Proposed Development at St. John's Convent, New Street, Rathangan, Co. Kildare

Outline Construction & Demolition Waste Management Plan

Prepared by:
Walsh Associates Architects & Project Managers,
Merchants House,
27-30 Merchants Quay,
Dublin 8.

walsh associates
ARCHITECTS & PROJECT MANAGERS

Contents

1. Introduction **3**

2. Project Description **4**
2.1 Site 4
2.2 Proposed Development 5
2.3 Infrastructure 6
2.4 Demolition 6
2.5 Excavation/Site Clearance 6
2.6 Environmental Considerations 6
2.7 Project Programme and Phasing 7
2.8 Hazardous Materials/Contamination 7

3. Roles & Responsibilities **8**
3.1 Pre-Construction 8
3.1.1 Client 8
3.1.2 Design Team 8
3.2 Construction - Contractor 8

4. Design Approach **10**
4.1 Designing Out Waste 10
4.2 Design for Waste Efficient Procurement 10
4.3 Design for Materials Optimisation 10
4.4 Design for Off-Site Construction 11
4.5 Design for Reuse & Recycling 12
4.6 Design for Deconstruction 12

5. Predicted Waste Streams **13**
5.1 Waste Identification 13
5.1.1 Demolition Waste Generation 13
5.1.2 Construction Waste Generation 14
5.2 Hazardous Waste 15

6. Site Management **16**
6.1 General Contractor Responsibilities 16
6.2 Resource Manager (RM) 16
6.3 Training 17
6.4 Auditing/Inspection of Work Practices 17
6.5 On-Site Waste Management 18
6.6 Off-Site Waste Management 18
6.7 Tracking and Tracing 19
6.8 Supply Chains 20
6.9 Communications 21

7. Site Infrastructure **22**

1. Introduction

This Outline Construction Demolition Waste Management Plan (CDWMP) has been prepared to accompany the Part 8 Planning Application for the demolition of the existing former convent and external store and construction of a social housing development comprising 24 no. 1 and 2-bedroomed apartments and a community room at St. John's Convent, New Street, Rathangan, Co. Kildare.

The objective of the Outline CDWMP is to outline how the appointed Contractor will be required to manage waste during construction of the proposed development and to ensure that construction & demolition (C&D) waste is managed in accordance with applicable legislation and regional targets, including but not limited to;

- *Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects*, EPA (2021)
- EU Waste Framework Directive (Directive 2008/98/EC) as implemented in Ireland under the Waste Directive Regulations 2011 (S.I. No. 126 of 2011)
- European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020)
- Waste Management Act 1996 and amendments and associated regulations
- Environmental Protection Act 1992 and amendments and associated regulations
- Kildare County Council Development Plan 2023-2029
- Eastern-Midlands Region Waste Management Plan 2015-2021

This Plan outlines the issues to be considered throughout the project life cycle including;

- Predicted construction wastes streams
- Waste disposal/recycling of wastes at the site
- Sequencing of works
- Contractor responsibilities, including provision of training personnel
- Tracking and tracing waste
- Waste audit procedures and plans
- Communications with relevant stakeholders

A more detailed **Resource and Waste Management Plan (RWMP)** will be required from the appointed Contractor for the construction stage. The Contractor will also be required to prepare and implement a detailed Health & Safety Plan for the proposed development.

2. Project Description

2.1 Site

The site is located on New Street in Rathangan within 200m of Rathangan town centre. Refer red line below;

The site encompasses approximately 0.7 ha.

The Eastern boundary is shared with a former convent building (Protected Structure - RPS No. B17-37), which is currently occupied by an engineering company. The Western boundary is shared with 2 storey semi-detached houses & their associated gardens to the front of the site and a memorial garden towards the rear. The Southern boundary is defined by New Street and the northern boundary is shared with agricultural land.

The site is currently occupied by a former convent/school and associated external store. Existing buildings have not been used for educational purposes since 1986. The convent closed in 2017 and has remained unoccupied since then.

