PROPOSED MODIFICATIONS TO PERMITTED LRD REG. REF. LRD6057/24-S3A (AS AMENDED BY REG. REF. WEBLRD6103/26-S3) AT PRUSSIA STREET, DUBLIN 7

Operational Waste Management Plan

Randalswood Construction Ltd.

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1 INTRODUCTION

DNV has produced this Operational Waste Management Plan (OWMP) at the request of Randalswood Construction Ltd. for a Proposed Modifications to Permitted LRD Reg. Ref. LRD6057/24-S3A (as amended by Reg. Ref. WEBLRD6103/26-S3) at Prussia Street, Dublin 7 (hereafter referred to as 'the Proposed Development'). A full project description is included in Section 3 of this report.

The OWMP has been prepared to ensure that the management of waste during the operational phase of the Proposed Development is undertaken in accordance with current legal and industry standards including the 'Waste Management Act 1996, as amended', and associated Regulations including, 'Protection of the Environment Act 2003 as amended', 'Litter Pollution Act 1997 as amended', the '*National Waste Management Plan for a Circular Economy 2024-2030*' and '*Fingal County Council Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws 2020'* (hereinafter referred to as 'the bye-laws').

At present, there are no specific guidelines issued Dublin City Council for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation, and other guidelines.

The plan will be subject to review if a planning permission is granted and any material-changes in the proposed operational strategy will be subject to agreement with Dublin City Council at project construction and operational stages.

This OWMP aims to provide a detailed plan for the storage, handling, collection, and transport of the wastes generated at the development in a manner that does not present a risk to human health or the environment, or a risk of common waste related nuisance such as litter or odour.

The OWMP is designed to ensure that waste arising from the operational phase of the project is managed to incentivise waste prevention and to encourage the segregation of waste so that it can be managed in accordance with the Waste Hierarchy. Diversion of waste from landfill and waste prevention will be the overarching philosophy adopted. Figure 1-1 details the waste hierarchy.



Figure 1-1 Waste Hierarchy

Source: https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

The plan estimates the type and quantity of waste to be generated from the Proposed Development during the operational phase and provides a strategy for managing the different waste streams.

This OWMP considers the requirements of national and regional waste policy, legislation, and other local authority guidelines. In addition, it takes account of the following guidance:

- *"Sustainable Urban Housing: Design Standards for New Apartments",* July 2023*;*
- *The British Standard, "BS 5906:2005 Waste management in buildings — Code of practice"; and*
- *"Planning Design Standards for Apartments, Guidelines for Planning Authorities, 2025",*

2 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

Operational Waste Management Plans are prepared to support planning applications in Ireland. The purpose of this Operational Waste Management Plan is to detail and plan how waste generated during the operational phase of the Proposed Development will be managed. This will include requirements for waste storage provisions, access to authorised waste collection and proximity to additional recycling facilities.

The Proposed Development is located in the Dublin City Council (DCC) planning district. In preparing this document, consideration has been given to the requirements of the DCC Environment Department, national and regional waste policy, legislation, and other Local Authority Guidelines.

2.1 European and Irish Legal Context

Waste Legislation in Europe and the Republic of Ireland (hereinafter referred to as “Ireland”) is extensive and often complex.

The Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) is a core component of waste regulations across Europe. The Waste Framework Directive (which was transposed into Irish law in 2011) ‘S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011’, encourages the prevention, recycling, and processing of waste. The Waste Framework legislation establishes the legal structure for the prevention and management of waste in Ireland. It sets out a Waste Hierarchy which priorities waste prevention, preparation for re-use, recycling, and energy recovery. Waste disposal is the last resort and least favourable option. The Directive requires Member States to adopt waste management plans and waste prevention programmes. It also governs the reporting on waste generation, waste treatment, and capacity and sets down mandatory targets for waste diversion, collection, and treatment.

The new WFD (Directive (EU) 2018/851 of the European Parliament, amending Directive 2008/98/EC on waste) was approved by the EU in July 2018, and was transposed into Irish Law in July 2020. The new WFD forms part of the circular Economy Package adopted by the EU; it requires EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.

