a well graded granular material with low fines content.

10.2 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.

10.3 Disposal

Typically, the current cost of disposal of waste of landfill exceeds €200 per tonne. From 1st September 2023, in accordance with the Waste Management (Landfill Levy) (Amendment) regulations 2023, the landfill level increased to €85 per tonne for waste disposed to landfill.

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.

A list of currently authorised waste sites in each Local Authority is available on the following website: <u>http://facilityregister.nwcpo.ie/</u>

A list of sites currently licensed by the EPA is available on the following websites: <u>http://www.epa.ie/terminalfour/waste/</u>

11. Waste Audits

Details of the inputs of materials to the project site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit undertaken by the Principal Contractor.

This audit will identify the amount, nature and composition of the waste generated on the site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of demolition waste.

The Principal Contractor will be responsible for undertaken regular waste auditing. The Design team may undertake verification audits to review the findings of the Contractor's audits during the course of the construction stage.

It is noted that the RWMP should be treated as a "live" document and regular review and update should be informed by the audit findings.

12. Resource & Waste Management Plan Awareness & Training

Copies of the RWMP will be made available to all personnel on site.

All site personnel and sub-contractors will be instructed about the objectives of these plans and informed of the responsibilities which will fall upon them as a consequence of its provisions. Where source segregation and selective material reuse techniques apply, each member of staff will be given instructions and training on how to comply with the RWMP.

Posters will be designed to reinforce the key messages within the RWMP and will be displayed prominently for the benefit of site staff. Specialist training (e.g., asbestos-containing materials handling) will be assessed and provided, as required.

