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Forest Road, Large Scale Residential Development

Resource and Waste Management Plan

10 June 2025

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Executive Summary

Wave Dynamics was engaged by Golden Port Homes Limited to prepare this Resource and Waste Management Plan (RWMP) for a Large-Scale Residential Development (LRD) on lands at Forest Road, Swords, Co. Dublin.

The proposed development will consist of a total of 109 no. residential units (42 no. duplex units; 41 no. apartments; 26 no. houses) as follows:

a) 42 no. duplex units within 3-storey buildings comprising 21 No. 1 bed units at ground level and 21 No. 3 bed units over first and second floor levels with balconies/terraces, private and communal open space;
b) 41 no. apartments within 2 blocks. Block A will be a 4 storey building with 14 no. apartments (4 no. 1 bed units and 10 no. 2 bed units) with balconies/terraces to the north, south and west elevations, and bin, bicycle parking and plant at ground floor level and pv panels at roof level; Block B will be a 5 storey building with 27 no. apartments (13 no. 1 bed and 14 no. 2 bed units) with balconies/terraces to the east and west elevations and bin, bicycle parking and plant at ground floor level and pv panels at roof level;
c) 26 no. houses (comprising 5 no. 2 bed, 2 storey terrace houses; 6 no. 3 bed, 2 storey terrace houses; 4 No. 3 bed, 2 storey semi-detached houses; and 11 no. 4 bed, 3 storey houses);
d) 96 no. Surface level car parking spaces and 4 no. surface level motorcycle parking spaces as well as bike parking stores and spaces; and bin stores;
e) 1 no. ESB substation;
f) Landscaping, including the provision of new public open spaces with play areas and a MUGA; footpaths and cycle paths, new vehicular access/egress from Forest Road; public lighting; boundary treatment and all associated site, drainage and development works necessary to facilitate the proposed development.

Resource and Waste Management Plan

This document outlines the principles and measures by which the waste generated during the construction phase of the proposed Large Scale Residential Development (LRD) at Forest Road, Swords will be managed and controlled. It provides clear guidance on the legal and policy framework for construction and demolition (C&D) waste management in Ireland. It includes estimates of the type and quantity of waste that the proposed development will generate and prescribes effective measures for managing various waste streams. This RWMP will be further updated by the Contractor prior to the commencement of works will be regularly reviewed and updated when required throughout the project's lifecycle to maximise waste reduction and efficiency.

Adhering to this Resource and Construction Waste Management Plan will ensure that waste management during the construction phase of the proposed development is conducted in accordance with the standards specified in the EPA's Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects, the Finglas County Council (FCC) Waste Bye-Laws, and the National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024).

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1 Introduction

Wave Dynamics was engaged by Golden Port Homes Limited to prepare a Construction Resource and Waste Management Plan (RWMP) for a Large-Scale Residential Development (LRD) on lands at Forest Road, Swords, Co. Dublin.

This document outlines a Resource and Waste Management Plan (RWMP) for the control, management and monitoring of resources and waste associated with the construction phase of the proposed development. This Plan has been prepared in-line with the current legal and industry standards including, the Waste Management Act 1996 as amended and associated Regulations, Environmental Protection Agency Act 1992 as amended, Litter Pollution Act 1997 as amended, and the National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024).

This RWMP has been prepared with the following principles and objectives in mind:

- To maximise the use of resources in the Design and Construction Phases and to minimise the generation of waste with regard to the following principals:
    - Green Procurement and Design
    - Resource Re-Use, Recycling and Management
    - Waste Prevention and Segregation
- To maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for re-use and recycling both on-site and off-site.
- To comply with all legal requirements for handling of construction waste; and
- To achieve high standards of environmental performance with respect to waste management.

This plan is designed to ensure maximum recycling, reuse, and recovery of waste while firmly diverting it from landfills whenever possible. It establishes robust measures for the collection and transportation of waste from the site, effectively preventing issues related to litter and more serious environmental pollution, including soil and water contamination.

The Resource and Waste Management Plan (RWMP) provides clear guidance on the legal and policy framework for construction and demolition (C&D) waste management in Ireland. It includes estimates of the type and quantity of waste that the proposed development will generate and prescribes effective measures for managing various waste streams. The RWMP will be further updated by the Contractor prior to the commencement of works will be regularly reviewed and updated when required throughout the project's lifecycle to maximise waste reduction and efficiency.

This Resource and Waste Management Plan (RWMP) is supplemented with the following appendices.

- Appendix A: Resource Waste Management Register
- Appendix B: Licensed Waste Facility/Collectors in the Dublin Region
- Appendix C: Proposed Development Plans

1.1 Statement of Competence

This report was completed by Shannon Doherty, a Senior Consultant at Wave Dynamics. Shannon has over 12 years' experience working on major residential, infrastructure, energy and brownfield/greenfield development projects in the UK and Ireland. His qualifications include; BSc (Hons) in Music Technology, Diploma in Acoustics and Noise Control (Institute of Acoustics), ANC Certificate of Competence in Sound Insulation Testing. Shannon is a member of the Institute of Acoustics. In addition to his work in Acoustics Shannon is part of the NOAL team with WDA. He has extensive experience in producing Construction Environmental Management Plans (CEMPS), Waste Management Plans (WMP) Emergency Response Plans (ERP), Decommissioning and Aftercare Plans for Wind and Solar, Air Quality Impact Assessments, Odour Assessments and Artificial Lighting Impact Assessments. Shannon has completed environmental plans for major residential, infrastructure, energy and brownfield/greenfield development projects in the UK and Ireland

2 Proposed Development

This Resource and Waste Management Plan (RWMP) is for a Large-Scale Residential Development (LRD) on lands at Forest Road, Swords, Co. Dublin. The proposed development will consist of a total of 109 no. residential units (42 no. duplex units; 41 no. apartments; 26 no. houses) as follows:

a) 42 no. duplex units within 3-storey buildings comprising 21 No. 1 bed units at ground level and 21 No. 3 bed units over first and second floor levels with balconies/terraces, private and communal open space;
b) 41 no. apartments within 2 blocks. Block A will be a 4 storey building with 14 no. apartments (4 no. 1 bed units and 10 no. 2 bed units) with balconies/terraces to the north, south and west elevations, and bin, bicycle parking and plant at ground floor level and pv panels at roof level; Block B will be a 5 storey building with 27 no. apartments (13 no. 1 bed and 14 no. 2 bed units) with balconies/terraces to the east and west elevations and bin, bicycle parking and plant at ground floor level and pv panels at roof level;
c) 26 no. houses (comprising 5 no. 2 bed, 2 storey terrace houses; 6 no. 3 bed, 2 storey terrace houses; 4 No. 3 bed, 2 storey semi-detached houses; and 11 no. 4 bed, 3 storey houses);
d) 96 no. Surface level car parking spaces and 4 no. surface level motorcycle parking spaces as well as bike parking stores and spaces; and bin stores;
e) 1 no. ESB substation;
f) Landscaping, including the provision of new public open spaces with play areas and a MUGA; footpaths and cycle paths, new vehicular access/egress from Forest Road; public lighting; boundary treatment and all associated site, drainage and development works necessary to facilitate the proposed development.

Figure 1 illustrates the proposed development plans.

Figure 1: Proposed Development Plans

3 C&D Resource Waste Management in Ireland

The following section gives an overview of the main policy drivers for construction and demolition (C&D) resource waste management in Ireland. It details the broad legislative context from the European Union (EU) and national legislation and considers how these are brought together to provide the main framework for an integrated waste management network.

In the preparation of this RWMP the National legislation and guidelines listed in this document were consulted and followed where applicable. In addition, the requirements of the Regional and Local policies have been adhered to in estimated quantities of construction waste generated during the construction phase of the proposed development.