The topography of the site shows a decrease in level falling from the north to south. However, due to its previous development, the site itself remains fairly level and the interfaces between the site and the surrounds are relatively level.

Primary access to the site is via the existing entrance from New Street. It is proposed that the existing site access will be re-located as part of the proposed development.

2.2 Proposed Development

The proposal provides for the demolition of the former convent/school building and associated external store and construction of a social housing development comprising 24 no. 1 and 2-bedroomed apartments and a community room for residents in a courtyard type development set around the existing gardens, to be created by a simple contemporary 2-storey block that addresses the existing streetscape and a 2-storey block to the rear that provides a solid edge to the communal gardens.

32 no. car-parking spaces including electric vehicle parking spaces, 1 no. minibus drop-off space and 37 no. long-stay and 12 no. short-stay bicycle stands will be provided. The development will also provide for a single-storey utility building including bin stores, bicycle parking and a separate ESB sub-station.

The site is characterised by a number of existing trees and a mature formal garden layout. The proposal provides for retention of high-quality trees and the existing garden layout will be retained, enhanced and act as a public and communal open space as part of the landscape plan. The proposal provides for communal open space at a rate of 27% of the area of the site.

2.3 Infrastructure

New access roads will be designed to appropriate level, with cambers and falls and incorporating all necessary drainage and surfacing. Roads will be adequate for access for all users, including bin collection, emergency services (ambulance, fire brigade); and will be of taking- into-maintenance standards by Kildare County Council after completion. New footpaths, kerbs, road crossings will all be of taking-into-maintenance standards by Kildare County Council.

Parking areas materials will be robust and car-parking will be of taking-into-maintenance standards by Kildare County Council.

Gradients, widths and material finish of all footways and access for persons from parking bays and footways to dwellings will allow level access to dwellings and will fully comply with the requirements of Part M – Access and Use, of the Building Regulations 2022.

The proposed surface water drainage system is a combination of SuDs mechanisms including permeable surfaces, raid gardens/landscaped areas and gravity feed drainage systems discharging to soakaways. The surface water system is designed to take the runoff generated by a 1 in 100-year storm event (+30%).

The foul drainage system for the proposed development is a gravity feed system within the site falling to the existing foul drainage system on the site at the site entrance. There is an existing foul connection on the site to the public main in the road to the south of the site which will be maintained.

There will be a full separation of the foul and surface systems within the site.

2.4 Demolition

The proposed development includes the demolition of the former convent and associated external store;

i. **Former Convent**
   Single-storey dormer bungalow with tiled pitched roof on rendered masonry structure.

ii. ***Associated Out-Buildings***
   Single-storey stone sheds with corrugated metal roofs and lean-to glazed conservatory.

2.5 Excavation/Site Clearance

The proposed development at Rathangan is expected to result in the excavation of approximately 435m³ of soil foundations, road and pavement buildups. Any suitable excavated topsoil material will be temporarily stockpiled for reuse if possible.

2.6 Environmental Considerations

The proposed development site has been subject to screening for both Environmental Impact and Appropriate Assessment as part of the planning process.

The Environmental Impact Assessment Screening carried out by the Planning Partnership has determined that the proposed residential development and construction operations associated with same are unlikely to have any particular environmental impact occurring. An Environmental Impact Assessment is therefore not required.

Screening for Appropriate Assessment carried out by NM Ecology has determined that the proposed development will not cause direct or indirect impacts on any European sites, and therefore Appropriate Assessment is not required.

2.7 Project Programme and Phasing

The anticipated programme is 15 months with the project to be delivered in a single phase.

2.8 Hazardous Materials/Contamination

No hazardous materials/contamination have been found during the site investigations completed to date.

3. Roles and Responsibilities

Under the EU Directive and in accordance with the polluter-pays principle, there is a legal requirement that the costs of disposing of waste must be borne by the holder of waste or by the producers of the product from which the waste came, thereby placing the legal obligation for the management of the waste on the Client.