In Ireland, the primary platform for waste legislation is the ‘Waste Management Act 1996, as amended’, and the ‘Protection of the Environment Act 2003, as amended’. ‘The Waste Management Act, as amended’, has been brought into effect by making a series of subordinate regulations, covering a range of specific ‘priority’ waste types such as food waste, waste electrical and electronic equipment, batteries etc. The Act has been further amended by enacting regulations, mainly the Waste Directive Regulations which addresses new EU environmental initiatives and strengthen areas where problems have arisen.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the ‘Waste Management Act, as amended’, and subsequent Irish legislation, is the principle of “Duty of Care”. This implies that the waste producer is responsible for waste from the time it is generated until its legal disposal (including its method of disposal).

As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final waste treatment destination, waste contractors will be employed to physically transport waste to the final waste destination. It is therefore imperative that residential development management companies undertake on-site management of waste in accordance with all legal requirements and employ appropriately authorised waste contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport, and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

Each appointed Waste Contractor must hold a valid waste collection permit to transport waste which is issued by the National Waste Collection Permit Office (NWCPO). Waste treatment facilities must also be appropriately permitted (Waste Facility Permit or Certificate of Registration) or licensed by the Local Authority or Environmental Protection Agency to accept the waste. The Management Company appointed will be responsible for ensuring that all Waste Contractors hold the appropriate authorisations.

2.2 Waste Policy in Ireland

In addition to waste regulations, Ireland has adopted waste management policies. Waste management policy is adopted by the government and is detailed in a set of policy documents which have been produced since 1998:

- Waste Management: Changing Our Ways (1998);
- Preventing and Recycling Waste: Delivering Change (2002);
- Taking Stock & Moving Forward (2004);
- National Strategy on Biodegradable Waste Management (2006);
- A Resource Opportunity – Waste Management Policy in Ireland (2012); and
- A Waste Action Plan for a Circular Economy (2020) – Ireland's National Waste Policy 2020-2025 (2020)

'*A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025*' was published by the Department of Communications, Climate Action and Environment in September 2020. This policy sets out a number of important policy actions with the aim of transforming the current economic and waste system from linear to circular. These include the following actions:

- A shift towards a policy framework which rewards circularity and moves away from the waste of resources.
- Increased accountability of products that producers place on the market through levies on non-recyclable waste and the overuse of packaging.
- Targets for recycling (65% by 2035), food waste (reduced by 50% by 2030) and waste to landfill (no more than 10% by 2035).
- To support households, awareness and education measures will be strengthened; the waste collection industry will be encouraged to play a role in such measures.
- All Regional Waste Management Plans will be replaced with a National Waste Management Plan for a Circular Economy.
- A standardising of the colour coding of bins:

- (Mixed Municipal Waste (MMW) / General Waste to be designated as a 'recovery' bin: colour **black**;
- Dry Mixed Recyclables (DMR) bin: colour **green**;
- Organic (food) Waste bin to be designated as 'organic waste recycling bin': colour **brown**); and
- Glass bin: colour **blue**.

2.3 National Waste Management Plan & Local Bye-laws

The National Waste Management Plan for a Circular Economy 2024-2030 sets out the framework for the prevention and management of waste across Ireland. This document is a statutory document underpinned by national and EU waste legislation.

The strategic vision of the Plan is to rethink the approach to managing waste, and to move towards a 'circular economy' approach where resources are reused or recycled as much as possible, and the overall generation of waste is minimised.

To achieve this vision, the Plan has set out a number of specific and measurable performance targets:

- Achieve a recycling rate of 55% by 2025, 60% by 2030 and 65% by 2035;
- Mitigate total waste growth to 0% growth per person over the life of the Plan (baseline for total waste generated per person per year is 2.7 tonnes based on NWCPO data);
- 6% aggregate reduction in all residual municipal waste by 2030 (including commercial and household) (Baseline 0.37 tonnes rMSW per person); and
- Reduce contamination in municipal bins. This is measured as 'material compliance' which is the fraction of appropriate material placed in each of the residual, recyclable or food waste recycling bins.
  - A material compliance target of 90% in the dry recycling bin as a minimum standard.
  - A target of 10% per annum increase in material compliance in the residual bin is applied in this Plan. This represents a potential 90% material compliance rate by the end of 2030.

