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Forest Road, Large Scale Residential Development

Operational Waste Management Plan

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Executive Summary

Wave Dynamics was engaged by Golden Port Homes Limited to undertake an Operational Waste Management Plan (OWMP) for a Large-Scale Residential Development (LRD) on lands at Forest Road, Swords, Co. Dublin.

Operational Waste Management Plan

This Operational Waste Management Plan (OWMP) has been developed to demonstrate that the proposed Large Scale Residential Development (LRD) at Forest Road, Swords, will be designed and managed to provide residents with waste management infrastructure. The goal is to minimise the generation of residual waste while maximising opportunities for segregating and recycling the waste produced by the development.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development.

The waste management strategy outlined in this report ensures that there is adequate storage capacity for the various types of segregated waste produced by the residential development. Following the guidelines in British Standard 5906:2005, which addresses waste management in buildings, the typical weekly waste generation was calculated. This calculation confirms that sufficient and appropriate waste storage capacity will be available for the development when it reaches full occupancy.

All recyclable materials will be separated at the source to minimise costs for waste contractors and maximise the diversion of materials from landfills. This effort contributes to the targets outlined in the National Waste Management Plan for a Circular Economy (NWMPCE) for 2024-2030. Following this Operational Waste Management Plan (OWMP) will also ensure that waste management practices at the development comply with the Fingal County Council Waste Bye-Laws.

Additional recommendations have been provided. These recommendations may be used to further help contribute towards achieving current and long-term national and FCC targets for waste minimisation, re-use and recycling.

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1 Introduction

Wave Dynamics was engaged by Golden Port Homes Limited to undertake an Operational Waste Management Plan (OWMP) for a Large-Scale Residential Development (LRD) on lands at Forest Road, Swords, Co. Dublin.

The principal aim of this Operational Waste Management Plan (OWMP) is to demonstrate how the Proposed Development has considered sustainable methods for waste management during its operation. This Plan has been prepared in-line with the current legal and industry standards including, the Waste Management Act 1996 as amended, Environmental Protection Agency Act 1992 as amended, Litter Pollution Act 1997 as amended, Fingal County Council (FCC) 'Fingal County Council Segregation, Storage and Presentation of household and Commercial Waste ByeLaws' (2020), the National Waste Management Plan for a Circular Economy 2024 - 2030 and has been prepared with the following principles and objectives in mind:

- To contribute towards achieving current and long-term national and local targets for waste minimisation, recycling and re-use;
- To comply with all legal requirements for handling operational waste;
- To achieve high standards of environmental performance with respect to waste management; and
- To provide users of the proposed development with convenient, clean and efficient waste systems that enhances the operation of the buildings and promote high levels of recycling.

The key aims of this OWMP are to:

- Provide estimations on the anticipated waste generation within the proposed development;
- Provide a strategy for the management of the anticipated waste generation within the proposed development, from the point where waste is generated to the point where it is collected for off-site treatment;
- Ensure that occupants can easily segregate recyclables and are encouraged to do so;
- Allow waste to be disposed of easily, and be stored and collected in an efficient and discreet manner;
- Ensure that the Proposed Development has adequate facilities and space to adapt to any future waste management trends and practices; and
- Ensure that national and local targets, as well as all client waste management aims and aspirations, are met.

This operational WMP may be updated during detailed design and when the development is occupied to incorporate any changes in legislation and also to incorporate any changes and improvements in management technique.

Appendix A of this operational WMP outlines the 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 Operational Waste Management Plan (OWMP) 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 Waste Management in Ireland

The following section gives an overview of the main policy drivers for 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 OWMP 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 the provision of waste management facilities at the development and the estimated quantities of waste generated and for which the provision of storage is required have been based on the British Standard 5906:2005 Waste Management in Buildings – Code of Practice.

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 waste 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," 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.

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 its development;

- (Residual Municipal Waste) 6% Reduction in Residual Municipal Waste per person by 2030
- (Contamination of Materials) 90% of Material in Compliance in the Dry Recycling Bin
- (Material Compliance Residual) 10% per annum increase in Material Compliance in the residual bin. (90% by the end of 2030)
- (Reuse of Materials) 20kg Per person / year – Reuse of materials like cloths or furniture to prevent waste.
- 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 a €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015.

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.

3.2.2 Fingal County Council Waste Bye-Laws

Fingal County Council's "Segregation, Storage, and Presentation of Household and Commercial Waste Bye-Laws 2020" took effect in March 2020. These Bye-Laws establish enforceable requirements for both waste holders and collectors concerning the storage, separation, presentation, and collection of waste within the Fingal County Council's functional area. The key requirements outlined in these Waste Bye-Laws include:

1. Containers used for the presentation of kerbside waste shall be maintained in such condition and state of repair that the waste placed therein will not be a source of nuisance or litter.
2. Other than on the day before and the designated waste collection day, containers used for the presentation of kerbside waste shall be held within the curtilage of the premises where the waste is produced. They shall not be stored on a roadway, footway, footpath or any other public place unless the location has been expressly authorised in writing by an authorised person.

3. Household kerbside waste shall only be presented for collection in an appropriate waste container. The container shall not be over-loaded and the lid shall be securely closed. No waste shall be presented on the top of the lid or adjacent to the waste container.
4. Kerbside waste presented for collection shall not be presented for collection earlier than 1800 hours on the day immediately preceding the designated waste collection day.
5. All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 0900 hours on the day following the designated waste collection day.
6. Household waste that comprises hazardous waste or waste electrical and electronic equipment (WEEE) shall not be placed in any waste container and presented for kerbside collection except for specific WEEE collection events.
7. Household kerbside waste shall be segregated into residual household kerbside waste and recyclable household kerbside waste, with these fractions being stored separately. Any such separated recyclable waste shall not be deposited into a container designated for residual household kerbside waste and no such residual waste shall be deposited into a container designated for recyclable household kerbside waste.
8. Neither recyclable household kerbside waste nor food waste arising from households shall be contaminated with any other type of waste before or after it has been segregated.
9. A management company, or another person if there is no such company, who exercises control and supervision of residential and/or commercial activities in multi-unit developments, mixed-use developments, flats or apartment blocks, combined living/working spaces or other similar complexes shall ensure that:
    a. separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable household kerbside waste and residual household kerbside waste.
    b. additional receptacles are provided for the segregation, storage and collection of food waste where this practice is a requirement of the national legislation on food waste.
    c. the receptacles referred to in paragraphs (a) and (b) are located both within any individual apartment and at the place where waste is stored prior to its collection.
    d. any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector.
    e. written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection.
    f. an authorised waste collector is engaged to service the receptacles referred to in this section of these bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Fingal County Council.
    g. receptacles for kerbside waste are presented for collection on the designated waste collection day.
    h. adequate access and egress onto and from the premises by waste collection vehicles is maintained.