3.1 Pre-Construction

3.1.1 Client

The Client (Sophia Housing) is responsible for the following;

- Establishing the ambition and the performance targets for the project.
- Setting out these commitments and targets in relation to prevention and minimisation in the project brief, tendering documentation including pre-qualification requirements, invitation to tender, etc.
- Requiring the preparation and submission of an Outline CDWMP as part of the design and planning submission, even if not requested by the planning authority for planning.
- Requiring the preparation and submission of an updated RWMP by the Contractor as part of the construction tendering process.
- Ensuring that the RWMP is agreed and submitted to Kildare County Council prior to commencement of works on site
- Requesting the end-of-project RWMP from the Contractor.

3.1.2 Design Team

The Design Team are responsible for the following:

- Drafting and maintaining the CDWMP through the design, planning and procurement phases of the project.
- Appointing a Resource Manager (RM) to track and document the design process, inform the Design Team and prepare the CDWMP.
- Including details and estimated quantities of all projected waste streams. This should also include data on waste types.
- Incorporating relevant conditions imposed in the planning permission into the CDWMP.
- Handover of the CDWMP to the Contractor at commencement of construction for the development of their detailed RWMP.
- Working with the Contractor as required to meet the performance targets for the project.

3.2 Construction

In accordance with the EPA's *Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects* (2021), the appointed Contractor will be responsible for;

- Preparing, implementing and reviewing the RWMP through construction (including the management of all suppliers and sub-contractors).
- Identifying a designated and suitably qualified **Resource Manager (RM)** who will be responsible for implementing the RWMP.

- Identifying all hauliers to be engaged to transport each of the resources/wastes off-site and ensuring that any resource that is legally a 'waste' is only be transported by a haulier with a valid Waste Collection Permit.
- Ensuring any shipment of hazardous waste material off-site is accompanied by a Waste Transfer Form in accordance with the European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011.
- Ensuring any hazardous waste is only handled by competent persons with appropriate training and expertise.
- Identifying all destinations for resources taken off-site and ensuring any resource that is legally a 'waste' is transported to an authorised waste facility.
- Addressing end-of-waste and by-product notifications with EPA where required.
- Clarification of any other statutory waste management obligations, including on-site processing.
- Full records of all resources (both wastes and other resources) for the duration of the project
- Preparing a RWMP Implementation Review Report at project handover.

4. Design Approach

4.1 Designing Out Waste

The Design Team have considered the five key principles for reducing waste during the design process for the proposed development at Rathangan, i.e.

i. Design for Waste Efficient Procurement
ii. Design for Materials Optimisation
iii. Design for Off-Site Construction
iv. Design for Reuse and Recycling
v. Design for Deconstruction

These principles have informed the scope and agendas of Designing Out Waste workshops and gateway reviews attended by all members of the Design Team throughout the design process in order to identify and evaluate resource reduction measures and their impact on cost, time, quality, buildability, and second life and management post demolition.

4.2 Design for Waste Efficient Procurement

Sophia Housing will adhere to the principles outlined in the EPA's *Procurement: Guidance for the Public Sector* at tender stage for the proposed development at Rathangan.

This will include;

- Clearly stating targets in relation to waste prevention and reduction in the tender documentation for the proposed development at Rathangan.
- Including Outline CDWMP in the tender documentation.
- Including resource prevention/reduction capability and competence questions in Contractor-qualification questionnaires and MEAT quality criteria for the proposed project at Rathangan in order to incentivise sustainable proposals.
- Ensuring material specifications for the project are flexible enough to allow for variations in reclaimed materials.
- Ensuring appointed Contractor prepares a detailed Resource and Waste Management Plan (RWMP) prior to commencement. The RWMP must include specific proposals as to how the RWMP will be measured and monitored for effectiveness. This RWMP must be made available for inspection at the site office at all times.
- Securing contractual agreement to implement the initiatives outlined in the RWMP as part of the contract.
- Ensuring that the appointed Contractor appoints a dedicated Resource Manager (RM) with expert knowledge in waste prevention and minimisation for the project.
- Ensuring appointed Contractor selects procurement routes that minimise unnecessary packaging throughout construction – e.g. 'Just in Time' delivery.

