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Resource & Waste Management Plan

Project Title: Section 177E Application for Existing Sandstone Quarry at a Site in County Carlow

CLIENT
Milford
Quarries
Limited

DOCUMENT REFERENCE
257501.0506WMR01

DATE
08/12/2025

DOCUMENT CONTROL SHEET

Document Control Sheet		
Our Reference	257501.0506WMR01	
Original Issue Date	8/12/2025	
Client:	Milford Quarries Limited	
Revision	Revision Date	Description

Details	Written by	Approved by
Signature		
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Date	08/12/2025	08/12/2025

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1. INTRODUCTION

AWN Consulting, a Trinity Consultants Company, has prepared this Construction and Demolition (C&D) Resource & Waste Management Plan (RWMP) on behalf of Milford Quarries Limited. The development principally consists of a c. 41.86ha historic sandstone quarry at Clogrenan, Co. Carlow.

This plan provides information necessary to ensure that the management of C&D waste at the site was undertaken in accordance with the current legal and industry standards including the *Waste Management Act 1996 as amended* and associated Regulations ¹, *Environmental Protection Agency Act 1992 as amended* ², *Litter Pollution Act 1997 as amended* ³, the *National Waste Management Plan for a Circular Economy 2024 - 2030* (NWMPCE) (2024) ⁴. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste generated by the development and identifies measures implemented for the management of different waste streams. The RWMP was viewed as a live document and was regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2. OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National level

The Irish Government issued a policy statement in September 1998, *Changing Our Ways*⁵, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2018).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste*'⁶ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, '*A Waste Action Plan for a Circular Economy*'⁷ (WAPCE), replaces the previous national waste management plan, '*A Resource Opportunity*' (2012), and was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021)⁸ to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years. At the time of authoring this RWMP there has yet to be an updated plan issued.

*The Circular Economy and Miscellaneous Provisions Act 2022*⁹ was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' in November 2021¹⁰. These guidelines replace the previous 2006 guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006¹¹. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project.

These guidelines have been followed in the preparation of this document and include the following elements:

- ▶ Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- ▶ Design teams roles and approach;
- ▶ Relevant EU, national and local waste policy, legislation and guidelines;
- ▶ Waste disposal/recycling of C&D wastes at the site;
- ▶ Provision of training for Resource Waste Manager (RM) and site crew;
- ▶ Details of proposed record keeping system;
- ▶ Details of waste audit procedures and plan; and
- ▶ Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a bespoke RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development, which require a simplified RWMP:

- ▶ New residential development of less than 10 dwellings.
- ▶ Retrofit of 20 dwellings or less.
- ▶ New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m².
- ▶ Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m²; and
- ▶ Demolition projects generating in total less than 100m³ in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 development.

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- ▶ New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m².

Other guidelines followed in the preparation of this report include '*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*'¹², published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The development is located in the Local Authority area of Carlow County Council (CCC). The Southern Region Waste Management Plan 2015 – 2021, which previously governed waste management policy in the CCC area, has been superseded as of March 2024 by the NWMPCE 2024 – 2030, the national waste management plan for Ireland.

The NWMPCE does not dissolve the three regional waste areas. The NWMPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector. This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

National Targets

- 1B. (Construction Materials) 12% Reduction in Construction & Demolition Waste Generated by 2030.
- 3B. (Reuse Facilities) Provide for reuse at 10 Civic Amenity Sites, minimum

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015 (as amended)*¹³. The *Circular Economy (Waste Recovery Levy) Regulations 2024*¹⁴ will also incur a levy of €10 per tonne for waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills.

The *Carlow County Development Plan 2022-2028*¹⁵ sets out a number of policies and objectives for Carlow County in line with the objectives of the National climate action policy and emphasises the need to take action to address climate action across all sectors of society and the economy.

Policies:

- ▶ *WM P1: Implement European Union, National and Regional waste related environmental policy, legislation, guidance and codes of practice to improve management of material resources and wastes.*
- ▶ *WM P2: Encourage the transition from a waste management economy to a green circular economy in accordance with A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020-2025', to enhance employment and increase the value recovery and recirculation of resources.*
- ▶ *WM P3: Support the circular economy, and to provide, promote and facilitate high quality sustainable waste recovery and disposal infrastructure and technology in keeping with the EU waste hierarchy subject to economic and technical feasibility and environmental assessments.*
- ▶ *WM P5: Require the appropriate provision for the sustainable management of waste within developments, including the provision of facilities for storage, separation and collection of waste.*
- ▶ *WM P6: Ensure that all waste that is disposed of by private waste companies is done so in compliance with the requirements of the Environmental Protection Agency and the Waste Management Legislation and in accordance with the Planning Code.*