4 Guidelines and Standards

4.1 Design Standards for New Apartments

The Department of Housing, Planning and Local Government published the "Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities" in 2015, with updates released in 2018, December 2020, and December 2022. These guidelines establish standards for apartment development, focusing on design quality safeguards that include internal space standards for one-, two-, and three-bedroom apartments, as well as requirements for internal storage and amenity spaces.

The guidelines mandate the provision of facilities for the storage and collection of waste materials in apartment complexes. Refuse facilities should be easily accessible to each apartment's stairwell or lift core and designed to accommodate the anticipated level of waste generation, including the types and quantities of containers required. Within the apartments, there should be sufficient space for the temporary storage of segregated materials before they are deposited in communal waste storage areas. Additionally, the use of in-sink macerators is discouraged, as they can impose additional strain on drainage systems. The guidelines outline several general design considerations that should be taken into account when providing refuse storage facilities:

- Sufficient communal storage area to satisfy the three-bin system for the collection of mixed dry recyclables, organic waste and residual waste;
- In larger apartment schemes, consideration should also be given to the provision of separate collection facilities for other recyclables such as glass and plastics;
- Waste storage areas must be adequately ventilated so as to minimise odours and potential nuisance from vermin/flies and taking account the avoidance of nuisance for habitable rooms nearby;
- Provision in the layout for sufficient access for waste collectors, proximity of, or ease of access to, waste storage areas from individual apartments, including access by disabled people;
- Waste storage areas should not present any safety risks to users and should be well-lit;
- Waste storage areas should not be on the public street, and should not be visible to or accessible by the general public. Appropriate visual screening should be provided, particularly in the vicinity of apartment buildings;
- Waste storage areas in basement car parks should be avoided where possible, but where provided, must ensure adequate manoeuvring space for collection vehicles;
- The capacity for washing down waste storage areas, with wastewater discharging to the sewer.

4.2 Waste Management Obligations

Currently, there are no specific guidelines in Ireland for the preparation of Operational Waste Management Plans (OWMPs). As a result, this document refers to national and regional waste policies, legislation, and other relevant guidelines. The Waste Management Act follows the "polluter pays" principle, meaning that the waste producer is responsible for any pollution incidents that may occur due to the improper transport of the waste they generate. Therefore, it is essential for waste producers to ensure that all waste contractors they hire comply with legal requirements regarding waste transport and disposal.

When appointing a waste contractor for the development, the Facilities Management Company must ensure that the chosen waste contractor has a valid waste transport permit. A contractor is not allowed to accept any waste at their site unless they possess a waste permit granted by a local authority under the Waste Management (Permit) Regulations, 1998, or a waste license issued by the Environmental Protection Agency (EPA).

This permit specifies the types of waste that a contractor is licensed to receive, store, sort, and recycle at their site. The Facilities Management Company appointed to oversee the development will be responsible for implementing all aspects of the Operational Waste Management Plan as outlined in this report.
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.

4.3 Regional Waste Management Service Providers and Facilities

Several contractors provide waste collection services for the residential sector in the FCC region. Information about waste collection permits—whether granted, pending, or withdrawn—can be obtained from the National Waste Collection Permit Office (NWCPO). According to the Eastern Midlands Region (EMR) Waste Management Plan for 2015-2021, the number of landfills available in the region is decreasing. Currently, only three municipal solid waste landfills are operational, all of which are managed by the private sector. In addition, there are various other licensed and permitted facilities in the region, including waste transfer stations, hazardous waste facilities, and integrated waste management facilities.

Thermal treatment facilities are waste management systems that use high temperatures to process waste, reducing its volume, destroying harmful substances, and potentially generating energy. These facilities employ various methods like incineration, pyrolysis, and other thermal technologies to manage different types of waste, including municipal and industrial. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second in Poolbeg in Dublin.

There is a Civic Amenity / recycling centre, located c. 5 km north east of the development site at Estuary Recycling Centre, Greenfields, Swords, which can be utilised by the residents of the development for other household waste streams, while a bottle bank can be found c. 1.7 km north of the development site at Hilltown, Swords. A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all Waste Licenses issued are available from the EPA.

5 Typical Waste Categories

5.1 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.

5.2 Waste Type

At a strategic level the key waste streams produced on site can be classified as:

- Inert – wastes that will not cause adverse effects to the environment when disposed of, or do not decompose and they have no potentially hazardous content when placed in a landfill. Examples of inert wastes are rocks, concrete, mortar, glass, uncontaminated soils and aggregates.
- Non-Hazardous – wastes that will decompose when buried resulting in the production of methane and carbon dioxide. Examples of non-hazardous wastes include timber, paper and cardboard.
- Hazardous – wastes that are harmful to human health or the environment (for example, pollution of watercourses) if they are incorrectly contained, treated or disposed of. Hazardous wastes may have one or more of the following properties: explosive, corrosive, flammable, highly flammable, infectious, oxidising or sensitising.

5.2.1 Operational Waste from the Proposed Development

The typical non-hazardous and hazardous wastes that will be generated at the Proposed Development will include the following:

- Dry Mixed Recyclables (DMR) - is defined as a collection of solid waste materials that can be stored and collected in one bin or in separate bins to increase recycling value. Includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – organic waste is defined as waste that is organic in nature and comprises mainly of food, be it cooked or uncooked, from kitchens and other catering establishments and is generally classified as putrescible;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste - this is the residual waste that is the remaining waste material after separate diversion of waste components though reduction, reuse, recycling and food waste collections.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants or external landscaping;
- Batteries (both hazardous and non-hazardous);
- Drink Cans and Bottles (Deposit Return Scheme)
- Waste electrical and electronic equipment (WEEE) (both hazardous and nonhazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Lightbulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or crèche tenants);
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles.