4.3 Design for Materials Optimisation

Sophia Housing is committed to ensuring that material optimisation is employed on the proposed development at Rathangan. The appointed Contractor, suppliers, manufacturers etc. must adopt lean

production models, including maximising the reuse of materials onsite, thereby reducing the environmental impacts associated with transportation of materials and from waste management activities.

The following have been considered:

- Reducing the overall material use in the design of structures, reducing the weight of structures to lower the loading, allowing for thinner structural members and foundations, which will require less concrete and less reinforcement.
- Simplifying the design, layout, building form, structural system, building services and construction sequencing where appropriate and feasible.
- Standardising design details and specified materials and reducing the number of materials specified where appropriate to facilitate process repeatability and minimise the number of variables and bespoke elements to enable manufacturing and installation efficiencies.
- Designing material dimensions using appropriate structural and planning grids where appropriate, considering manufacturer's product sizes. If standards sizes do not work, contacting the manufacturers and suppliers to ensure materials are pre-sized and pre-cut to specific design specifications and requirements.
- Coordinating the design, i.e., structural and service zones, to prevent cutting and jointing of materials, which create offcuts.
- Introducing design 'freezes' to encourage clear Client design briefs and early engagement of the supply chain, i.e., main Contractor, specialist sub-contractors, manufacturers and suppliers.
- Careful cut and fill analysis will ensure ground excavated from cuttings will be used as fill material elsewhere in the project, e.g., within embankments, with no waste sent to landfill and no need to import fill. An optimum cut and fill balance will be achieved by including a degree flexibility in the design to allow for site issues.

4.4 Design for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are also benefits for resource management. Some further considerations for procurement of the development will be follows:

- Modular buildings displacing the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.
- Modular buildings are pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels may reduce the residual volumes of concrete blocks, mortars, plasters, etc.
- Use of prefabricated composite panels for walls and roofing may reduce residual volumes of insulation and plasterboards.
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring will reduce the residual volumes of concrete/formwork and wood/packaging, respectively.

4.5 Design for Reuse and Recycling

Consideration has been given to;

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.).
- Examining the potential for refurbishment and refit of existing structures or buildings rather than demolition and new build.
- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements.
- Enabling the optimum recovery of assets on site.

4.6 Design for Deconstruction

Consideration has been given to material efficiency for the duration and end of life of a building project; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

For example, the use of removable partitions within a structure allows spaces to be reconfigured to suite the changing needs of residents over time.

the concept of designing for flexibility and deconstruction is a good practice principle that should be adopted for resource management through a building life cycle.

5. Predicted Waste Streams

5.1 Waste Identification

The bulk of the waste material generated during the construction phase of the proposed development at Rathangan will be from the excavation of subsoil to accommodate the structural foundations and site services. Should appropriate reuse be required, and practical, clean soil will be retained on site and reused in areas of soft landscaping, backfilling, etc.

During construction activities, waste will also be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete tiles, glass etc. Packaging waste is also expected.

The appointed Contractor must maintain a record of the volumes and reuse requirements as part of their WMP in accordance with the EPA's *Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects.*

All wastes generated must be identified, recorded, classified and quantified (volume, weight) as early in the project lifecycle as possible. The appointed Contractor must also demonstrate a procedure for ongoing waste classification as the site works progress to account for any unanticipated wastes generated.

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, where possible.

A non-exhaustive list of anticipated wastes from the construction phase is outlined below;

5.1.1 Demolition Waste Generation

The existing buildings currently occupy a combined footprint of approximately 610m².