The relevant Priority Actions identified by the Plan in regard to the management of Municipal Household Waste are as follows:

- "*Maximise households on kerbside systems, standardise the identification of bins and promote items accepted for recycling using visual representation";* and
- *"Identify appropriate segregated waste collection systems for apartments and mixed use developments and support the waste industry in the implementation of these systems*."

2.3.1 Dublin City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws, 2018 as amended

The Dublin City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws, 2018 (hereinafter referred to as 'the bye-laws') place some additional obligations in how waste is stored and managed at the development.

The bye-laws state that "household kerbside waste shall only be presented for collection in an appropriate waste container. The container shall not be overloaded and the lid shall be securely closed. No waste shall be presented on the top of the lid or adjacent to the waste container."

A management company of an apartment complex shall ensure that "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" and "additional receptacles are provided for the segregation, storage and collection of **organic/food** waste."

Section 2.9(h) of the bye-laws state "adequate access and egress onto and from the premises by waste collection vehicles is maintained" for the collection of waste. This requirement has been taken into account when designing the development. Sufficient access and egress for waste collection vehicles will be provided.

2.3.2 The Dublin City Development Plan 2022-2028

This OWMP also takes into account the objectives of Chapter 9 of the Dublin City Development Plan 2022-2028:

Objective SI29: Segregated Storage and Collection of Waste Streams

To require new commercial and residential developments, to include adequate and easily accessible storage space that supports the separate collection of as many waste and recycling streams as possible, but at a minimum **general domestic waste**, **dry recyclables** and **organic/food** waste as appropriate (for further guidance see Appendix 7).

Objective SI30: Waste Management in Apartment Schemes

To require that the storage and collection of mixed dry recyclables, organic and residual waste materials within proposed apartment schemes have regard to the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018 (or and any future updated versions of these guidelines produced during the lifetime of this plan).

3 DESCRIPTION OF THE PROJECT

3.1 Description of the Development

The Proposed Development will consist of proposed modifications to the previously permitted Large-scale Residential Development (LRD) (permitted under planning permissions Reg. Ref. LRD6057/24-S3A and Reg. Ref. WEBLRD6103/26-S3), including modifications to the previously permitted total number of apartment units (110 no. permitted units to now provide a total of 120 no. apartment units i.e. 74 no. 1 beds, 43 no. 2 beds, 2 no. 3 beds, and 1 no. 4 bed) as follows:

Modifications to Block C from a total of 53 no. permitted apartments comprising of 34 no. 1 beds and 19 no. 2 beds, in a permitted building ranging from 7-8 storeys in height, to now provide two additional storeys to this block, to provide for a total of 63 no. apartments comprising of 40 no. 1-beds and 23 no. 2-beds, with modifications to the unit mix of the permitted seventh floor, in a building now ranging from 7-10 storeys in height, and all apartments provided with private balconies/terraces to south, east and west elevations; 16 no. additional cycle parking spaces to now provide a total of 240 no. cycle parking spaces on site, and all associated site works necessary to facilitate the development.

The Proposed Development shall provide further amendments to a previously permitted LRD development, under Reg. Ref. LRD6057/24-S3A, which has previously been amended under planning permission Reg. Ref. WEBLRD6103/26-S3. The parent permission was granted for 102 no. apartments on the subject site, across 3 no. blocks ranging in height from 3- 8-storeys in height. The applicant has since prepared the necessary pre-commencement planning compliance submissions to allow enabling works and construction to commence on site in recent months. Under planning permission Reg. Ref. WEBLRD6103/26-S3, by Order dated 27th April 2026, permission was granted for modifications to the unit mix of the parent permission to now provide a total of 110 no. units within the same building block. This alteration was proposed to align with the recent Planning Design Standards for Apartments Guidelines for Planning Authorities, (2025).

The applicant is now seeking permission for a further amendment to the permitted development, which will provide for an additional 10 no. units on site (a total of 120 no. units now proposed). This is being achieved through the proposal of 2 no. additional storeys on Block C at a new 8th and 9th floor, as well as a minor changes in unit mix proposed on the permitted 7th floor.