Wastes should be separated into the specified types to ensure compliance with waste legislation and guidance while maximising the reuse, recycling, and recovery of waste, diverting it from landfill wherever possible.

5.3 List of Waste Codes

In 1994, the European Commission introduced the European Waste Catalogue and the Hazardous Waste List. In 2002, the EPA published a document summarizing these resources, which has since been replaced by the 2018 publication, "Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous." This classification system is used across the EU for waste reporting related to collection permits, Certificates of Registration (CORs), and the EPA National Waste Database.

In the classification system, various types of waste are defined by specific codes. The List of Waste (LoW) codes for typical waste materials anticipated during the operation of the proposed development are outlined in Table 1.

Waste Material	Hazard Level	LoW/EWC Code
Paper and Cardboard	Non-Hazardous	20 01 01
Plastics	Non-Hazardous	20 01 39
Metals	Non-Hazardous	20 01 40
Mixed Non-Recyclable Waste	Non-Hazardous	20 03 01
Glass	Non-Hazardous	20 01 02
Biodegradable Kitchen Waste	Non-Hazardous	20 01 08
Oils and Fats	Non-Hazardous	20 01 25
Textiles	Non-Hazardous	20 01 11
Batteries and Accumulators*	Hazardous	20 01 33*/34
Printer Toner/Cartridges*	Hazardous	20 01 27*/28
Green Waste	Non-Hazardous	20 02 01
WEEE*	Hazardous	20 01 35*/36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.) *	Hazardous	20 01 13*/19*/27*/28/29*/30
Fluorescent tubes and other mercury containing waste*	Non-Hazardous	20 01 21*
Bulky Wastes	Non-Hazardous	20 03 07

Table 1: Typical Waste Typed Generated and Associated LoW Codes
** Individual waste type may contain hazardous materials*

The most common wastes remain Mixed Dry Recyclables, Organic Waste, Mixed Non-Recyclables, and Glass. The other wastes will be produced in small quantities and can be disposed at civic amenity centres.

5.4 Waste Management

Once a substance has become waste it will remain waste until it has been fully recovered and no longer poses a potential risk to the environment or human health. From that moment onwards, the material ceases to be waste, and it is no longer subject to the same legislative controls.
This applies to waste used as aggregate or construction material in civil engineering applications and to exceed topsoils and sub-soils which need to be moved off-site. Waste recovery can be achieved when such waste is incorporated into a road, building or other infrastructure works, or in the case of inert waste, after processing if such a process is conducted following the criteria specified in the relevant quality protocols.
The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, materials and resources are maintained in the economy for as long as possible and the generation of waste is minimised.
To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy as illustrated in Figure 3.

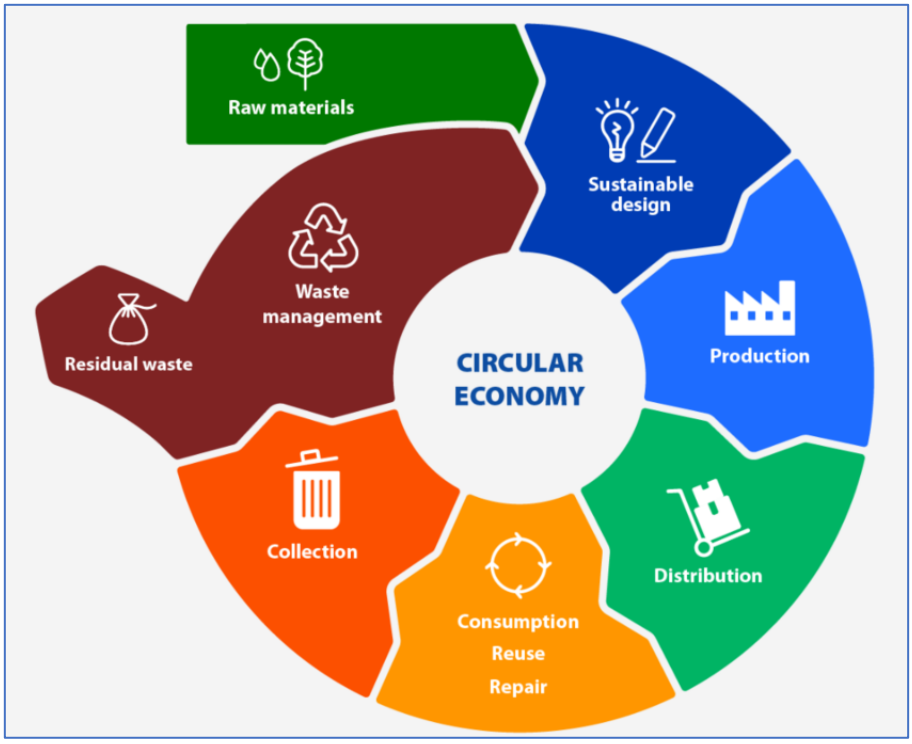

Figure 3: Circular Economy

6 Estimated Waste Arisings

British Standard 5906:2005 Waste Management in Buildings – Code of Practice covers methods of storage, collection, segregation for recycling and recovery, and on-site treatment of waste from residential and non-residential buildings and healthcare establishments. It is applicable to new buildings, refurbishments and conversions of residential and non-residential buildings, including but not limited to retail and offices. It sets out typical weekly waste arisings for various types of buildings, as outlined in Table 2.