Objectives:

- ▶ *WM O1: Implement the provisions of the Southern Region Waste Management Plan 2015-2021, and any updates thereto during the life of this Plan, subject to compliance with the Habitats Directive and normal planning and environmental considerations.*
- ▶ *WM O4: Use statutory powers to prohibit the illegal deposit and disposal of waste, refuse and litter, and to authorise and regulate waste disposal within the County in an environmentally sensitive manner.*

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- ▶ *Waste Management Act 1996 as amended;*
- ▶ *Environmental Protection Agency Act 1992 as amended;*
- ▶ *Litter Pollution Act 1997 as amended;*

- ▶ *Planning and Development Act 2000 as amended* ¹⁶; and
- ▶ *Circular Economy and Miscellaneous Provisions Act 2022*.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of "*Duty of Care*". This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors was employed to physically transport waste to the final destination. Following on from this is the concept of "*Polluter Pays*" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the Developer ensures that the waste contractors engaged by construction contractors were legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 as amended* or a Waste Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site

3. DESIGN APPROACH

The client and the design team have integrated the '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' guidelines into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

As noted in the EPA guidelines, the approaches presented are based on international principles of optimizing resources and reducing waste on construction projects through:

- ▶ *Prevention;*
- ▶ *Reuse;*
- ▶ *Recycling;*
- ▶ *Green Procurement Principles;*
- ▶ *Off-Site Construction;*
- ▶ *Materials Optimisation; and*
- ▶ *Flexibility and Deconstruction.*

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- ▶ Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);
- ▶ The potential for refurbishment and refit of existing structures or buildings rather than demolition and new build; and
- ▶ Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and was further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They will also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and was an ongoing part of the long-term design and selection process for this development.

3.3 Designing 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 significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- ▶ Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.;
 - Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- ▶ Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- ▶ The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- ▶ Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- ▶ Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite as outlined in section 3.1, structures should be designed with the intent of designing out waste. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has and was investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; 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.

4. DESCRIPTION OF THE DEVELOPMENT

4.1 Location, Size and Scale of the Development

The Development Site currently comprises of an existing quarry void which is surrounded by agricultural lands. Red Rock Quarry was previously used to extract sandstone bedrock. The quarry was registered in 2005 under a different operator and included for the extraction of sandstone and siltstone, conducted primarily through mechanical methods within an extraction area of approximately 7.28 hectares. The existing quarry contains several large stockpiles of spoil which have vegetated in places. An access track passes through the centre of the existing void. Some old plant, machinery and workshops are located to the east of the Development Site, adjacent to the L3896/L7134. The land is located within the townland of Clogrennane, Co. Carlow and directly sits along the Co. Laois/Co. Carlow border.

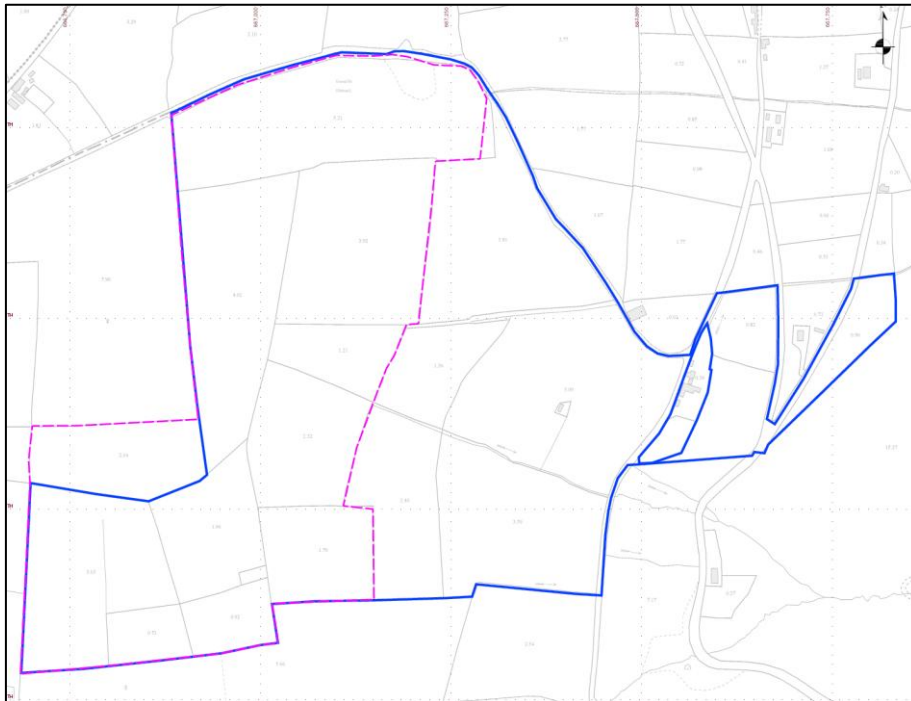


Figure 4.1 Site Location Map (Source: Hydro Environmental Services)