Figure 3-1 details the proposed site layout.



Figure 3-1 Proposed Site Layout (C+W O' Brien Architects, Aug 2026)

3.2 Proximity of the Development to Recycling Facilities

The site is located at 23-28 Prussia Street, Dublin 7. Figure 3-2 presents the proximity of the development site to local bring bank facilities. There are large civic amenity centres servicing the area, with numerous bring banks throughout the region for glass bottle collection.

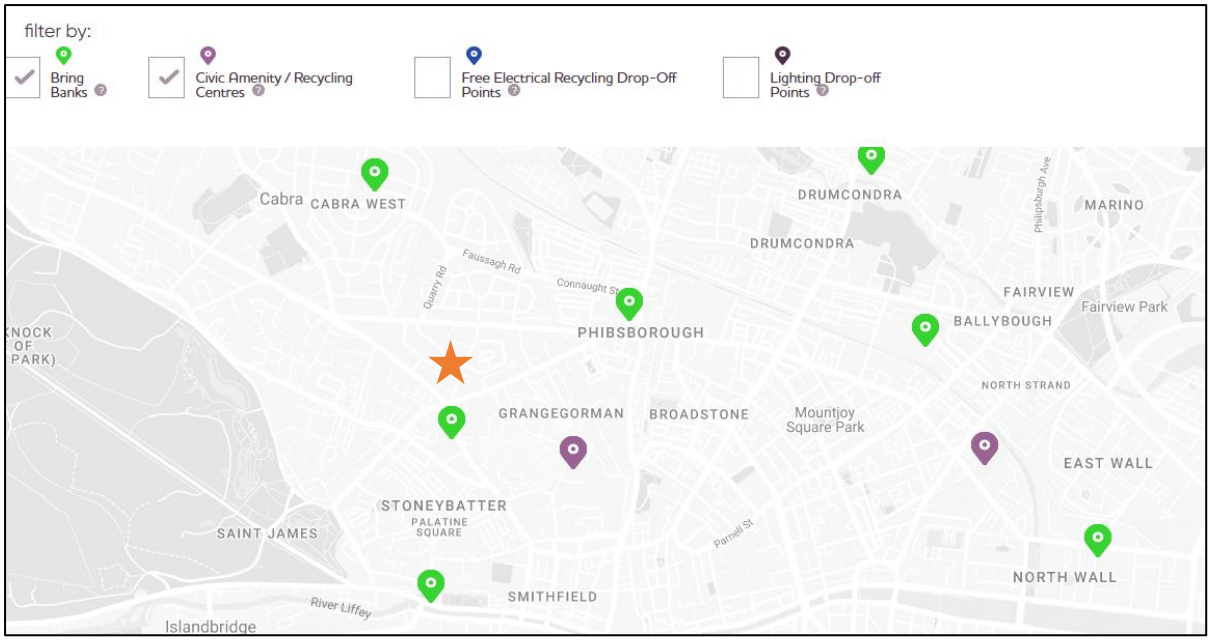

Figure 3-2 Bring Banks & Civic Amenity Centres located in proximity to the Proposed Development (Source: Repak), site location identified with an orange star.

4 WASTE GENERATION AND STORAGE

4.1 List of Waste Codes

Correct classification of waste is the foundation for ensuring that the collection, transportation, storage, and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements. In 1994, the 'European Waste Catalogue' (EWC) was published by the European Commission. This waste classification system applies across the EU and is the basis for all national and international waste reporting obligations such as those associated with waste collection permits, certificates of registration, waste facility permits and EPA Waste and IED licences and EPA National Waste Database.

In 2002, the EPA published a document titled the 'European Waste Catalogue and Hazardous Waste List'. This document was replaced in 2018 by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous'. The EPA document consolidates the EWC legislation and allows the generators of waste to classify the waste as hazardous or non-hazardous and, in the process to assign the correct List of Waste entry.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (previously referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the Proposed Development are provided in Table 4-1.