3.1 Policy and Legislation

Irish waste policy is grounded on the European Union's concept of a waste management hierarchy. The European Union's waste management hierarchy is a series of waste management options, presented in decreasing order of environmental and economic desirability. The hierarchy states that the preferred option is prevention, followed by re-use, recycling, recovery, with the least desirable option being landfill. The overall intent of these policy statements is to move Irish waste management away from disposal and towards the more favoured options higher up the hierarchy and ultimately to achieve the full transition to a Circular Economy.

3.1.1 European Directives

Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste - the basic concepts related to waste management, such as definitions of waste, recycling and recovery. The Directive explains when waste ceases to be waste and becomes a secondary raw material, and how to distinguish between waste and by-products. The Directive outlines the requirement that wastes be managed without endangering human health and harming the environment. The Directive introduces the "polluter pays principle" and the "extended producer responsibility". It incorporates provisions on hazardous waste and includes recycling and recovery targets to be achieved by 2020. Article 4 sets out the waste hierarchy which prioritises waste management options to reduce and manage waste ranking from waste avoidance, as the preferred option, followed by resource recovery and as a final option, safe disposal of waste. This waste hierarchy is shown below in Figure 2.

Figure 2: Waste Hierarchy

2000/532/EC: Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive

91/689/EEC on hazardous waste - the Directive seeks to provide a clear and concise definition of hazardous waste while also setting out the requirements for the management and permitting of hazardous waste recovery and disposal facilities.

Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste - sets out the technical standards that all landfill disposal site must meet in the future in terms of improved and consistent operation and ensuring environmental protection. It is intended to prevent or reduce the adverse effects of the landfilling of waste on the environment, in particular on surface water, groundwater, soil, air and human health.

Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) – aims to increase recovery rates for waste/scrap items, and to reduce the quantities of this waste stream consigned to landfill. Producers of WEEE are responsible for the recovery of End-of-life equipment deemed a priority waste by the EU.

Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage – The purpose of the Directive is to establish a framework of environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage. It is aimed at preventing environmental damage by forcing industrial polluters to pay prevention and remediation costs.

3.1.2 National Waste Policy

The Department of Housing, Planning and Local Government is responsible for waste policy and legislation at the national level in Ireland. A considerable part of the national policy is influenced by initiatives from the European Union (EU). These initiatives typically come into effect through European Directives, as listed above, which are then integrated into Irish law via our own legislative processes. The national waste management policy in Ireland is outlined in the following policy documents:

- Waste Management Changing our Ways, 1998.
- Preventing and Recycling Waste: Delivering Change, 2002.
- Taking Stock and Moving Forward, 2004.
- A Resource Opportunity – Waste Management Policy in Ireland, 2012; and
- A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025; September 2020

The national waste policy currently in place, titled "A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 (WAPCE)," was released in September 2020. This policy outlines various measures and actions for each aspect of waste management, along with compliance and enforcement strategies regarding applicable waste legislation. A significant shift in this new policy is the emphasis on the production chain rather than solely on waste disposal. The document features over 200 measures that cover diverse areas such as Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement, and Waste Enforcement. The key objectives of the current Action Plan are as follows.

- To shift the focus away from waste disposal and treatment by ensuring that the useful lifetime of materials and products is prolonged.
- To shift the burden of environmental responsibility for disposable goods to the producer.
- To ensure that measures for supporting sustainability are fostered.

The existing legal framework is centred around the Waste Management Act of 1996 and the Environment (Miscellaneous Provisions) Act of 2011, which serve as the primary means for implementing national waste policy. Additional regulations are found in the Circular Economy Act. The Circular Economy and Miscellaneous Provisions Act of 2022 supports Ireland's transition from a "take-make-waste" linear approach to a more sustainable model of production and consumption, ensuring that resources maintain their value within our economy for as long as possible.

The 2021 National Circular Economy and Waste Statistics web resource, which is the most recent study published, along with the national waste statistics web resource (November 2023) reported the following key statistics for 2020:

- **Generated** – Ireland produced 3,170,000 t of municipal waste in 2021. This is a 1% decrease since 2020. This means that the average person living in Ireland generated 630 kg of municipal waste in 2021.
- **Managed** – Waste collected and treated by the waste industry. In 2020, a total of 3,137,000 t of municipal waste was managed and treated.
- **Unmanaged** – An estimated 33,000 tonnes of this was unmanaged waste i.e., not disposed of in the correct manner in 2021.
- **Recovered** – The amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In Ireland 42% of Municipal waste was treated by energy recovery through incineration in 2021.
- **Recycled** – Just over 1.3 million tonnes of municipal waste generated in Ireland was recycled in 2021, resulting in a recycling rate of 41 per cent. The recycling rate remains unchanged from 2020 and indicates that we face significant challenges to meet the upcoming EU recycling targets of 55% by 2025 and 65% by 2035.
- **Disposed** – The proportion of municipal waste sent to landfill also remains unchanged at 16% the same as 2020.
- **Reuse** – 54,800 tonnes of second-hand products we estimated by the EPA to have been reused in Ireland in 2021. The average annual Reuse rate per person in Ireland is 10.6 kg per person.

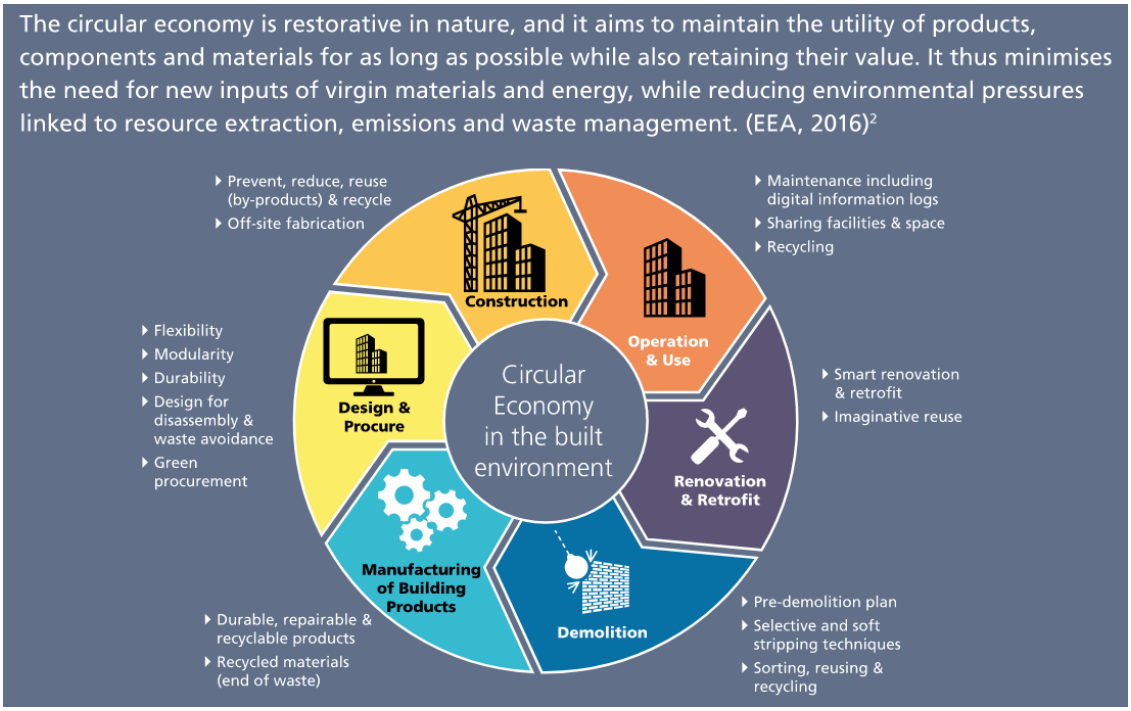

Figure 3: Circular Economic Model (Source: EPA Best Practice Guidelines)

3.1.3 Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects (Environmental Protection Agency (EPA))

In November 2021, the Environmental Protection Agency (EPA) of Ireland released the "Best Practice Guidelines for Resource and Waste Management Plans for Construction and Demolition Projects." These guidelines replace the 2006 version issued by the National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage, and Local Government (DoEHLG).