Typical Weekly Waste Arisings			
Building Type	**Weekly Waste Calculation**	**Example**	**Weekly Waste Arisings (Litres)**
Dwelling (not HMO) This estimate assumes residential purposes only; if the dwelling is also used for any non-domestic purposes, the relevant arisings should be separately estimated and planned for.	70L per bedroom + 30L per dwelling	3-bedroom house	240
House in Multiple Occupation	100L per bedroom + 60L per dwelling	3-bedroom house	360
Office	50L per employee	10 employees	500
Shopping Centre	10L per sqm of sales area	25,000 sqm sales area	250,000
Fast Food Outlet	5L per sale	45,000 sales per week	225,000
Department Store	10L per sqm of sales area	3,700 sqm	37,000
Restaurant	75L per dinning space	30 dining spaces	2,250
4/5 Star Hotel	350L per bedroom	370 bedrooms	129,500
2/3 Star Hotel	250L per bedroom	100 bedrooms	25,000
1 Star Hotel/ B&B	150L per bedroom	5 bedrooms	750
Supermarket (small – sales area up to 1500sqm)	100L per sqm of sales area	800 sqm sales area	80,000
Supermarket (large – sales area more than 1500sqm)	150L per sqm of sales area	2,000 sqm sales area	300,000
Industrial Unit	5L per sqm of floor area	2,000 sqm floor area	10,000
School	2,500L per 100 pupils	700 puplis	17,500

Table 2: Typical Waste Arisings

For the purposes of the waste storage calculations, the waste will be segregated and stored into three main designated waste streams namely mixed dry recyclables, organic food waste and residual waste. When using volume as the unit measurement for waste arisings, it is considered that a 60:25:10:5 split between mixed dry recyclables, residual waste, organic waste and glass waste is a best estimate fit for waste breakdown for the proposed development and typical residential living. The above equation can be used to estimate the waste arisings for each of the different residential types based on the number of bedrooms present in the dwelling unit. Sections 6.1 and 6.2 below outline the estimated volume of waste that will be generated each week by each of the residential units based on the number of bedrooms per unit.

6.1 Waste Arisings: Houses

While British Standard 5906:2005, a code of practice for waste management in buildings, does not mandate a specific waste calculation for individual houses, it provides guidance on predicting waste quantities and designing appropriate storage solutions. While individual houses are generally not subject to the same detailed waste management regulations as larger developments, understanding the principles outlined in BS 5906:2005 and any relevant council regulations can help determine appropriate waste storage solutions for each dwelling, which in turn helps determine appropriate storage capacity and collection frequencies for the proposed development.

The proposed development will consist of a total of 109 no. residential units, 26 of which will be houses, comprising 5 no. 2 bed, 2 storey houses; 10 no. 3 bed, 2 storey houses; 11 no. 4 bed, 3 storey houses, in a mix of terraced and semi-detached house types.
Table 3 presents the estimated volume of waste that will be generated each week by each of the residential house units based on the number of bedrooms per unit.

Waste Stream	Approximate Waste Volume (litres/week)		
	2 Bedroom House	3 Bedroom House	4 Bedroom House
DryR (60%)	102	144	186
NonR (25%)	43	60	78
Organic (10%)	17	24	31
Glass (5%)	9	12	16
Total (100%)	171	240	311

Table 3: Estimated Main Waste Generation Volume for Each House Per Week

Assuming full occupancy rates for all 26 houses the total waste arisings for all the houses on the proposed development have been calculated as shown in Table 4.

Waste Stream	Approximate Waste Volume (litres/week)		
	5 No. 2 Bedroom Houses	10 No. 3 Bedroom Houses	11 No. 4 Bedroom Houses
DryR (60%)	510	1440	2046
NonR (25%)	215	600	852.5
Organic (10%)	85	240	341
Glass (5%)	45	120	170.5
Total (100%)	**855**	**2400**	**3421**

Table 4: Total Estimated Main Waste Generation Volume for All Houses Per Week

6.2 Waste Arisings: Duplex Units and Apartments

The proposed development will consist of a total of 109 no. residential units, of which 42 no. are duplex units and 41 no. are apartments.

The 42 no. duplex units are within 3-storey buildings comprising of 21 no. 1 bed units and 21 no. 3 bed units.

The 41 no. apartments are within 2 blocks;

- Block A will be a 4-storey building with 14 no. apartments (4 no. 1 bed and 10 no. 2 bed units); and
- Block B will be a 5-storey building with 27 no. apartments (13 no. 1 bed and 14 no. 2 bed units).

British Standard 5906:2005, code of practice for waste management in buildings was also used to estimate the weekly volume of waste generated by the duplexes and apartments in the development using the same methodology as the houses. Assuming full occupancy rates for all units the waste arisings for each apartment and duplex unit has been calculated as shown in Table 5 and Table 6.

6.2.1 Duplex Units

Table 5 illustrates the weekly estimated main waste generated by the 1 bedroom and 3 bedroom duplex units.

Waste Stream	Approximate Waste Volume (litres/week)	
	1 Bedroom Unit	3 Bedroom Unit
DryR (60%)	60	144
NonR (25%)	25	60
Organic (10%)	10	24
Glass (5%)	5	12
Total (100%)	100	240

Table 5: Estimated Main Waste Generation Volume for Each Duplex Unit Per Week

Assuming full occupancy rates for all 42 no. duplex units, the total waste arisings have been calculated as shown in Table 6.

Waste Stream	Approximate Waste Volume (litres/week)	
	21 No. 1 Bedroom Units	21 No. 3 Bedroom Units
DryR (60%)	1260	3024
NonR (25%)	525	1260
Organic (10%)	210	504
Glass (5%)	105	252
Total (100%)	**2100**	**5040**

Table 6: Total Estimated Main Waste Generation Volume for Each Duplex Unit Per Week

In total, the 21 no. 1 bedroom duplex units will produce approximately 2,100 litres of waste per week, with the 21 no. 3 bedroom duplex units producing approximately 5,040 litres of waste per week.

6.2.2 Apartments

Table 7 illustrates the weekly estimated main waste generated by the 1 bedroom and 2-bedroom apartment units.

Waste Stream	Approximate Waste Volume (litres/week)	
	Block A and Block B	
	1 Bedroom Unit	2 Bedroom Unit
DryR (60%)	60	102
NonR (25%)	25	43
Organic (10%)	10	17
Glass (5%)	5	9
Total	100	171

Table 7: Estimated Main Waste Generation Volume for Each Apartment Unit Per Week

Assuming full occupancy rates for all 41 no. apartments, the total waste arisings have been calculated as shown in Table 8.