Table 4-1 Expected Waste Types and List of Waste Codes

Waste Description	List of Waste Code
Mixed Municipal Waste	20 03 01
Dry Mixed Recyclables	20 03 01
Biodegradable Kitchen Waste	20 01 08
Glass	20 01 02
Bulky wastes	20 03 07
Waste electrical and electronic equipment*	20 01 35*, 21 01 36
Batteries and accumulators*	20 01 33*, 20 01 34
Textiles	20 01 11
Fluorescent tubes and other mercury containing waste*	20 01 21
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)*	20 01 13*, 20 01 19*, 20 01 27*, 20 01 28, 20 01 29*, 20 01 30
Plastic	20 01 39
Metals	20 01 40

Paper and Cardboard	20 01 01

**Individual waste type may contain hazardous materials*

4.2 Residential

4.2.1 Waste Types Arising

The predicted waste types that will be generated at the Proposed Developments residential units include the following:

i. **Mixed Municipal Waste (MMW) / General Waste;**
ii. **Dry Mixed Recyclables (DMR)** - including cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
iii. **Organic (food) Waste**; and
iv. **Glass**.

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

- Bulky wastes – including furniture, carpets, mattresses;
- Waste electrical and electronic equipment (WEEE);
- Batteries;
- Textiles – clothes or soft furnishings;
- Light bulbs or fluorescent tubes;
- Chemicals – old medicines, paints, detergents; and
- Waste oil - cooking oil.

4.2.2 Waste Storage Capacity Requirements

4.2.2.1 Apartments

For the apartment buildings, it is necessary to calculate the required bin storage capacity based on the number of units and the number of bedrooms in each unit. The capacity requirements have been based on a scenario of full occupancy and collections of bins every second week, which is preferable to weekly collections from a resource efficiency perspective. It should be noted that this leaves scope for increased frequency of collections should this ever be required.

Table 4-2 Description and Number of Apartments

ID	1 BED	2 BED	3 BED	4 BED	Total
A	11	11	2	1	25
B	23	9	0	0	32
C	40	23	0	0	63
	74	**43**	**2**	**1**	**120**

The British Standard BS5906:2005 *Waste management in buildings — Code of practice* provides guidance in respect of waste generation for domestic and commercial premises to calculate the storage, containment, and equipment requirements for effective waste

management. Calculations provided in this British Standard document have been used to calculate the waste storage capacity requirements for the apartments in this Proposed Development. Table 4-2 details the Schedule of Accommodation for the residential apartments.

The number of bedrooms is required to complete the calculations of waste volumes generated as per the *BS 5906:2005 Waste management in buildings — Code of practice.*

The calculation for typical weekly waste arisings and subsequent storage requirements for domestic dwellings is as follows:

Number of dwellings × {(volume arising per bedroom [70 L] × average number of bedrooms) + 30}[a]

[a] *Based on average household occupancy.*

Table 4-3 below includes the calculations of waste arising using the formula provided in the *BS 5906:2005 Waste management in buildings — Code of practice.* Table 4-3 details the number of bins required to service the volume of waste arisings. The volume arising per bedroom is assumed to be 70 litres (L) as per the calculation formula provided. An additional 30L is added onto every dwelling for each calculation. It is expected that this additional volume is to allow for sufficient storage capacity in periods of seasonal variations resulting in high waste generation.

Table 4-3 Estimated Waste Volumes for Apartments

A					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres/Unit/Week**
1 Bed	**11**	**70**	1	**30**	**1,100**
2 Bed	**11**	**70**	2	**30**	**1,870**
3 Bed	**2**	**70**	3	**30**	**480**
4 Bed	**1**	**70**	4	**30**	**310**
	25		**Total Litres**		**3,760**
B					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres/Unit/Week**
1 Bed	**23**	**70**	1	**30**	**2,300**
2 Bed	**9**	**70**	2	**30**	**1,530**
3 Bed	**0**	**70**	3	**30**	**0**
	32				**3,830**
C					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres/Unit/Week**
1 Bed	**40**	**70**	1	**30**	**4,000**
2Bed	**23**	**70**	2	**30**	**3,910**
3 Bed	**0**	**70**	3	**30**	**0**
	63				**7,910**
Total Weekly waste arising in Litres (L)					15,500

The calculations completed in Table 4-3 conclude that the typical weekly waste arising is 15,500L.