The guidelines offer a practical approach to managing construction and demolition (C&D) waste and resources, addressing all phases from design to deconstruction. This document has been prepared in line with these guidelines and includes the following.

- 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

3.2 Regional Level

The development is located in the Local Authority administrative area of Fingal County Council (FCC).

Until recently waste management planning in Ireland had been divided into three different regions namely, Eastern-Midlands, Southern and Connacht-Ulster regions, with each region led by a Regional Waste Management Planning Office with its respective Waste Management Plan.

The Eastern-Midlands Region includes the local authorities of Dublin City, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow.

As of March 2024, the Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021 has been superseded by the Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025, which establishes a single, national plan to guide waste management in Ireland, moving towards a circular economy. Although the Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 has replaced previous regional waste management plans, it has not dissolved the three regional waste areas.

The Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 aims to promote sustainable consumption, reduce waste generation, enhance material capture to optimise circularity, and ensure compliance with relevant policies and legislation. The national plan outlines the following strategic targets for waste management in the country that are pertinent to this development.

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

In Ireland, municipal landfill fees are determined by the weight of waste disposed of. In the Leinster Region, these charges typically range from €140 to €160 per tonne of waste. This amount includes an €85 per tonne landfill levy established under the Waste Management (Landfill Levy) (Amendment) Regulations 2015, as amended. Additionally, the Circular Economy (Waste Recovery Levy) Regulations 2024 will introduce a new levy of €10 per tonne for waste accepted for recovery. This includes backfilling at authorized recovery sites and at municipal waste landfills.

3.2.1 The Fingal Development Plan 2023 – 2029

The Fingal Development Plan 2023–2029 outlines various policies and objectives for the Fingal region, aligning with the goals of the national waste management plan. The Plan identifies that the primary challenge over the Plan lifetime is to continue to deliver, maintain and expand high quality waste management infrastructure that will adequately cater for a growing resident population and business sector.

Section 11.6 of the Fingal Development Plan 2023-2029 outlines the waste policies and objectives designed to comply with the Development Management Standards and the Waste Action Plan for a Circular Economy 2020-2025 established for the county. The goal is to ensure orderly and sustainable development. The primary waste management policy of the County Development Plan is as follows:

- **IUO34** – **Waste Management in New Developments** - Require the provision of appropriate, well designed, accessible space to support the storage, separation and collection of as many waste and recycling streams as possible in all new commercial and residential developments within the County.
- **DMSO235** – **Communal Refuse Storage Provision** - In the case of communal refuse storage provision, the collection point for refuse should be accessible both to the external collector and to the resident and be secured against illegal dumping by non-residents. In the case of individual houses, the applicant shall clearly show within a planning application the proposed location and design of bin

storage to serve each dwelling and having regard to the number of individual bins required to serve each dwelling at the time of the application and any possible future requirements for refuse storage/collection. The following criteria will be considered in the assessment of the design and siting of waste facilities and bring facilities:

  - The location and design of any refuse storage or recycling facility should ensure that it is easily accessible both for residents and/or public and for bin collection, be insect and vermin proofed, will not present an odour problem, and will not significantly detract from the residential amenities of adjacent property or future occupants.
  - Provision for the storage and collection of waste materials shall be in accordance with the guidelines for waste storage facilities in the relevant Regional Waste Management Plan and the design considerations contained in Section 4.8 and 4.9 of the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities, DHLGH (2020).
  - Refuse storage for houses should be externally located, concealed / covered and adequate to cater for the size and number of bins normally allocated to a household. For terraced houses, the most appropriate area for bins to be stored is to the front of the house, which should be located in well-designed enclosures that do not to detract from visual amenity.
  - All applications shall clearly identify the waste storage and collection points and detail the anticipated waste collection schedule having regard to the impact on road users both within the development and the surrounding area.
  - Access to private waste storage in residential schemes should be restricted to residents only.

- **DMSO236 – Segregation and Collection of Waste** - Ensure all new large-scale residential and mixed-use developments include appropriate facilities for source segregation and collection of waste.
- **DMSO237 – Distance from Front Door to Communal Bin Area** - Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are provided.
- **DMSO239 – Refuse storage areas** - Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened or other such mitigation measures are provided.
- **DMSO240 – Distance to Communal Bin Areas** - Ensure the maximum distance between the front door to a communal bin area does not exceed 50 metres.
- **DMSO241 -** Construction and Demolition Waste Management Plan - Require that Construction and Demolition Waste Management Plans be submitted as part of any planning application for projects in excess of any of the following thresholds:
  - New residential development of 10 units or more.
  - New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250 sqm.
  - Demolition / renovation / refurbishment projects generating in excess of 100m3 in volume of C&D waste.
  - Civil engineering projects in excess of 500m3 of waste materials used for development of works on the site.

3.2.2 Legislative Requirements

A key principle of European waste legislation, reflected in the Waste Management Act 1996 and Irish laws, is the “Duty of Care.” This principle states that waste producers are responsible for their waste from generation until it is legally recycled, recovered, or disposed of. Since it is often impractical for producers to handle waste directly, they hire waste contractors for transportation. The "Polluter Pays" principle means that producers can be liable for any pollution incidents caused by improper waste management by themselves or their contractors.

Developers must ensure that contracted waste services comply with legal requirements for waste management. Each waste contractor must have a collection permit from the National Waste Collection Permit Office (NWCPO), and waste receiving facilities need the appropriate permits or licenses. Without a Certificate of Registration (COR) or a waste permit from the relevant Local Authority or a licence from the Environmental Protection Agency (EPA), these facilities cannot accept waste. The permits specify the types and amounts of waste that can be managed at those sites.

4 RWMP Roles and Responsibilities

4.1 Introduction

The Project Director/Manager will have overall responsibility for the construction of the Proposed Development and is responsible for developing and implementing the RWMP (and its various potential iterations as it is a 'live' document) during construction.

Other members of the project team will be assigned specific roles to assist the Project Director/Manager in the implementation of the RWMP, and individual specialists would be appointed to provide expert advice.

4.2 Construction Manager

The Construction Manager will act on behalf of the Principal Contractor, with responsibility for managing construction of the proposed development within the agreed environmental constraints in conjunction with all other necessary management processes. The principal duties and responsibilities of this position will include:

- Overall responsibility for the Proposed Development and implementation of the RWMP.
- Allocating resources to ensure the implementation of the RWMP.
- Participates in the management review of the RWMP for suitability, adequateness, and effectiveness; and,
- Sets the focus of environmental policy, objectives, and targets for the Contractor.

4.3 Site Manager

The Site Manager is directly responsible to the Construction Manager for the successful execution of the project. The principal duties and responsibilities of this position will include:

- To oversee the day-to-day construction activities.
- To report to the Construction Director on the on-going performance of the RWMP.
- To discharge his/her responsibilities as outlined in the RWMP; and,
- To support and augment the Environmental Manager through the provision of adequate resources and facilities in the implementation of the RWMP.

4.4 Site Personnel

All Contractors, and other site personnel, on the project will be responsible for the effective implementation of the RWMP and will adhere to the following principal duties and responsibilities:

- To co-operate fully with the General Contractor and the Environmental Officer in the implementation and development of the RWMP at the site.
- To conduct all their activities in a manner consistent with regulatory and best environmental practice.
- To participate fully in the environmental training program and provide management with any necessary feedback to ensure effective environmental management at the site; and,
- Adhere fully to the requirements of the site environmental rules

4.4.1 Training

All construction staff, including sub-contractors, would receive structured training on the requirements of the RWMP and the associated environmental control plans, as developed. They would also be required to attend a site induction which would include the key environmental issues identified for the Proposed Development. The briefing would emphasise the methods and working practices which must be employed to protect the environment, including emergency procedures for reporting and dealing with environmental incidents. Records of training and those attended will also be retained.
The topics to be covered will include.