Demolition wastes will typically include:

- Concrete
- Steel cladding
- Steel beams
- Gypsum
- Metals
- Plastic
- Wood
- Glass
- Waste electronic and electrical equipment (WEEE)
- Asbestos containing materials
- Concrete storage bays
- Existing drainage removal

The following table provides a preliminary estimate of the main demolition waste items which will be generated during the works;

Material	Area (m^2)	Material Quantity (m^3)	Density of material (kg/m^3)	Tonnage (t)	Comments
Glass	94	9.4	2500	2.25	
Timber/ Plasterboard	432	56	710	39.76	
Concrete	-	85.4	2400	204.96	Strip foundations/slab/walls
Doors	-	-	-	-	57 no. wooding doors
Drainage Removal		1.124	1330	1.494	Plastic pipes

5.1.2 Construction Waste Generation

The bulk of the waste material generated during the construction phase will be from the excavation of subsoil to accommodate the structural foundations and site services. During construction activities, waste will also be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete tiles, glass etc. Packaging waste is also expected.

The main non-hazardous and hazardous waste streams that could be generated by the demolition and construction activities at a typical site are shown in the table below. The List of Waste (LoW) code (also referred toas the European Waste Code or EWC) for each waste stream is also shown;

Waste Material	LoW/EWC Code
Non-Hazardous	
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Hazardous	
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Insulation containing asbestos and asbestos-containing construction materials and other insulation containing hazardous substances	17-06-01*, 03* & 05*
Treated wood, glass, plastic, containing hazardous substances	17-02-04*

Composition figures for Construction and Demolition waste in Ireland documented in the latest National Waste Statistics Report (2020) are as follows:

Waste Materials generated on a typical Irish Construction Site	%
Soil and stones	84
Mixed C&D waste	5
Concrete, bricks, tiles, plastics etc.	6
Metals	2
Bituminous materials	2
Segregated wood, glass and plastic	0.6
Total Waste	**100**

Notwithstanding the information in the table above, the proposed development at Rathangan is expected to result in the excavation of approximately 435m³ of soil foundations, road and pavement buildups. Any suitable excavated topsoil material will be temporarily stockpiled for reuse if possible.

In order to reduce the impact of the generation of surplus material the following principles will be considered:

- Careful separation of builder's rubble packaging and contaminated waste from re-usable material. This will assist with reducing the volume of material disposal of to landfill.
- Re-use of surplus clean insert material (subject to appropriate testing and classification) as fill material in other construction projects or engineering fill for waste licensed sites.

5.2 Hazardous Waste

An inspection of the site shall be made by the Contractor for hazardous substances including an Asbestos Survey, prior to commencement of demolition. If any additional substances are encountered during the course of construction or demolition, then works must be halted. The project supervisor for construction stage (PSCS) and the responsible Statutory Authority shall be informed immediately.

Where encountered, the removal of asbestos and asbestos containing material (ACM) will be carried out by a suitably qualified contractor. In accordance with the relevant regulations ACMs will only be removed from site by a suitable licensed waste contractor and taken to a suitably licensed/permitted waste facility.

6. Site Management

6.1 General Contractor Responsibilities

In accordance with the EPA's *Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects* (2021), the appointed Contractor will be responsible for management of resources and the following;

i. Agreeing and revising as necessary any commitments or targets included in the Outline CDWMP developed at design/planning with Sophia Housing/Kildare County Council for acceptance and adoption in the detailed RWMP for construction.
ii. Allocating responsibility for resource management to one or more individuals of sufficient seniority to put the relevant procedures into practice.
iii. Nominating a suitably qualified **Resource Manager (RM)** with expertise in waste and resource management to implement the RWMP.

6.2 Resource Manager (RM)

The Resource Manager (RM) will have overall responsibility for the implementation of the RWMP during the construction phase. The RM will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the RWMP.

The RM will be responsible for;

i. Updating the RWMP as required to reflect new resource streams, work practices, suppliers or resource management options as required.
ii. Delivery of all training and induction in relation to resource management.
iii. Ensuring site infrastructure is supplied and maintained as fit for purpose.
iv. Conducting all internal site audits including audits of sub-contractor operations.
v. Any Kildare County Council or other audits undertaken.
vi. Maintaining site records for waste and resources exported off-site and ensuring these are undertaken by suitably authorised operators to suitably authorised sites.
vii. Engaging with relevant individuals who have access to ordering and stock-control records to ensure supply chain initiatives have been adopted.