Waste Stream	Approximate Waste Volume (litres/week)			
	Block A		Block B	
	4 No. 1 Bedroom Units	10 No. 2 Bedroom Units	13 No. 1 Bedroom Units	14 No. 2 Bedroom Units
DryR (60%)	240	1020	780	1428

Waste Stream	Approximate Waste Volume (litres/week)			
	Block A		Block B	
	4 No. 1 Bedroom Units	10 No. 2 Bedroom Units	13 No. 1 Bedroom Units	14 No. 2 Bedroom Units
NonR (25%)	100	430	325	602
Organic (10%)	40	170	130	238
Glass (5%)	20	90	65	126
Total (100%)	**400**	**1710**	**1300**	**2394**
Block Total	**2110**		**3694**	

Table 8: Total Estimated Main Waste Generation Volume for Each Apartment Unit Per Week

In total, the 14 no. apartments in Block A will produce approximately 2,110 litres of waste per week, with the 27 no. apartments in Block B producing approximately 3,694 litres of waste per week.

6.3 Total Weekly Waste Arisings

The British Standard 5906:2005 Waste Management in Buildings – Code of Practice was used to determine the total amount of waste produced by the proposed development assuming full occupancy rates of all houses, duplexes, and apartments. It is therefore estimated that a total of 19,609 litres (approx. 20m3) of the main waste types will be generated by the proposed development on a weekly basis once full occupancy has been reached.

	Approximate Waste Volume (litres/week)			
	Houses	Duplex Units	Apartments Block A	Apartments Block B
Total Estimated Weekly Generated Wasted	6676	7140	2110	3694
Development Total	**19,620**			

Table 9: Total Development Weekly Waste Arisings

7 Waste Storage Facilities

This section outlines the procedures for storing waste generated within the development. It has been prepared with careful attention to the proposed site layout and adheres to best practice standards as well as local and national waste management requirements including those of FCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy2020-2025; September 2020.
- Fingal County Council Development Plan 2023 – 2029 (2023).
- Fingal County Council Segregation Storage, Presentation and of Household and Commercial Waste (2020); and
- DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (sections 4.8 & 4.9) (2022).

7.1 Individual Houses

Each house in the development will have its own designated waste storage area, located either at the rear of the property or, if rear access is unavailable, at the front. In cases where the waste storage area is situated at the front, the bins will be positioned so that they are not visible from the adjacent road. The bins will be collected on the street on the designated collection date each week. The residences are responsible for moving their bins for collection while following all of the Bye-laws issued by Fingal County Council.

Figure 4 and Figure 5 illustrate a house type bin/bike store which will be located to the front of any house for which access to the rear is unavailable.

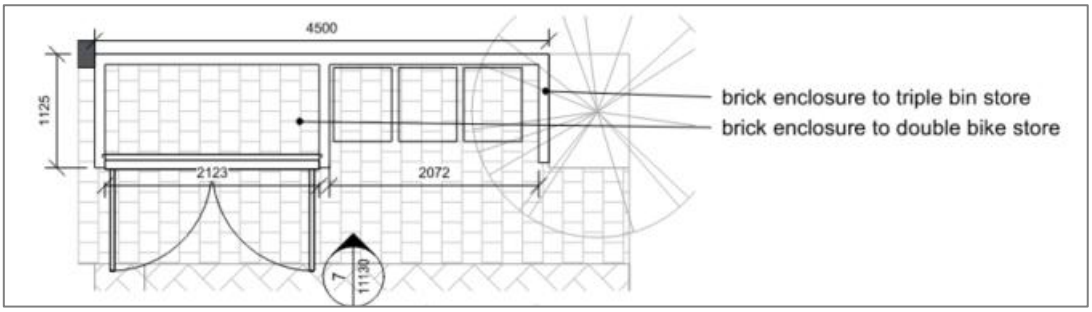

Figure 4: House Type Bin/Bike Store

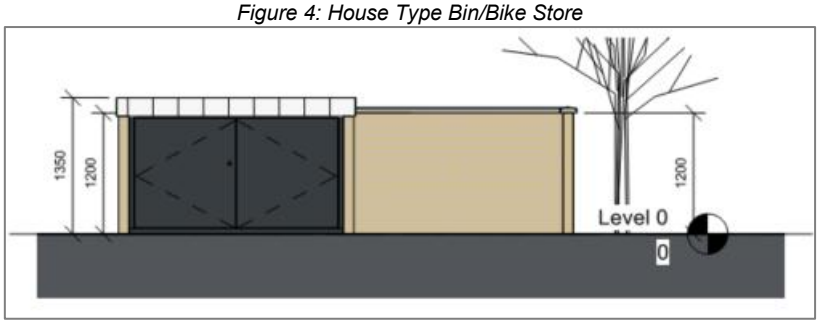

Figure 5: House Type Bin/Bike Store Elevation

7.1.1 Waste Storage Requirements for Houses

The largest house size, based on the expected number of occupants, is assumed to be a 4 No. bedroom house. This type of house would require one 240-litre wheelie bin for dry mixed -recyclables, along with two 140-litre wheelie bins for nonrecyclable and organic waste, respectively. All other house types will adopt the same waste storage capacity. Waste glass should be stored separately and taken to the nearest bring bank. The closest bottle bank can be found c. 1.7 km north of the development site at Hilltown, Swords.
Using the estimated waste generation volumes in Table 4 , the waste receptacle requirements for DMR, MNR organic waste and glass have been established for the houses. All waste types will be collected on a weekly basis. These are presented in Table 10.

House Type	Bins Required for Weekly Storage			
	DryR*	NonR**	Organic	Glass
2 – Bedroom House (Individual)	1 x 240L	1 x 140L	1 x 140L	Bring Bank
3 – Bedroom House (Individual)	1 x 240L	1 x 140L	1 x 140L	Bring Bank
4 – Bedroom House (Individual)	1 x 240L	1 x 140L	1 x 140L	Bring Bank

Table 10: Waste Storage Requirements for Houses
Note: * = Dry Mixed Recyclables
** = Mixed Non-Recyclables

Other types of waste materials, including waste electrical and electronic equipment, chemicals, lighting, furniture, and textiles, may be generated infrequently by residents. Residents are required to identify suitable temporary storage areas for these items within their units and dispose of them properly.