Figure 4.2 Existing Site Layout Plan (Source: Hydro Environmental Services)

4.2 Details of the Non-Hazardous Wastes to be Produced

There was soil, stones, clay excavated to facilitate construction of the development and as part of normal quarrying practices. It is currently envisaged that excavated material was sold as product and where excavated material is not of product standard it was able to be retained and reused onsite for landscaping and fill. If any of the remaining material is deemed unsuitable for reuse it, will need to be removed offsite. This material was taken for appropriate offsite reuse, recovery, recycling and / or disposal.

Waste will also be generated from workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

If any potentially contaminated material is encountered, it will need to be segregated from clean / inert material, tested and classified 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*'¹⁷ using the *HazWasteOnline* application (or similar approved classification method). 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*¹⁸, which establishes the criteria for the acceptance of waste at landfills. In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010* and *the Best Practice Guidance*

for Handling Asbestos (2023) ¹⁹. All asbestos would have been taken to a suitably licensed or permitted facility if located.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify CCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points was bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refueling techniques, it is understood there was no fuel / oil waste generated at the site.

If refueling or accidental spills occur onsite small associated waste volumes was generated from their cleanup, with the proposed mitigation this was kept to a minimum. Wastes were stored in appropriate receptacles pending collection by an authorised waste contractor.

4.3.3 Invasive Plant Species

If any invasive species listed on Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) are detected during the construction phase of the development, then an invasive species management plan would have been produced and submitted to CCC.

4.3.4 Asbestos

As there is no demolition associated with this project it is unlikely that asbestos or Asbestos Containing Materials (ACMS) were located on site. If any asbestos were found on site, removal of asbestos or ACMS was carried out by a suitably qualified contractor and ACMS will only be removed from site by a suitably permitted / licenced waste contractor, in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010 and the Best Practice Guidance for Handling Asbestos (2023)*. All material were taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances may be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated were kept to a minimum. Wastes were stored in appropriate receptacles pending collection by an authorised waste contractor. In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities. These wastes, if generated, it was stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5. ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the RWMP was appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it 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 RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. 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.

5.1 Role of the Client

The Client are the body establishing the aims and the performance targets for the project.

- ▶ The Client has commissioned the preparation and submission of this RWMP as part of the substitute consent application;
- ▶ The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- ▶ The Client will ensure that the RWMP is agreed on and submitted to the local authority and their agreement obtained prior to commencement of works on site;
- ▶ The Client will request the end-of-project RWMP from the Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- ▶ Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- ▶ Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP.
- ▶ Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This will also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- ▶ Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- ▶ Working with the Contractor as required to meet the performance targets for the project.

5.3 Role of the Contractor

Once the construction Contractors have been appointed, they will have major roles to fulfil. They were responsible for:

- ▶ Preparing, implementing and reviewing the RWMP throughout the construction phases (including the management of all suppliers and sub-contractors) as per the requirements of the EPA guidelines;
- ▶ Identifying a designated and suitably qualified RM who were responsible for implementing the RWMP;
- ▶ Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;

- ▶ Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- ▶ Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- ▶ Applying for the appropriate waste permit to crush concrete onsite;
- ▶ Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- ▶ End-of-waste and by-product notifications addressed with the EPA where required;
- ▶ Clarification of any other statutory waste management obligations, which could include on-site processing;
- ▶ Full records of all resources (both wastes and other resources) were maintained for the duration of the project; and
- ▶ Preparing a RWMP Implementation Review Report at project handover.

6. KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information was updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that were used to set targets include (as per guidelines):

- ▶ Weight (tonnes) or Volume (m3) of waste generated per construction value;
- ▶ Weight (tonnes) or Volume (m3) of waste generated per construction floor area (m2);
- ▶ Fraction of resource reused on site;
- ▶ Fraction of resource notified as by-product;
- ▶ Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- ▶ Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in **Error! Reference source not found..** The List of Waste (LoW) code (2018) for each waste stream is also shown.

Table 6.1 Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)

Waste Material	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
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
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
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

* Individual waste type may contain hazardous substances

6.3 Demolition Waste Generation

There is no demolition associated with the development and as such there is no demolition waste generated.

6.4 Construction Waste Generation

There is no physical construction of buildings or installation of services as part of this development and as such there is no standard construction waste to be generated. Construction for this project refers to the general clearance of overburden and the installation of temporary, portable structures.