- Project programme and requirements.
- Health and Safety requirements.
- RWMP.
- Materials to be segregated.
- Segregation systems and protocols.

- Arrangement for the storage and handling of reusable materials and recyclables.
- Document control requirements

4.5 Gate Person

The responsibilities of the Gate Person involve carefully monitoring and inspecting all vehicles departing from the site that are carrying waste. It is essential that each vehicle prominently displays a valid Waste Collection Permit (WCP) number on its side, which serves as proof of authorization for waste transport.

In cases where a vehicle fails to show a valid WCP number, the Gate Person will refuse the vehicle's exit from the site. Concurrently, the Responsible Waste Manager (RWM) will take the necessary steps to ensure that the waste load is safely returned to the designated area from which it originated. This process is crucial for maintaining site compliance and ensuring that all waste disposal regulations are strictly followed.

5 Resource and Waste Management Design Approach

5.1 Introduction

This section provides details on how resource optimisation and the management and minimisation of waste streams shall be implemented from design phase through to completion of the project.

5.2 Definition of Waste

The definition of "waste" comes from Article 3(1) of the revised European Waste Framework Directive (WFD) (2008/98/EC). According to this directive, waste is defined as “any substance or object which the holder discards or intends or is required to discard.” The term “discard” encompasses not only the disposal of a substance or object but also its recovery and recycling. Determining whether something is considered waste involves evaluating all relevant circumstances, such as the nature of the material, how it was produced, and its intended use. This assessment should also consider the aims of the WFD, which seeks to protect human health and the environment from harmful effects associated with the collection, transport, treatment, storage, and disposal of waste.

5.3 Prevention of Waste

Effective management of materials is essential for implementing a successful waste prevention and minimisation policy on-site. Materials will be ordered in a timely manner and only as needed to avoid over-ordering, excess supply, and waste. The Resource and Waste Management Plan (RWMP) will be updated before the construction phase to ensure proper storage and handling of construction materials, maximizing usage and minimizing waste. All materials delivered to the site will be inspected to verify that they are defect-free and suitable for use.

5.4 Design for Reuse and Recycling

5.4.1 Reuse the Site

Reusing materials and excavated soil on-site not only promotes sustainability but also reduces costs related to handling and disposing of waste generated during construction. To identify the best approach for reusing, recovering, or off-site disposal of materials, we will classify waste as either hazardous or non-hazardous, following the EPA's 2018 guidelines on waste classification. This process ensures responsible waste management and compliance with regulations, creating a safer construction environment.

It is important to note that the recovery of excavated material for reuse is subject to regulatory requirements. Compliance with the conditions for reclassifying resources and waste as outlined in Article 27 (By-products) and Article 28 (End of Waste) of the European Union (Waste Directive) Regulations 2011-2020 will be adhered to.

Whenever possible, concrete waste should be returned to the supplier for reuse. If this is not feasible, contractors must dispose of the concrete by crushing it on-site and taking it to an authorized off-site facility. Please note that crushed material resulting from a waste recovery operation is not suitable for the Article 27 Notification (By-products) procedure.

5.4.2 Excavation Works

Utilise the existing topography to minimise excavation and reuse any excavated materials on site where possible, e.g., rock for drainage layers, landscape fill, planting features or levelling spoil.

Site investigations and environmental soil testing will be conducted prior to any excavation on site. If potentially contaminated material is encountered, it must be segregated from clean or inert material, tested, and classified as either non-hazardous or hazardous according to the EPA publication titled “Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous” using the *HazWasteOnline* application or a similar approved classification method. The material will then be categorised as clean, inert, non-hazardous, or hazardous in accordance with EC Council Decision 2003/33/EC, which outlines the criteria for waste acceptance at landfills.

If Asbestos-Containing Materials (ACMs) are found among the excavated material, their removal will only be carried out by a suitably permitted waste contractor, following the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010 and the Best Practice Guidance for Handling Asbestos (2023). All asbestos will be transported to a licensed or permitted facility.

In the unlikely event that hazardous soil or historically deposited waste be encountered during the construction phase, the contractor will notify the Fingal County Council (FCC) and provide a Hazardous/Contaminated Soil Management Plan. This plan will include estimated tonnages, a description of the location, any relevant mitigation measures, and the intended destination for disposal or treatment, along with information on the authorized waste collector.

5.4.3 Demolition Works

The site consists of one agricultural field, measuring c. 4.2 hectares This is a greenfield site generally, with no demolition works proposed.

5.4.4 Site Preparation

Site offices, lock-ups, skips and containers from this phase of the site development will be reused for future development phases or on another project. Toilets, canteens, containers and office space will be shared with other sub-contractions on site.

5.4.5 Recycling

Recycling resources on site helps reduce the need for off-site management and lowers costs associated with transporting and processing materials. Import recycled materials or materials with recycled content from other locations and reuse them on site whenever possible.

A designated area of the site compound will be allocated for recycling building materials and packaging. Special skips will be provided to separately collect timber, concrete blocks, bricks, plastic, glass, and metal.

Waste generated by construction workers, including organic waste (such as food scraps), dry mixed recyclables (like paper, newspapers, plastic bottles, packaging, aluminium cans, tins, and Tetra Pak cartons), mixed non-recyclables, and general building waste (such as timber, cardboard, and metals), will be recycled whenever feasible.

5.5 Design for Green Procurement

Green procurement utilizes tender specifications and criteria to acquire products and services that minimize waste. Early engagement and collaboration with supply chain stakeholders can enhance resource management. Here are some key considerations for effective procurement.

- The sourcing of goods and services should be conducted on an “as-needed” basis where possible which can reduce the need for packaging.
- Methods of waste prevention and minimisation shall be discussed with staff and subcontractors at an early stage of development, prior to procurement. Design solutions are to be agreed with an emphasis on sustainable practices
- Project material specifications should consider allowing the use of reclaimed materials.
- Ordering procedures should be conducted with waste minimisation in mind, i.e., avoid over-ordering, identify take-back schemes for material surpluses and offcuts.
- Promote the Client corporate policy and targets in relation to waste prevention and reduction in all design-phase documentation and tender documentation.

5.6 Design for Off-Site Construction

The use of precast materials such as walls, concrete slabs, and stairs should be implemented wherever possible. Adopting precast materials offers several benefits:

- Superior Material Quality and Accuracy: Factory fabrication of precast components is standardised, which improves quality and accuracy while minimising the negative impacts of weather and site conditions.
- Reduced Over-Ordering: Materials can be ordered directly from the factory, eliminating the need for on-site production and helping to avoid over-ordering.
- Faster Construction Times: Precast materials enable quick establishment of floor levels and allow facades to be closed in rapidly, which facilitates earlier commencement of internal work.
- Less Waste Production: The use of precast materials contributes to a reduction in overall waste generated during construction.
- Enhanced Quality: Precast components are typically produced in a sheltered environment, which enhances quality by mitigating potential environmental effects that could arise on-site.
- Reduced Environmental Contamination: Particularly with precast concrete, the risk of spillages is minimized, leading to lower levels of environmental contamination. Implementing precast materials can greatly enhance the efficiency and sustainability of construction projects.

5.7 Design for Materials Optimisation

The key principle of materials optimisation is to encourage manufacturers and construction companies to adopt lean production models. This involves maximising on-site material reuse to minimise the environmental impact of transportation and waste management. Standardising material sizes can also help reduce waste, along with promoting off-site manufacturing.

5.8 Design for Flexibility and Deconstruction

The proposed development will encompass residential units; therefore, plans for deconstruction are not anticipated in the foreseeable future. This design is characterised by its flexibility, which is regarded as a sustainable approach, as it will effectively serve medium- to long-term residents for many years to come.