At the operational level, a designated person from the Contractor and from each Sub-Contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the WMP are performed on an on-going basis. Copies of the Waste Management Plan will be made available to all relevant personnel on site.

All site personnel and sub-Contractors will be informed of the objectives of the Waste Management Plan and their roles and responsibilities under the plan. Where source segregation, selective demolition and material reuse techniques apply, each staff member will be given instructions on how to comply with the Waste Management Plan. Posters will be designed to reinforce the key messages within the Waste Management Plan and will be displayed prominently for the benefit of site staff.

6.3 Training

Training of site personnel will be the responsibility of the RM. Waste management training to be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling. All project personnel (including sub-contractors and other parties working on site) are to receive an environmental induction before commencing work on the project that will include a module on resource management and the RWMP covering;

- Scope and content of the RWMP.
- Project commitments and targets.
- List of anticipated resources and wastes and volumes to be generated.
- Procedures for the proper identification and segregation of resources and wastes.
- Temporary storage and the location of the WSAs.
- Clear instruction on hazardous wastes will be incorporated into the training programme and the particular dangers of each hazardous waste.

This induction shall be provided and delivered by the Contractor and be tailored to suit the tasks and responsibilities of site personnel from management and supervisory level through to site operatives.

Toolbox talks on resource management should be provided on a continuous basis. Regular toolbox talks shall ensure site staff are aware of the resource management practices associated with their work and the appropriate control measures that are required to carry out their work in compliance with the RWMP.

6.4 Auditing/Inspection of Work Practices

The RM will be responsible for conducting ongoing resource audits on site during the construction phase including;

i. Assessing compliance with the RWMP including:
    - Adequacy of site signage and need for any repairs or upgrades.
    - Adequacy of storage infrastructure and need for any repairs or upgrades.
    - Compliance with resource segregation protocols and observed contamination in any resource streams.
    - Assessment of observed Contractor and Sub-contractor work practices for compliance with the RWMP.

ii. Reviewing records of wastes and resources generated on-site and transported off-site periodically through the project. If waste movements are not accounted for, the reasons for this are to be established to understand why the record keeping system has not been maintained and implement corrective actions if needed.

iii. Comparing resource records with established targets for the site (e.g., reuse of resource target or recycling of waste target).

iv. Examining material management on-site to determine where the largest percentage residual waste generation is occurring. Reviewing waste management methods for each material type in order to highlight how project contract targets can be achieved.

v. Issuing corrective actions (training, penalties, etc.) as required to site operatives where deviations of the RWMP are observed.

6.5 On-Site Waste Management Operations

The Contractor must manage and carry out the works in accordance with the best environmental practice and in accordance with the requirements of Kildare County Council and the EPA. The Contractor is encouraged to reuse and recycle any waste materials as much as reasonably practicable.

Waste will be separated on site in accordance with the categories detailed previously in Section 5. The site waste storage area will have skips and recycling containers for all recyclable material. These will be sized and collected as required. Non-recyclable materials will be transferred by suitable means to a licensed landfill.

The purchasing manager must ensure that materials are ordered so that the quantity delivered, and the timing of the delivery is efficient and does not encourage long-term storage which may lead to unnecessary waste ('Just-in-Time' delivery).

The Contractor must prepare a detailed inventory of construction and demolition (C&D) based hazardous waste generated, such as tars, adhesives, sealants and other dangerous substances and these must be kept segregated from other non-hazardous waste to prevent possible contamination. Arrangements must be made for such substances to be disposed in a safe manner to an authorized disposal site or by means acceptable to the relevant Authority.

The Contractor must ensure that excavation works are carried out in accordance with best standard practice and excavation materials are well segregated to minimize any potential cross-contamination. The Contractor must carry out appropriate environmental chemistry testing, including Waste Acceptance Criteria testing, in order to determine the waste classification of the soils that are to be excavated. The test regime must be agreed with the receiving landfill operator and the testing shall be carried out by an accredited laboratory. Should excavation materials be assessed to be hazardous, the Contractor must carry out pre-treatment of the waste soils to a methodology that is agreed with the receiving landfill operator and in accordance with EPA guidance.