7.2 Duplex Units

There are a total of 5 duplex blocks, with each block containing a number of duplex units. The largest duplex block consists of 6 duplex unites, the smallest duplex block consists of 3 duplex units, with the remaining 3 duplex blocks are made up of 4 duplex units each.
Each duplex block has a secure bin storage area located in the communal open space at the rear. The bin store is positioned next to the garden gate, making it easy to transfer the bins to the public area for collection.
Residents are responsible for taking their segregated waste materials to the designated bin store and disposing of them in the appropriate bins.
Figure 6 and Figure 7 illustrate a duplex bin store which will be located in the communal open space at the rear of the duplex units.

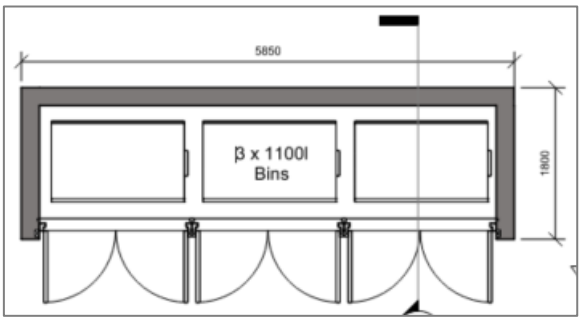

Figure 6: Duplex Bin Store

Figure 7: Duplex Bin Store Elevation

7.2.1 Waste Storage Requirements for Duplex Units

The specific bin allocation for each of the duplex blocks is presented in Table 11. This table shows the correct allocation of bin storage for each duplex block bin store to accommodate all the waste that will be generated by the associated duplex units when operating at full capacity. One duplex block consists of 6 duplex units, for this block an additional no.1 x360L bin for dry mixed recyclables will be required.

Waste glass should be stored separately and taken to the nearest bottle bring bank. Table 11 assumes a weekly emptying of the duplex bin stores.

Duplex Units	Bins Required for Weekly Storage			
	DryR*	NonR**	Organic	Glass
Duplex Communal Bin Storage	1 x 1100L 1 x360L ***	1 x 1100L	1 x 240L	Bring Bank

Table 11: Waste Storage Requirements for Duplex Units

Note: * = Dry Mixed Recyclables

** = Mixed Non-Recyclables

*** = For duplex block with 6 units, an additional 360L bin is required for Dry Mixed Recyclables

7.3 Apartment Blocks

Each apartment block (Blocks A and B) has been allocated one shared Waste Storage Area (WSA) for residents to use. Residents are responsible for taking their segregated waste materials to the designated waste storage area and disposing of them in the appropriate bins. These WSAs are located internally at ground level as illustrated in Figure 8 (WSA highlighted in blue). Access to the shared residential WSAs will be limited to authorised residents, facilities management, and waste contractors only, with access obtained using a key or electronic fob.

The locations of the shared WSAs can be viewed in detail on the drawings submitted with the planning application or in Appendix A of this report.

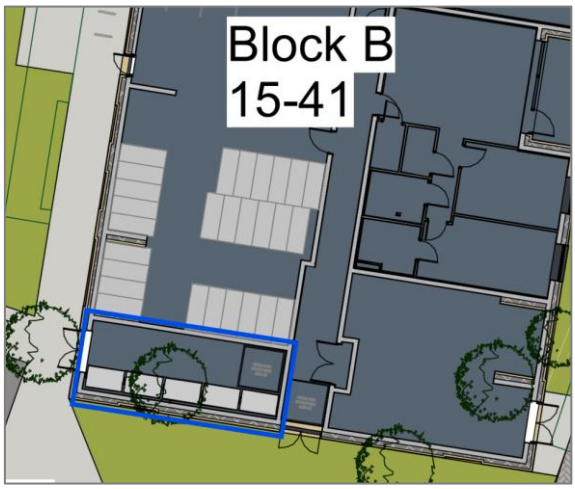

Figure 8: Apartment Block B Waste Storage Area

7.3.1 Waste Storage Requirements for Apartment Blocks

The estimated bin allocation for the apartment block WSA's is presented in Table 12. This table shows the allocation of bin storage to accommodate all the waste that will be generated by each apartment block when operating at full capacity. Mixed non-recyclable waste, dry mixed recyclable waste and organic waste will be collected weekly by the nominated waste contractor. Waste glass should be stored separately and taken to the nearest bottle bring bank.

Apartment Blocks	Bins Required for Weekly Storage			
	DryR*	NonR**	Organic	Glass
Apartment Block WSA	3 x 1100L	1 x 1100L	2 x 240L	Bring Bank

Table 12: Waste Storage Requirements for Apartment Blocks

Each bin or container in the shared residential waste storage areas (WSAs) will be clearly labelled and color-coded to prevent cross-contamination of the different waste streams. Signage will be displayed above or on the bins to indicate which types of waste can be placed in each container. Other waste materials such as textiles, batteries, printer toner/cartridges, waste cooking oil and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately.

7.3.2 Waste Storage Area (WSA) Design

The WSAs should be designed and fitted-out to meet the requirements of relevant design Standards, including:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours with a recommended 6-10 air changes per hour for a mechanical system for internal WSA's;
- The waste storage areas will be fitted with sensor lighting – a minimum Lux rating of 400 is recommended;
- The waste storage areas will be designed to provide safe access from the apartment units for all persons;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required; and
- Be fitted with CCTV for monitoring.

The facilities management company and residents must ensure that the WSA's are maintained in good condition, in full compliance with the FCC Waste Bye-Laws. It is essential that everyone takes responsibility for adhering to these standards.

7.4 Waste Storage in Residential Properties

All residents will be required to segregate their waste into the following main waste categories within their own properties:

- Organic waste;
- DMR;
- MNR; and
- Glass

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in Figure 9 below.

Figure 9: Example Trio Pull-Out-3-Compartment Bin

Residents must take their segregated waste materials to their own designated waste storage area and deposit their waste in the appropriate bins.