6 Key Materials and Quantities

In 2022, Ireland's construction and demolition (C&D) sector produced approximately 8.3 million tonnes of waste. After a sharp rise to 9 million tonnes in 2021 following the pandemic, waste levels decreased again in 2022. This decline was largely due to the types of developments—such as housing, commercial, and infrastructure—and the stages of construction, particularly those requiring significant excavation.

To reduce C&D waste further, it is important to implement best practices in circular construction. This includes minimising waste generation, applying By-products Regulation 27, and optimising resource use according to the Environmental Protection Agency's updated Best Practice Guidelines for Resource Management Plans for Construction and Demolition Projects.

6.1 Resource Targets

Project-specific resource and waste management targets will be updated upon confirmation by the client. It is expected that, for projects of this nature, a minimum of 70% of waste will be fully reused, recycled, or recovered. The establishment of these targets will facilitate the creation of project-specific benchmarks for monitoring progress. Typical Key Performance Indicators (KPIs) employed to define these targets will adhere to established guidelines:

- Weight (tonnes) or Volume (m^3) of waste generated per construction value.
- Weight (tonnes) or Volume (m^3) of waste generated per construction floor area (m^2).
- 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 Waste Categories

In 1994, the European Commission implemented the European Waste Catalogue and the Hazardous Waste List, establishing essential frameworks for waste management. In 2002, the Environmental Protection Agency (EPA) released a document outlining these resources, which has since been superseded by the authoritative 2018 publication titled "Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous." This classification system is essential for waste reporting across the EU, specifically for collection permits, Certificates of Registration (CORs), and the EPA National Waste Database.

Table 1 details the primary non-hazardous and hazardous waste streams generated from typical construction activities. The List of Waste (LoW) code (2018) for each waste stream is also included, ensuring proper identification and management of all waste types.

Table 1: Typical waste types generated and LoW codes

LoW/EWC Code	Waste Material
17 01 01-03 & 07	Concrete, bricks, tiles, ceramics
17 02 01-03	Wood, glass and plastic
17-02-04*	Treated wood, glass, plastic, containing hazardous substances
17 04 01-11	Metals (including their alloys) and cable
17 08 01* & 02	Gypsum-based construction material
17 05 03* & 04	Soil and stones
17 09 04	Mixed C&D waste
20 01 01	Paper and cardboard
17 03 01*, 02 & 03*	Bituminous mixtures, coal tar and tarred products

LoW/EWC Code	Waste Material
17 06 04	Insulation materials
20 02 01	Green waste
20 01 33 & 34	Batteries and accumulators
20 01 35 & 36	Electrical and electronic components
20 01 13, 19, 27-30	Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)
13 07 01-10	Liquid fuels
20 03 01	Mixed Municipal Waste
20 01 08	Organic (food) waste

** Individual waste type may contain hazardous materials*

The most common types of waste are Mixed Dry Recyclables, Organic Waste, Mixed Non-Recyclables, and Glass. Other waste types are produced in smaller quantities and should be disposed of at civic amenity centres.

6.3 Construction Waste Generation

Table 2 illustrates the breakdown of construction and demolition (C&D) waste types produced on a typical site, based on data from the EPA National Waste Reports 21 and the joint EPA & GMIT study.

Table 2: Percentage of waste materials generated on a typical Irish construction site

Waste Type	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

Table 3, presents the estimated construction waste generation for the project, calculated based on the gross floor area and other available information up to this point. It includes indicative targets for managing the various waste streams. The estimated amounts for the primary waste types (excluding soils and stones) are determined using an average waste generation rate per square meter for large-scale developments, following the waste breakdown rates outlined in Table 2. These rates have been derived from the development area schedule provided by the architect.

Table 3: Estimated rates for the reuse, recycling, and disposal of construction waste, both on-site and off-site.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonn es
Mixed C&D	285	10	28	80	228	10	28
Timber	242	40	97	55	133	5	12
Plasterboard	86	30	26	60	52	10	9
Metals	69	5	3	90	62	5	3

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonn es
Concrete	52	30	16	65	34	5	3
Other	129	20	26	60	77	20	26
Total	**863**		**196**		**586**		**81**

In addition to the waste streams in Table 3, any excavated material will be temporarily stockpiled for reuse as fill. It is expected that most material can be reused onsite for landscaping, but any remaining material will need to be removed offsite for appropriate reuse, recovery, recycling, or disposal.

It is important to note that it is challenging to accurately predict the construction waste generated from the proposed works until the final materials and detailed construction methods are confirmed. The exact materials and quantities may change during the construction process, which can lead to variations in waste generation.

6.4 Hazardous Wastes Arisings

6.4.1 Contaminated Land

Site investigations and environmental soil testing will be carried out prior to any excavation taking place on site. If potentially contaminated material is encountered, it must be segregated from clean or inert material, tested, and classified as either non-hazardous or hazardous according to the EPA publication titled “Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous” using the “HazWasteOnline”[1] application or a similar approved classification method. The material will then be categorised as clean, inert, non-hazardous, or hazardous in accordance with EC Council Decision 2003/33/EC, which outlines the criteria for waste acceptance at landfills.

6.4.2 Invasive Species

An ecological site walk over was carried out on the 24th of July and the 11th of September 2024. No invasive plant species were noted within the site.

6.4.3 Fuel/Oils

Fuels and oils are classified as hazardous materials, and thus, all on-site storage of fuel and oil, including storage tanks and draw-off points, will be securely contained within bunds and positioned in a designated, secure area of the site. Compliance with these requirements is mandatory, and the site staff must be thoroughly trained in proper refuelling techniques. By adhering to these protocols, we will ensure that no fuel or oil waste is generated at the site.

6.5 Resource and Waste Manager

The Construction Project Manager will act as the Resource and Waste Manager (RWM) and will be responsible for reducing and preventing waste. To help with this goal, consider the following initiatives.

- Provide proper storage facilities to minimize material damage.
- Align material ordering with the work program to reduce on-site storage but be prepared for necessary on-site storage due to labour and material shortages.
- Subcontractors must manage their own waste.
- Assess and recycle existing materials on site, such as using roof tile or brick offcuts as crushed rock sub-bases.
- Specify environmentally friendly materials that include a percentage of recycled content, meeting all functional and regulatory requirements.
- Utilize the existing topography to minimize excavation, reusing excavated materials like rock for various purposes.
- Standardize designs and materials to reduce complexity and enhance manufacturing and installation efficiencies.
- Provide training on resource management, including inductions and toolbox talks.

[1] https://www.hazwasteonline.com/

- Update the Resource Waste Management Plan (RWMP) as needed to reflect new resources and practices.

6.6 Resource and Waste Management Options

Waste materials generated on-site will be segregated when practical. If on-site segregation is not feasible, off-site segregation will be conducted. Skips and receptacles will be available to promote proper waste separation. All waste leaving the site will be covered or enclosed, and an appointed waste contractor will collect it as receptacles fill. An approved waste contractor with a current waste collection permit will manage all generated waste. Waste requiring off-site disposal will be reused, recycled, recovered, or disposed of at an appropriately licensed facility.

The National End-of-Waste Decision EoW-N001/2023 (Regulation 28) sets criteria for determining when recycled aggregate from recovery operations is no longer considered waste. During construction, materials can be assessed under these criteria to determine if it can be classified as non-waste.

During construction, some subcontractors may generate small amounts of waste. According to Article 30(1)(b) of the Waste Collection Permit Regulations 2007, those transporting non-hazardous waste not exceeding 2 tonnes, in vehicles not designed for waste, do not require a waste collection permit. Subcontractors generating no more than 2 tonnes of waste at a time can take this waste off-site in their work vehicles, but must ensure the receiving facility has the appropriate Certificate of Registration (COR), permit, or license

The contractor(s) will maintain written records that detail the waste generated during the construction phase. These records will include the classification of each waste type, waste collection permits for all contractors involved in waste collection from the site, and the necessary certificates, permits, or licenses for the facilities that will receive the waste removed from the site. This ensures that the waste is handled appropriately for reuse, recycling, recovery, or disposal.