In respect of any liquid disposal including groundwater, the Contractor must carry out appropriate chemical testing in order to determine whether the liquid is contaminated or not. The test regime must be agreed with the receiving disposal facility and the testing carried out by an accredited laboratory. Waste mixtures containing dangerous substances will be classified as hazardous waste. This will not be used as fill on the site and only disposed of at licensed hazardous waste facilities.

During the construction phase, mitigation measures must be incorporated into the project-specific Construction & Environmental Management Plan (CEMP) and the project specific Resource and Waste Management Plan (RWMP). These specific measures will provide protection to the receiving soil and water environments during the construction phase. The CEMP and RWMP provide for work practices that are industry best practice measures that must be applied during the construction phase, and they are in no way included to avoid or reduce potential harmful effects (if any) to European sites (if any), which is a matter that is the subject of separate assessment.

6.6 Off-site Waste Management Licensing/Permitting

Section 32 of the Waste Management Act 1996, as amended, places the responsibility on the original waste producer, or waste holder, to transfer waste only to an appropriate person, i.e., a Local Authority and/or a person with a valid Waste Collection Permit.

It is an offence under Section 32(1) of the Waste Management Act 1996 to cause or facilitate the abandonment, dumping or unauthorised management of waste, or to hold, transport, recover or dispose of waste, or treat waste, in a manner that causes or is likely to cause environmental pollution. It is also an offence under Section 32(2) to transfer the control of waste to any person other than an appropriate person.

All C&D waste materials must be considered for re-use. Where waste materials cannot be re-used, they shall be disposed of offsite, under the appropriate Duty of Care and subject to approval/consents from relevant statutory bodies.

It is the responsibility of the Contractor to ensure that any company to whom waste is transferred is legally permitted to receive waste and that the facility they bring the waste to is licensed to handle that type of waste as outlined in the Waste Management Act (1996) (and all subsequent amendments). The Waste Collection Permit Register, in accordance with the Waste Management (Collection Permit) Regulations (2007) must be consulted to ensure that waste carriers hold the appropriate permit.

Any wastes that are to be disposed/recycled off site must be transported to the nearest appropriate facility in order to comply with the proximity principle and reduce the associated emissions from the transportation of waste. The EPA holds details of waste facilities which will be consulted where necessary.

A list of currently authorised waste collectors is available at:
https://www.nwcpo.ie/permitsearch.aspx

Dublin City Council is designated as the National Competent Authority for the export, import and transit of waste shipments. Details are available at:
https://www.dublincity.ie/residential/environment/national-tfs-office

All residual resources legally classified as a 'waste' taken from site must be sent to suitably authorised waste facilities for disposal or recovery. The following authorisations are applicable:

- Certificate of Registration (CoR) from the Local Authority (issued to private sector)
- Certificate of Registration (CoR) from the EPA (issued to Local Authority)
- Waste Facility Permit (WFP) from the Local Authority
- Waste or Industrial Emissions Licence from the EPA

A list of currently authorised (CoR or WFP) waste sites in each Local Authority is available at:
https://facilityregister.nwcpo.ie/

A list of sites currently licensed by the EPA is available on the EPA website;
https://epawebapp.epa.ie/terminalfour/waste/index.jsp

6.7 Tracking & Tracing

The RM is required to maintain records for all resource material which is used on site and leaves the site, either for reuse, recycling, energy recovery, backfilling or other recovery or disposal on third party sites.

Information to be recorded in the site tracking system includes;

i. Signed docket/invoice from the haulier/contractor for each movement of resource off-site detailing the following:
   - A description of the resource stream.
   - List of Waste (Low) Code for each stream (where applicable).
   - Validated quantity of material moved off-site by the haulier/contractor (typically reported in tonnes).

ii. Name and authorisation of the haulier to transport the material. A valid Waste Control Permit (WCP) is required for all 'waste' products. In the case of by-product or other materials that are not a waste, no WCP is required. In both cases the vehicle registration number should be recorded for each load of material removed from site.

iii. Name and authorisation of the destination site for the resource. A valid Cert of Registration (COR), Waste Permit or Waste Licence is required for all 'waste' products. Relevant by-product certification is required in the case of a by-product.

iv. Waste contractors must provide details of end-use or waste treatment in waste reports.