7.5 Waste Storage Receptacles

Typical waste storage receptacles, as shown in Figure 10 (or other approved containers), will be supplied by the facilities management company in the shared residential waste storage areas (WSAs). Each individual house is responsible for contacting a waste contractor to obtain the appropriate waste storage receptacles. These receptacles will be provided by the waste contractor for each specific unit. The types of bins utilised will vary in size, design, and colour based on the selected waste contractor. It is essential that all waste containers comply

with the performance requirements specified in the SIST EN 840-1:2020 and SIST EN 840-2:2020 standards for mobile waste containers, as required.

Figure 10: Typical Waste Receptacles of Varying Size

7.5.1 What goes in Each Bin?

Green Bin

- Paper and cardboard
- Food tins
- Drink cans
- Tetra-Pak cartons (e.g. milk, soup and juice cartons)
- Hard plastics (e.g. mineral , water and detergent bottles)
- Soft plastics (e.g. crisp packets, plastic bags)

Black Bin

- Soiled food packaging
- Bathroom waste
- Nappies
- Animal waste
- Cold ashes
- Aerosols
- Takeaway coffee cups
- Used candles

Brown Bin

- Coffee grounds and filters
- Cooked and raw foods
- Dairy products
- Eggs and egg shells
- Fruit, vegetables and peelings
- Tea leaves and tea bags
- Meat, bones and fish
- Hedge clippings, twigs and branches (max. 2 inches in diameter)
- Leaves, plants, weeds and grass.

Receptacles for organic waste, mixed dry recyclables, glass, and mixed non-recyclable waste will be readily available in the shared Waste Storage Areas (WSAs) before anyone occupies the first residential unit. Every resident will receive this WMP upon moving in. Furthermore, the facilities management company will proactively update the WMP as necessary, incorporating any new information on waste segregation, storage, reuse, and recycling initiatives that are introduced over time.

8 Waste Collection

There are numerous private contractors that provide waste collection services in the FCC area. All waste contractors servicing the development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered / permitted / licensed facilities only.

The facilities management company will put in place an agreement to ensure bins from the WSAs of Block A and Block B will be collected by waste contractors directly from the WSA and brought to the waiting refuse collection vehicles at the front of the apartment blocks, see Figure 11. The empty waste receptacles will then be returned to the WSA immediately after collection. Suitable access and egress have been provided to enable the bins to be moved easily from the WSA to the waste collection vehicles on the appropriate days.

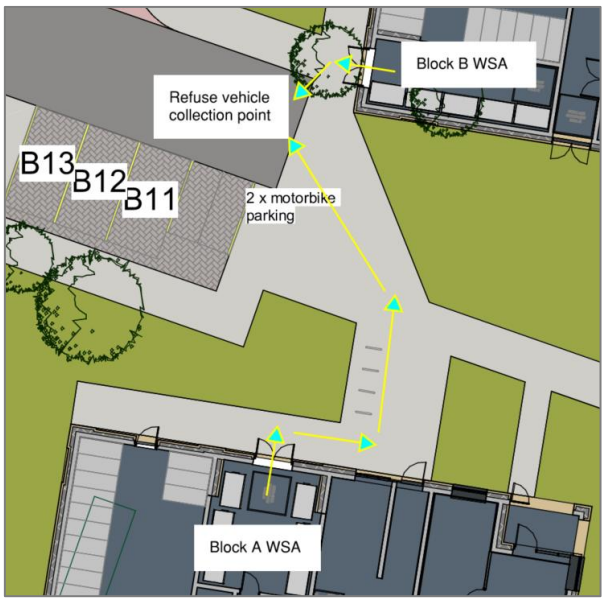

Figure 11: Refuse Collection Point for Block A and Block B

Residents with individual waste storage areas will be responsible for transferring their own bins to/from their own waste storage areas to the street/bin staging area for collection.

Residential waste from shared duplex WSAs, will be brought to an allocated bin staging area by personnel nominated by the facilities management company, prior to collection of the waste by the appointed waste contractor. Each block of duplex units has a secure bin store located in the communal open space at the rear of the building, with an associated bin staging area in proximity.

The bin staging area is designed to ensure it does not obstruct traffic or pedestrians. It provides a clear footway path of at least 1.8 meters, which is sufficient for two wheelchairs to pass each other comfortably. This design complies with the recommendations outlined in the Design Manual for Urban Roads and Streets (2019). The bin staging areas can be viewed on the Proposed Site Layout drawing in Appendix A of this report. Suitable access and egress have been provided to enable the bins to be moved easily from the bin stores/WSAs to the bin staging area for collection by the waste contractor on the appropriate days.

All waste receptacles should be clearly identified as required by waste legislation and the requirements of the FCC Waste Bye-Laws. Waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter. It is recommended that bin collection times are staggered to reduce the number of bins required to be emptied at once and the time the waste vehicle is on-Site. This will be determined during the process of appointment of a waste contractor. Waste will be collected at agreed days and times by the nominated waste contractors The frequency of the waste collection will be agreed with the Waste Contractor and will be reviewed when the subject development is fully occupied and as waste management trends evolve.

9 Management of Additional Waste

Some additional waste will be generated infrequently from the site during the operational phase of the proposed development. These types of materials will require separate management and outlined in the following non-exhaustive list.

Green Waste

Green waste from gardening activities, like trimming and pruning, can be disposed of in organic waste bins designed for biodegradable materials. If there's a large quantity of green waste, it's best to hire a professional landscape contractor for proper and eco-friendly disposal, following local regulations.

Batteries

A take-back service for waste batteries, including rechargeable ones, has been established to comply with S.I. No. 283/2014 - the EU (Batteries and Accumulators) Regulations 2014 as amended. Consumers can return used batteries to local civic amenity centres or retailers selling the same type for free, regardless of where they were purchased. This initiative promotes responsible recycling and provides easy access to safe disposal options.

Deposit Return Scheme

Most beverage containers are eligible for recycling through the deposit return scheme. This includes bottles, cans, and tins made from plastic, aluminium, or steel. To qualify for return, containers must be between 150 ml and 3 litres in size and must prominently display the Re-turn logo.
At the shops you can either return the containers:

- Using a Reverse Vending Machine (RVM)
- Manually in the shop

If a shop lacks a reverse vending machine (RVM) but sells containers with the Re-turn logo, it may allow manual returns unless a take-back exemption applies. RVM locations can be found on the Re-turn website (www.re-turn.ie).