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

6.6.1 Soil, Stone and Gravel

The waste hierarchy prioritises waste management as follows: prevention and minimization, preparing for reuse, recycling/recovery, energy recovery and finally, disposal.

During construction-related excavations, the preferred options of prevention and minimisation cannot be applied. Excavated material will be reused on-site wherever possible. If some material cannot be used on-site, it must be removed for appropriate reuse or disposal. Off-site material can be classified as a by-product (not waste) if it meets conditions under Regulation 27 of the European Communities (Waste Directive) Regulations 2011, which requires notification to the EPA via an online form.

Excavated material cannot be removed until EPA approval is secured. The potential for reusing material as a by-product will be evaluated during excavation to minimise unnecessary disposal.

The beneficial reuse option for excavated material depends on environmental testing to classify it as hazardous or non-hazardous, following the EPA guidelines. Clean, inert materials can be used as fill in construction projects or as engineering fill for licensed waste sites. Additional testing may be necessary to ensure these materials meet the specific engineering standards for their intended use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any soils or stones are transferred onto another construction site, this will be done in accordance with Regulation 27.

Contaminated material classified as hazardous will be stored separately and require off-site treatment or disposal abroad through the Transfrontier Shipment of Wastes (TFS.

6.6.2 Bedrock

Although it is not expected that bedrock will be encountered, if it is found, it is anticipated that it will not be crushed on-site. Any excavated rock is expected to be removed from the site for proper reuse, recovery, or

disposal. Should there be a need to crush bedrock on-site, the necessary mobile waste facility permit will be obtained from FCC.

6.6.3 Silt and Sludge

During the construction phase, silt and petrochemical interception will be 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.

6.6.4 Concrete Blocks, Bricks, Tiles and Ceramics

Concrete blocks, bricks, tiles, and ceramics produced during construction are anticipated to be clean and inert materials, which will be recycled whenever possible. If concrete needs to be crushed on-site, an appropriate mobile waste facility permit will be obtained from FCC.

6.6.5 Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

6.6.6 Timber

Uncontaminated timber, free from paints, preservatives, and glues, will be disposed of in a separate skip for off-site recycling.

6.6.7 Metal

Metals will be carefully separated according to their type whenever possible and stored in designated skips. Metals are highly recyclable resources, and numerous companies specialise in accepting these materials for processing. By ensuring proper segregation and storage, a more sustainable recycling ecosystem is achieved as well as minimising waste in landfills.

6.6.8 Plasterboard

During construction, plasterboard will be segregated in a designated skip until it is collected for recycling. The Site Manager will carefully monitor new plasterboard supplies to reduce waste.

6.6.9 Glass

Glass materials will be segregated for recycling, where possible.

6.6.10 Waste Electrical & Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

6.6.11 Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off-site.

6.6.12 Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles.

6.6.13 Other Hazardous Wastes

Hazardous wastes, including contaminated soil and waste fuels, will be stored on-site only as necessary, with regular off-site removal arranged. Storage will prioritize minimizing exposure to personnel and the public and reducing environmental impacts. Whenever possible, these wastes will be recovered; otherwise, they will be disposed of properly.

7 Estimated Cost of Waste Management

The true cost of waste goes beyond just the expenses associated with waste collection and disposal. It also includes the value of the materials in the waste skip, the costs related to site storage, handling, and management, as well as the potential revenue lost from not selling, recycling, or reusing those materials.

Design teams should focus on reducing material purchasing costs through waste-efficient procurement methods, such as reusing materials and specifying recycled content where appropriate. Additionally, they should aim to lower waste disposal costs by implementing strategies to design out waste, plan material logistics, segregate waste at the source, and collaborate within the supply chain.

The following outline details the costs associated with various aspects of waste management. The overall cost of construction and demolition (C&D) waste management will be assessed, taking into account handling costs, storage costs, transportation costs, disposal costs, and revenue from rebates.

7.1 Reuse

Reusing materials on-site can lower transportation and disposal costs that would otherwise involve a waste contractor. Clean and inert materials like soils, gravel, and stones unsuitable for reuse can still be utilized as access roads or capping for landfills. These materials are often accepted at little to no cost, further reducing waste disposal expenses.

7.2 Recycling

Salvageable metals can earn a rebate to help offset collection and transportation costs.
Clean cardboard and certain hard plastics are recyclable. Waste contractors charge less for collecting segregated recyclables than mixed waste.
Timber can be recycled into chipboard, and contractors also charge less for segregated timber compared to mixed waste.

7.3 Disposal

Landfill charges range from €140 to €160 per tonne, which includes an €85 per tonne landfill levy as per the Waste Management (Landfill Levy) Regulations 2015. Waste contractors also charge a collection fee for skips.

Collecting segregated construction and demolition (C&D) waste is usually cheaper than municipal waste. C&D waste contractors take the materials to licensed facilities and often salvage usable items before disposing of the rest. Clean soil and rubble can also be utilized as fill or capping material when possible.

8 Construction Site Management

8.1 Site Management

The Construction Manager will oversee the Resource and Waste Management Plan (RWMP) and manage project resources. Key responsibilities include:

- Revising commitments or targets in the RWMP for Client approval during construction.
- Assigning resource management responsibilities to senior individuals.
- Appointing a qualified Resource Manager (RM) to implement the RWMP, who will update the plan as needed and provide training related to resource management.
- Ensuring site infrastructure is suitable and maintained.
- Engaging permitted Waste Contractors for the collection and disposal of inert and hazardous wastes.
- Maintaining up-to-date Waste Collection Permits and Waste Facility Permits.
- Conducting internal site and subcontractor audits.
- Being available for Local Authority audits.
- Keeping records of waste and resource exports handled by authorized operators.
- Collaborating with supply chain personnel to adopt supply chain initiatives.

8.2 On Site Resource Management

To minimise construction waste and promote the reuse and recycling of materials on-site, the following practices will be implemented:

- Order materials on an "as needed" basis to avoid oversupply and damage.
- Store and handle materials to reduce damage.
- Order materials in a sequence that minimizes on-site storage.
- Conduct inductions and toolbox talks for staff and subcontractors on proper waste disposal.
- Segregate broken concrete and excess aggregate for future use as hardstanding.
- Collect excess wood in designated skips for recycling.
- Separate plastics and metals into dedicated skips.
- Retain stripped topsoil in managed bunds to prevent erosion.
- Hazardous materials (e.g., unidentified hotspots, underground tanks) found during construction will be isolated, with removal managed by the responsible manager (RM).

8.3 Supply Chain

The Resource Manager (RM) will work with procurement teams to ensure best practices are followed to prevent excess resources on-site. Key measures include:

- Choosing procurement methods that reduce unnecessary packaging, like 'Just-in-Time' (JIT) delivery to limit material spoilage.
- Using consolidation centres for JIT delivery, which are storage and distribution facilities located near the site.
- Implementing ordering procedures that avoid waste, such as preventing over-ordering and using take-back programs for packaging and surplus materials.
- Planning the work sequence to minimize leftover resources on-site.

8.3.1 Tracking and Tracing

The Resource Manager (RM) is responsible for maintaining records of all resource materials used on site and those that leave the site. This includes materials designated for reuse, recycling, energy recovery, backfilling, or other recovery and disposal methods at third-party locations. A recording system will be established to track residual waste and resources generated on-site.

A daily log will be maintained to track the movement of resources off-site, with updates provided each day. This information will be compiled into a database as part of the Resource Waste Management Plan (RWMP) files.