There was soil, stones, clay excavated to facilitate construction of the development and as part of normal quarrying practices. All excavated material was to be sold as product and where excavated material was not of product standard it was able to be retained and reused onsite for landscaping and fill. When any of the remaining material was deemed unsuitable for reuse it, was removed offsite. This material was taken for appropriate offsite reuse, recovery, recycling and / or disposal.

6.5 Resource and Waste Management Options

Waste materials generated was segregated on-site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation was carried out. There were skips and receptacles provided to facilitate segregation at source, where feasible. All waste receptacles leaving the site were covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Carlow region that provide this service.

All waste arisings were handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site were reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28) published by the EPA in September 2023, establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this proposed development were investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

During construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records were maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contractors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off-site for appropriate reuse, recycling, recovery and / or disposal

Dedicated bunded storage containers were provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals, if required.

The anticipated management of the main waste streams is outlined as follows:

Soil, Stone & Clay

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

If material was removed off-site, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

If the material was deemed to be a waste, then removal and reuse / recovery / disposal of the material it was carried out in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites was considered.

In the event that contaminated material was encountered and subsequently classified as hazardous, this material was stored separately to any non-hazardous material. It required off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Silt & Sludge

During the construction phase, silt and petrochemical interception was carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) was kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site was undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes were recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each construction waste stream. Prior to commencement of construction and removal of any waste offsite, details of the proposed destination of each waste stream were provided to CCC by the project team upon request.

6.6 Tracking and Documentation Procedures for Off-Site Waste

All waste was documented prior to leaving the site. Waste was weighed by the contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records were maintained on site by the nominated project RM (see Section 8.0).

All movement of waste and the use of waste contractors were undertaken in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to

have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 8.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste Licence for that site were provided to the nominated project Waste Manager (see Section 8.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document was be obtained from Dublin City Council (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material was kept as part of the on-site waste management records.

All information was entered in a waste management recording system to be maintained on-site.

7. ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management were measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

7.1 Reuse

By reusing materials on site, there was a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

7.2 Recycling

By recycling excavated materials on site, there was a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

7.3 Disposal

Landfill charges are currently at around €140 - €160 per tonne which includes a €85 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015* as amended. In addition to disposal costs, waste contractors will also charge a collection fee for skips. *The Circular Economy (Waste Recovery Levy) Regulations 2024* will also incur a levy of €10 per tonne for waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills

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.

8. TRAINING PROVISIONS

A member of the construction team was appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of the development.

8.1 Resource Manager Training and Responsibilities

The nominated RM was given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority was given to the Waste Manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM was trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

8.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program was organised. A basic awareness course was held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes was incorporated into the training program and the particular dangers of each hazardous waste was explained.

9. TRACKING AND TRACING / RECORD KEEPING

Records were kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system was put in place to record the waste arisings on Site.

A waste tracking log was used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver will stop at the site security personnel and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel will complete and sign the Waste Tracking Register with the following information:

- ▶ Date
- ▶ Time
- ▶ Waste Contractor
- ▶ Company waste contractor appointed by, e.g. Contractor or subcontractor name
- ▶ Collection Permit No.
- ▶ Vehicle Reg.
- ▶ Driver Name
- ▶ Docket No.
- ▶ Waste Type
- ▶ LoW
- ▶ Weight/Quantity

The waste vehicle was checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets were transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information was forwarded onto the CCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor was required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs were merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences was maintained on site at all times and was periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, will provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

10. OUTLINE WASTE AUDIT PROCEDURE

10.1 Responsibility for Waste Audit

The appointed RM was responsible for conducting a waste audit at the site during the C&D phase of the proposed Project. Contact details for the nominated RM were provided to the CCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

10.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site were undertaken mid-way through the construction phase of the proposed Project.

If waste movements are not accounted for, the reasons for this was established in order to see if and why the record keeping system has not been maintained. The waste records were compared with the established recovery / reuse / recycling targets for the site. Each material type was examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type was reviewed in order to highlight how the targets can be achieved.

11. CONSULTATION WITH RELEVANT BODIES

11.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream were provided to the CCC Waste Regulation Unit when requested.

CCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

11.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors were audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licences are held. In addition, information was obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes were collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

12. SUMMARY AND CONCLUSION

Adherence to this plan will ensure that waste management during the construction phase at the proposed development is carried out in accordance with the requirements in the EPA's Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects and the CCC Waste Bye-Laws and the NWMPCE.

13. REFERENCES

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