It is preferable to accommodate weekly collection in the interests of promoting source segregation and waste minimisation efforts and encouraging the use of the recycling and food waste bins. This waste collection model has the added benefit of reducing the cost burden on the occupants and management company.

Based on weekly waste collections, there would therefore be a requirement to accommodate storage for a volume of 15,500L, or the equivalent of 14 no. 1,100L wheeled bins.

Based on weekly waste collections, it is anticipated that 16 no.1,100L bins and 18 no. 140L bins (or equivalent) will be required in the waste storage areas as detailed in Table 4-4 below (7 no. 1,100L bins for **Mixed Municipal Waste (MMW)**, 9 no. 1,100L bins for **Dry Mixed Recyclables (DMR),** 12 no. 140L bin for **Organic (food) Waste**, and 6 no. 140L bin for **Glass**).

Table 4-4 Breakdown of Bin Numbers and Capacity for Weekly Collections (Apartments)

No. of Bins	Size of Bins	Total Litre Capacity	Waste Type
6	140	840	Glass
12	140	1,680	Organic (food) Waste
9	1,100	9,900	Dry Mixed Recyclables (DMR)
7	1,100	7,700	Mixed Municipal Waste (MMW)
TOTAL		**20,120**	

The percentage of recyclable and non-recyclable wastes are set out in Table 4-5 overleaf.

Table 4-5 Breakdown of Waste Storage Capacity into Recyclable and Non-Recyclable (Apartments)

		Waste Types to be Generated								Total Storage Volume Required per WSA
		Glass		Organic (food) Waste		Dry Mixed Recyclables (DMR)		Mixed Municipal Waste (MMW)		
WSA ID	**Total No. of Units**	**Bin Capacity (l)**	**No. bins required**	**Bin Capacity (l)**	**No. bins required**	**Bin Capacity (l)**	**No. bins required**	**Bin Capacity (l)**	**No. bins required**	
A	25	140	1	140	5	1,100	2	1,100	2	5,240
B	32	140	2	140	2	1,100	3	1,100	2	6,060
C	63	140	3	140	5	1,100	4	1,100	3	8,820
		840		**1,680**		**9,900**		**7,700**		**20,120**
% Of waste type		**5%**		**9%**		**56%**		**30%**		**100.00%**
		70%						30%		

The total capacity of the number of bins actually provided is 20,120L (or the equivalent of 18 no. 1100L wheeled bins) which exceeds the required capacity for weekly collections.

On this basis, the bin storage capacity comfortably allows for weekly collections which is more efficient, leaving adequate contingency to increase collection frequency should that be required during unusually high-volume periods such as Christmas time.

4.2.3 Waste Storage Arrangements

4.2.3.1 Apartments

A number of dedicated, shared Waste Storage Areas are provided within the communal amenity spaces to serve the apartment units. These Waste Storage Areas are centrally located to ensure security and ease of access for residents throughout the development.

Residents will be required to segregate waste into the following waste categories:

- Mixed Municipal Waste (MMW) / General Waste;
- Dry Mixed Recyclables (DMR) - includes cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
- Organic (food) Waste; and
- Glass.

The layout and design of the apartments will ensure that there is adequate provision for the temporary storage of segregated materials prior to deposition in communal Waste Storage Areas. Adequate space is allocated in the kitchen area to accommodate a three-compartment bin for waste segregation at source. In-sink macerators will not be provided in the apartments.

A management company will be responsible for the provision of a leaflet to all new tenants encouraging good waste segregation and pictorial information detailing the waste streams that can be placed in each bin. In addition to this, clauses that support waste segregation targets will be included in relevant legal documentation e.g., tenancy agreements where possible.

A Waste Storage Area has been allocated for the apartment residents. It will be the responsibility of the residents to bring their segregated waste to Waste Storage Area and place into the appropriately labelled bins. Each bin will be clearly labelled to identify what wastes can and cannot be placed in the bin and labels will be pictorial. The route to the Waste Storage Area, and the area itself, will be wheelchair accessible, adequately lit, and appropriately ventilated.

Residents will have secure access to the Waste Storage Area (pin code or fob key). This will prevent unauthorised access to waste bins by the general public.