Waste Electrical and Electronic Equipment (WEEE)

The WEEE Directive (Directive 2002/96/EC) and Waste Management Regulations aim to promote the recycling of electronic and electrical equipment. Consumers can bring their waste equipment to local recycling centres or return it to retailers within 15 days when purchasing new, similar items. Retailers must also collect WEEE within 15 days of delivering a new item, provided it is disconnected, safe, and accessible for collection.

Printer Cartridge / Toners

Residents have the option to return used printer cartridges and toners to the respective suppliers at no charge. Additionally, these items can be disposed of at local civic amenity centres, where they will be managed for proper recycling or disposal.

Chemicals

Chemicals, such as solvents, paints, adhesives, resins, and detergents, are often produced during building maintenance work. These tasks are usually carried out by external contractors, who are responsible for the off-site removal and proper recovery, recycling, or disposal of any waste materials generated. Residents should bring any waste cleaning products or hazardous waste packaging from cleaning products (if they arise) to a civic amenity centre for appropriate disposal.

Light Bulbs

Residents are advised to transport used light bulbs to the nearest civic amenity centre for appropriate storage and disposal.

Textiles

Residents are encouraged to recycle waste textiles or donate them to charitable organisations for reuse. It is the responsibility of residents to ensure the proper disposal of waste textiles..

Waste Cooking Oil

If the residents generate waste cooking oil, this can be brought to a civic amenity centre.

Furniture & Other Bulky Waste Items

Residents may occasionally generate bulky waste items, including furniture and carpets. If they wish to dispose of such items, they can bring them to a civic amenity centre.

Abandoned Bicycles

Bicycle parking areas will be included in the development plan. Residents may occasionally abandon defective or unused bicycles, making ownership identification difficult. Abandoned bicycles should ideally be donated to charity, or facilities management may arrange for collection by a licensed waste contractor.

9.1 Facility Management Responsibilities

It shall be the responsibility of the facilities management company to ensure that all domestic waste generated by residents is managed to ensure correct storage prior to collection by an appropriately permitted waste management company.

Facilities management will provide the following items:

- Provision of a Waste Management Plan document, prepared by the Facilities Management Company to all residential units, which shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the proposed development;
- Provision and maintenance of appropriate graphical signage to inform residents of their obligation to reduce waste, segregate waste and in the correct bin;
- Preparation of an annual waste management report for all residential units;
- Designation of access routes to common waste storage areas to ensure safe access from the apartment units by mobility impaired persons;
- Provision of an appropriately qualified and experienced staff member, who will be responsible for all aspects of waste management at the proposed development; Daily inspection of waste storage areas and signing of a daily check list, which shall be displayed within the area; and Maintenance of a weekly register, detailing the quantities and breakdown of wastes collected from the proposed development and provision of supporting documentation by the waste collector to allow tracking of waste recycling rates.

10 Recommendations

This section outlines recommendations that can be used to help contribute towards achieving current and long-term national and FCC targets for waste minimisation, re-use and recycling.

Implementation

The subject development will appoint a fully Licenced Waste management company to manage the waste disposal process. All documentation, such as licenses, waste transfer notes will be made available to the management company and a record will be held on site.

Bulk Items

The management company will arrange for waste collection for bulk items from the apartment and duplex units on an annual basis which will allow residents to have heavy items such as electrical appliances and furniture collected and transported to a licenced facility. This initiative should also reduce the potential for illegal waste collections and fly-tipping in the local area.

Pest Management

A pest control operator will be designated as necessary to oversee pest management during the operational phase of this development. All waste generated within the premises will be stored in sealed waste receptacles, both within individual units and in the designated Waste Storage Area (WSA). These receptacles will be meticulously maintained to prevent leaks, odours, and pest infestations. The WSA will be equipped with access to hot and cold water, a drainage point, and will undergo regular inspections by facilities management to mitigate pest-related issue.

Record Keeping

The management company shall maintain a comprehensive weekly register that details the quantities and classifications of general waste, recyclable waste, and organic waste collected from the development. Additionally, the waste collection contractor will provide supporting documentation on a regular basis.
For each load of waste collected, the following information will be documented: the date of collection, the type of waste, the quantity of waste in that load, and the signature of an authorised representative of the company. Furthermore, the management company will compile an annual report for the apartment units that presents the quantities and types of waste generated by the development during the preceding year. This report will also include guidelines on the proper procedures for waste segregation at the source, as well as the correct placement of waste within the designated storage area.

11 Conclusion

This Operational Waste Management Plan (OWMP) has been developed to demonstrate that the proposed Large Scale Residential Development (LRD) at Forest Road, Swords, will be designed and managed to provide residents with waste management infrastructure. The goal is to minimise the generation of residual waste while maximising opportunities for segregating and recycling the waste produced by the development.

Waste management within the Development has the following aims:

- To contribute towards achieving current and long-term government and BCC targets for waste minimisation, re-use and recycling;
- To allow that all legal requirements for handling and management of waste during operation of the Development are complied with; and
- To provide occupants with convenient, clean and efficient waste management systems that enhance the operation of the buildings and promote high levels of recycling.
- Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development.

The waste management strategy outlined in this report ensures that there is adequate storage capacity for the various types of segregated waste produced by the residential development. Following the guidelines in British Standard 5906:2005, which addresses waste management in buildings, we calculated the typical weekly waste generation. This calculation confirms that sufficient and appropriate waste storage capacity will be available for the development when it reaches full occupancy.

All recyclable materials will be separated at the source to minimize costs for waste contractors and maximize the diversion of materials from landfills. This effort contributes to the targets outlined in the National Waste Management Plan for a Circular Economy (NWMPCE) for 2024-2030. Following this Operational Waste Management Plan (OWMP) will also ensure that waste management practices at the development comply with the Fingal County Council Waste Bye-Laws.

Additional recommendations have been provided. These recommendations may be used to further help contribute towards achieving current and long-term national and FCC targets for waste minimisation, re-use and recycling.

Appendix A- Proposed Site Layout

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