For each movement of resources leaving the site, the RM will obtain a signed docket or invoice from the haulier or contractor. This document must detail the following information:

- 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)
- The name and authorisation of the haulier to transport the material – in the case of a 'waste' this requires a valid Waste Collection Permit (WCP). 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 also be recorded for each load of material removed from site.
- The name and authorisation of the destination site for the resource – again for a 'waste' this requires a valid Cert of Registration, Waste Permit or Waste Licence and in the case of by-product the relevant by-product determination.
- The waste contractors will be required to provide details of end-use or waste treatment in waste reports. This recording will be carried out for each resource type and the system will also be linked with the delivery records to allow the percentage of residual resource generated for each material to be determined.
- The system will 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. The RM shall ensure that all resources taken off-site are in line with the relevant legislation and the key area relates to ensuring that hauliers and recovery/disposal sites have the appropriate authorisations. Some key considerations include:
- Checking 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).
- Checking 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).
- Authorisation for the resource management operation proposed (e.g. Waste Permits and Waste Licences only permit an operator specific recovery or disposal codes).
- 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 limits (for example a licensed soil recovery facility can only accept uncontaminated material which meets the limits set out in the EPA Soil Trigger Level Guidance for Soil Recovery Site10 and cannot accept contaminated soils).

All movement of waste and the use of waste contractors will be 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 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 will be provided to the nominated project Waste Manager. If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from FCC and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

8.3.2 Record Keeping

All waste leaving the site will be documented. A system will track waste generated on-site, and a waste tracking log will monitor each exit. When the waste collection vehicle departs, the driver must stop at the site office to sign out as a visitor and provide either a waste docket or a Waste Transfer Form (WTF) for hazardous waste. Security personnel will then complete and sign the Waste Tracking Register with the required 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

Waste vehicles must be checked by security or the Resource Manager (RM) to confirm they display the waste collection permit number and have a copy of the permit before removing waste.

Waste transfer dockets are due weekly to the RM and must be added to the Waste Tracking Log. This information will be provided to the FCC Waste Regulation Unit on request.

Subcontractors using their own waste contractors must maintain a waste tracking log for inspection by the main contractor, which will be combined with the main waste log.

Site contractors must keep waste receipts from the facility on file. All Waste Collection Permits, Certificates of Registration (CORs), Waste Facility Permits, and Waste Licenses should be on-site and reviewed periodically by the RM. Subcontractors must also furnish their waste collection permits and CORs for inspection by the main contractor.

8.3.3 Auditing

The Resource Manager (RM) will conduct ongoing audits during the construction phase, focusing on work practices, record keeping, and off-site tracking. Key responsibilities include:

Work Practice Audits: The RM will perform periodic inspections to ensure compliance with the Resource Waste Management Plan (RWMP), assessing the following.

- Site signage and necessary repairs.
- Storage infrastructure and required upgrades.
- Resource segregation practices and any contamination.
- Compliance of contractors' work practices with the RWMP.

Record Review: The RM will periodically check records of on-site wastes and resources. If there are unaccounted waste movements, the RM will investigate and implement corrective actions.

Target Comparison: Resource records will be compared with established goals for reuse and recycling.

Material Management: The RM will identify areas of high residual waste generation and review waste management methods to meet project targets.

Corrective Actions: The RM will issue corrective actions, such as training or penalties, for any deviations from the RWMP.

8.4 Communications

It is recommended that the Resource Manager (RM) carries out the following communication tasks during construction:

- Provide resource statistics to the Client and Contractor management. These reports should show performance against targets and be included in site meeting agendas.
- Communicate with local authorities about site inspections and audits. Document and report any follow-up actions.
- Work with stakeholders, such as the Environmental Protection Agency (EPA) and the public, on resource management at the site.
- After construction, create a final report summarising the outcomes of resource management, including reuse and recovery figures and the final destinations of resources removed from the site. Submit this

report to the Client, Contractor management, and the local authority, which may need it for planning compliance.

8.5 Training

The Responsible Manager (RM) will oversee the training of site personnel, including waste management, which should be combined with general site induction, health and safety awareness, and manual handling.
Before starting work, all project personnel, including sub-contractors, must complete an environmental induction covering the Resource Waste Management Plan (RWMP). The induction will include:

- The scope and content of the RWMP.
- Project commitments and targets.
- Anticipated resources and waste volumes.
- Procedures for identifying and segregating resources and wastes.
- Locations of Waste Storage Areas (WSAs).
- Instruction on hazardous wastes and their dangers.

This induction will be tailored to the specific responsibilities of site personnel. Ongoing toolbox talks will also be provided to keep staff informed about resource management practices and compliance with the RWMP.

9 Site Infrastructure

9.1 Overview

A Construction Environmental Management Plan (CEMP) will be prepared and submitted as part of the planning application for the proposed development. This document will outline the site logistics for the development and will serve as the primary reference for issues related to site logistics. This includes details on development staging, construction access, site access, site security, site facilities, and health and safety.

9.2 Waste Storage Areas (WSA)

In relation to resource and waste storage, the Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as 'waste' at the site where it was produced. The Act defines the phrase 'the temporary storage of waste' limiting it to having a six-month duration. Appropriate measures to prevent environmental impact, e.g. run-off, will be implemented as needed.

Prior to construction, the site layout will be reviewed and suitable Waste Storage Areas (WSA) with adequate space for storage and handling will be identified. WSAs may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, wood, glass, etc.) or secure containers for hazardous materials. All WSAs will be assessed as fit for purpose and will be suitably contained, bunded or defined as required.
The WSA will be laid out to reduce any potential for impact on sensitive human (e.g. residential) or natural (water courses, ecological sites, etc.) and a suitable buffer to receptors will be applied to mitigate any impact.
Waste materials will be collected and stored in separate clearly labelled skips and suitable containers for collection by a Permitted Waste Contractor holding an appropriate Waste Collection permit.

Labelling and signage will be used on site to inform personnel of key WSA requirements and restrictions, with clear signage provided on all WSAs. Signage will also be erected to provide information to assist good resource practice across the site.

9.2.1 Oil Storage and Refuelling

Oil storage and refuelling areas will not be located close to any local watercourses or any drainage ditch. The following measures must be implemented.

- Dedicate specific areas for oil storage and refuelling, bunds sized to contain 110% of fuel storage capacity.
- The contractor will use fill point drip trays, bunded pallets and secondary containment units.
- The site will be enclosed and secured, and fuel storage areas will be secondarily secured.
- All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.

9.2.2 Stockpiles

The following measures are proposed in relation to stockpiling of materials:

- Locate stockpiles out of the wind or provide wind breaks to minimise dust generation.
- Keep stockpiles to minimum practicable height and use gentle slopes.
- Minimise the storage time of materials on site.
- Store materials away from the site boundary.
- Minimise the height of fall of all materials.
- Avoid spillage and clean any spill up as soon as possible.
- Good soil handling and storage methods including protection of stockpiles with geotextiles.

9.2.3 Spill Kits

Spill kits shall be located within the WSA with clearly labelled instructions on how they shall be used to clean up fuel/oil spills.
Spill kit must be kept on site with sand, earth or commercial products for the containment of fuel and other material spillages. All staff will receive appropriate training in the use of these kits and are to be made aware of where the kit is stored. In the event of a spillage of oils or chemicals resulting in contamination of water courses or damage to habitats, the following procedure will be adopted:

- The appropriate spill kit is to be deployed immediately, and the site manager is to be informed.
- The incident is to be recorded within the site logbook; and
- In the event of significant spillage (in excess of 10 litres) or of contaminants being discharged directly to water courses, the EPA is to be contacted on **0818 33 55 99**.