This recording must be carried out for each resource type and the system must also be linked with delivery records in order to determine the percentage of residual resource generated for each material. The tracking system must allow the comparison of these figures with the targets established for the prevention, reuse and recovery of resources to highlight successes or failures against these targets. Records of all waste movements and documents must be held on site and issued to Sophia Housing/Kildare County Council if required.

The RM must ensure that all resources taken off-site are in line with the relevant legislation and that hauliers and recovery/disposal sites have the appropriate authorisations. The RM must;

i. Check the expiry date of the authorisation relative to the duration of the works and whether any review of the permit is required over that period (e.g., WCPs have a maximum life of five years and review applications need to be lodged before expiry).

ii. Check that the waste consent i.e., permit/licence has the authorisation 'COR holders, Waste Facility Permit holders and Waste Licence holders' for the resource stream proposed (e.g., Waste Permits and Waste Licences only permit an operator to accept specific waste streams).

iii. Check authorisation for the resource management operation proposed (e.g., Waste Permits and Waste Licences only permit an operator specific recovery or disposal codes).

iv. Check that any waste acceptance limits expressed in the permit/licence for material acceptance are known and that on site sampling has indicated that the residual resource complies with these.

6.8 Supply Chains

The RM must engage with individuals/teams tasked with procurement of materials and services to ensure best practice procedures are employed to prevent residual resources at the site, including;

- Selecting procurement routes to minimise unnecessary packaging, e.g. 'Just-in-Time' delivery processes to minimise material spoilage by ensuring materials are delivered precisely when they are needed (as determined by demand signals or a pre-determined schedule).
- Using strategically-located 'consolidation centres' for storage to support JIT delivery.
- Implementing ordering procedures and supply chain systems that avoid waste, i.e., avoiding over-ordering and utilising use of take-back schemes for packaging, material surplus and offcuts.
- Planning works sequence to reduce the potential for on-site residual resource generation.

6.9 Communications

The RM has responsibility for the following communication tasks during construction;

i. Internal reporting of resource statistics to Sophia Housing and the Contractor management. Performance relative to agreed targets and objectives must be included as an agenda item at site meetings.
ii. Engaging with relevant Kildare County Council Departments on any site inspection or enforcement audits undertaken at the site. All follow-up actions and corrective actions must be logged and reported to Kildare County Council.
iii. Engaging with other stakeholders (EPA, public, etc.) as appropriate in relation to the resource management on site.
iv. Preparing report outlining outcomes of resource management processes adopted, the total reuse and recovery figures and the final destinations of all resources taken off-site upon completion of construction. This report must be issued to Sophia Housing, the Design Team, Contractor management and Kildare County Council.

7. Site Infrastructure

Prior to construction, the site layout must be reviewed/approved by Sophia Housing/Kildare County Council to ensure that the proposed Waste Storage Areas (WSAs) have adequate space for storage and handling. Detail of same must be provided in the appointed Contractors WMP.

WSAs may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, wood, glass, etc.) or secure containers for hazardous materials. All WSAs must be reviewed/approved as fit for purpose and must be suitably contained, bunded or defined as required.

The WSA must be set out to reduce any potential for impact on sensitive human (e.g., residential) or natural (water courses, ecological sites, etc.) and a suitable buffer, e.g., receptors must be applied to mitigate any impact.

Site labelling and signage must be used on site to inform personnel of key WSA requirements and restrictions, with clear signage provided on all WSAs.

Signage is also required to provide information to assist good resource practice across the site.

The Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as ‘waste’ at the site where it was produced, limited to a six-month duration. Appropriate measures to prevent environmental impact, e.g., run-off, must be implemented as needed during this time.