Figure 4:Example Spill Kit

10 Conclusion

This document outlines the principles and measures by which the waste generated during the construction phase of the proposed Large Scale Residential Development (LRD) at Forest Road, Swords will be managed and controlled. It provides clear guidance on the legal and policy framework for construction and demolition (C&D) waste management in Ireland. It includes estimates of the type and quantity of waste that the proposed development will generate and prescribes effective measures for managing various waste streams. This RWMP will be further updated by the Contractor prior to the commencement of works will be regularly reviewed and updated when required throughout the project's lifecycle to maximise waste reduction and efficiency.

Adhering to this Resource and Construction Waste Management Plan will ensure that waste management during the construction phase of the proposed development is conducted in accordance with the standards specified in the EPA's Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects, the Finglas County Council (FCC) Waste Bye-Laws, and the National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024).

Appendix A- Resource Waste Management Register

Description of Waste		Resource & Waste Management								Waste Collector		Waste Facility	
Waste Details	LoW Code	Vol. Gen t	Prevention Non-waste t	Reused Non-waste t	Recycled Non-waste t	R'covered Waste t	Disposed Waste t	Unit Cost € / t	Total Cost	Name	NWCP	Name	WFP/WL No.
Concrete, Bricks, Tiles and Ceramics	**17 01**												
Concrete	17 01 01												
Bricks	17 01 02												
Tiles and Ceramics	17 01 03												
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	17 01 06*												
Mixture of concrete, bricks tiles & ceramics	17 01 07												
Wood, Glass, and Plastic	**17 02**												
Wood	17 02 01												
Glass	17 02 02												
Plastic	17 02 03												
Glass, plastic and wood containing or contaminated with hazardous substances	17 02 04*												
Bituminous Mixtures, Coal Tar and Products	**17 03**												
Bituminous mixtures containing coal tar	17 03 01												
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02												
Metals (including their Alloys)	**17 04**												
Copper, Bronze, Brass	17 04 01												
Aluminum	17 04 02												
Lead	17 04 03												
Zinc	17 04 04												
Iron and Steel	17 04 05												
Tin	17 04 06												
Mixed Metals	17 04 07												
Metal waste contaminated with hazardous substances	17 04 09*												
Cables	17 04 11												
Soil (including excavated soil from contaminated sites, stones and dredging spoil)	**17 05**												
Soil and Stones	17 05 04												
Soil and Stones containing hazardous substances	17 05 03*												
Insulation and Asbestos-Containing Construction Materials	**17 06**												

Description of Waste		Resource & Waste Management								Waste Collector		Waste Facility	
Waste Details	**LoW Code**	**Vol. Gen t**	**Prevention Non-waste t**	**Reused Non-waste t**	**Recycled Non-waste t**	**R'covered Waste t**	**Disposed Waste t**	**Unit Cost € / t**	**Total Cost**	**Name**	**NWCP**	**Name**	**WFP/WL No.**
Insulation Material	17 06 04												
Construction Materials Containing Asbestos	17 06 05*												
Gypsum based Construction Materials	**17 08**												
Gypsum	17 08 02												
Other Construction and Demolition Materials	**17 09**												
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04												
Wastes of Liquid Fuels	**13 07**												
Fuel Oil & Diesel	13 07 01*												
Petrol	13 07 02*												
Other Fuels	13 07 03*												
Wastes from the Manufacture, Formulation. Supply and Use of Coatings	**08 01**												
Waste Paint & Varnish containing Organic Solvents or other Hazardous Materials	08 01 11*												
Waste Paint & Varnish other than those mentioned in 18 01 11	08 01 12												
Waste from wastewater treatment plants	**19 08**												
Sewage Screenings	19 08 01												
Municipal Wastes	**20 01**												
Paper and Cardboard	20 01 01												
Wood other than that mentioned in 20 01 37	20.01 38												
Paint, ink, adhesives, and resins containing hazardous substances	20 01 27												
Electrical and electronic components	20 01 35-36												
Batteries and accumulators	20 01 33-34												
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13/19/27-30												
Other Municipal Wastes	**20 03**												
Mixed Municipal Waste	20 03 01												

Appendix B - Licensed Waste Facility/Collector

Waste Type	Waste Code	Licensed Waste Facility/Collector	Facility Code	Facility Address
Soil & Stones	17 05 04	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Concrete	17 01 01	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Bricks	17 01 02	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Tiles and Ceramics	17 01 03	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Wood	17 02 01	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Glass	17 02 02	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Plastic	17 02 03	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Bituminous mixtures	17 03 02	SIAC Bituminous Products Ltd	WFP-DS-19-0002-01	Monastery Road Clondalkin Dublin 22
		KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
Mixed Metals	17 04 07	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
		Evolution Metal Recycling	WFP-DS-10-0002-06	Colas Bitumen Emulsions (Dublin) Ltd. Bluebell Industrial Estate Bluebell Avenue Dublin 24
Mixed Construction and Demolition Wastes	17 09 04	Callan Recycling Limited	WFP-DS-16-0001-05	Unit 51 Fourth Avenue, Cookstown Industrial Estate, Tallaght, Dublin 24 D24 NY76
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
		Citius Limited	COR-DS-22-0001-01	Club Road Ballymount Dublin 22

Appendix C – Proposed Development Plans

1 Site Layout Plan
1 : 500

Notes:
DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS IN ALL CASES. VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELY. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION. © THIS DRAWING IS COPYRIGHT AND MAY ONLY BE REPRODUCED WITH THE ARCHITECTS PERMISSION.

Drawing Notes:

Planning Symbols/Lines

- Redline Boundary (Site Area)
- Blueline Boundary (Lands under client ownership)
- Wayleave / Right of Way
- Existing Building

Resi zoned land = 21,450 sqm (2.14ha)
CLIENT OWNED AREA (resi zoned land + Greenbelt land) = 51,573 sqm (5.15 ha)

12% Required Open Space = 2,574 sqm (based on resi zoned land only)
Required Density = 35-80 units/ha

- Proposed Open Space = 2645sqm (12%) All provided within resi zoned land
- Private Open Space

TOTAL = 109 units
DENSITY = 51 units/ha (based on residential zoned land only)

Block A		
1 Bed		4
2 Bed 3 Person		2
2 Bed 4 Person		8
Block B		
1 Bed		13
2 Bed 3 Person		1
2 Bed 4 Person		13
Type A - Terrace - 2 Bed		5
Type B - End of Terrace - 3 Bed		2
Type C - Semi Detached - 3 Bed		4
Type D - Semi Detached - 4 Bed		11
Type E - Long Terrace - 3 Bed		4
Duplex -	1 Bed	21
	3 Bed	21
Total -		109
Mix		
1 Bed		38
2 Bed		29
3 Bed		31
4 Bed		11
Total -		109

NOT FOR CONSTRUCTION

Rev	Description	Date	Drn
GG	Frozen Site Layout	09/05/25	AG
FF	FFLs, Roads, Bin Stores updated	07/05/25	AG
EE	Motorbike parking added, EV charging	23/04/25	AG
DD	Updated	15/04/25	AG
CC	Planning Boundary Location Edited	11/04/25	DJH
BB	Apt Blocks Revised	03/04/25	AG
AA	Development Entrance Moved	19/03/25	AG
Z	Updated survey integrated	18/03/25	AG
Y	Issued for Discussion	17/02/25	AG
X	Issued for Discussion	17/01/25	AG
W	Roads and paths tweaked	16/01/25	AG
V	Distributor Road Added	15/01/25	AG
U	Section 32B Issue	21/11/24	AG
T	Section 32B Issue	20/11/24	AG
S	Draft Issue	18/11/24	AG

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Project:
Forrest Road
Swords,
Co. Dublin

Client:
Golden Port Contracting Ltd

Drawing Title:
Proposed Site Layout

Job No	Date	Scale@A1
23039	29/11/23	As indicated
Status: S0 - Initial Status or WIP		Drawn By: AG
Purpose: 1.0 Appraisal		Checked By: JC
Drawing Number: 23039-CRA-XX-XX-DR-A-11003		Revision: GG

A1 Landscape