Any additional household wastes such as bulky waste, WEEE, batteries, textiles etc. must be brought by the apartment residents to a local recycling facility.

Access to a Waste Collection Service will be provided upon the first occupancy, irrespective of the occupancy levels of the new units.

4.3 Commercial

4.3.1 Waste Types Arising

The commercial facilities will generate similar waste types to residential waste types;

i. Mixed Municipal Waste (MMW) / General Waste;
ii. Dry Mixed Recyclables (DMR) - includes cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
iii. Organic (food) Waste

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

- 'Office' type wastes such as paper and printer ink;
- Waste electrical and electronic equipment (WEEE);
- Batteries;
- Glass; and
- Light bulbs or fluorescent tubes.

4.3.2 Waste Storage Capacity Requirements

For the commercial unit, it is necessary to calculate the required bin storage capacity based on the floor area of the units.

It is estimated, based on the floor area of the commercial unit, that there will be a requirement for 1 no. 660 Litre bin for **Dry Mixed Recyclables (DMR)**, 1 no. 660 Litre bin for **Mixed Municipal Waste (MMW) / General Waste** and 1 no. 140 litre bins for **Organic (food) Waste**, and 1 no. 140 litre bins for **Glass**.

Ample space is provided in the secure Commercial Waste Storage Area to accommodate these receptacles. The Commercial Waste Storage Area will only be accessible to the commercial unit staff members and will not be accessible to residents or members of the public. The commercial units are expected to generate similar waste types to the domestic dwellings as well as volumes of packaging waste. It will be incumbent on the occupier to arrange collection of materials such as ink cartridges.

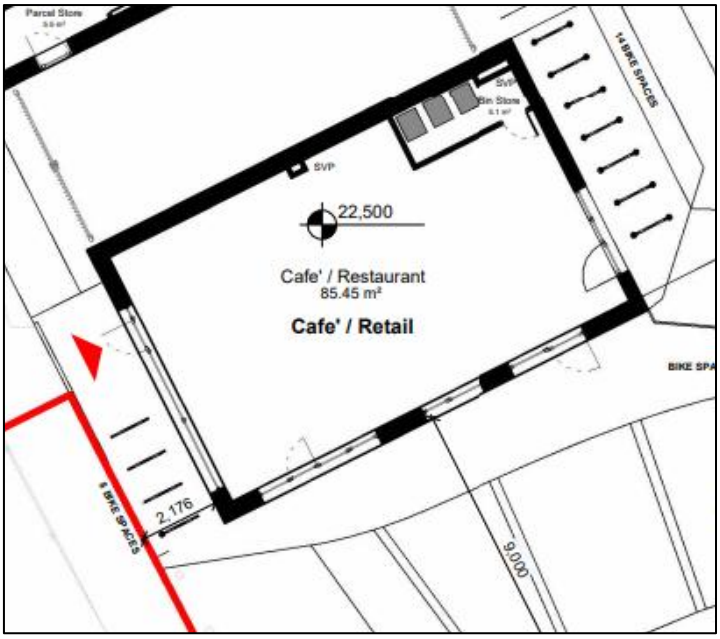

Figure 4-1 Layout of Commercial Facility Waste Storage Area

4.4 Shared Waste Storage Areas

The Department of Housing, Planning and Local Government published guidelines in July 2023– "*Sustainable Urban Housing: Design Standards for New Apartments*". These Guidelines detail the provisions that need to be made for the storage and collection of waste materials in apartment schemes. These guidelines have been considered when preparing the design of the Waste Storage Areas.

The Waste Storage Areas for this residential development is strategically located and will have the following provisions as minimum:

i. **Access:** The Waste Storage Area will be accessible for the mobility impaired.
ii. **Lighting:** The Waste Storage Area will have adequate lighting. This is to ensure that waste will not be tipped in dimly lit areas and that the areas do not pose as a safety risk.
iii. **Spillage and drainage:** A non-slip surface will be provided to prevent slips or falls, and the Waste Storage Area will have adequate drainage which will be directed to foul sewer.
iv. **Security:** The Waste Storage Area will have restricted access and will be accessible by tenants and residents only. This is to prevent unauthorised access to the bins by the general public.
v. **Screening:** The Waste Storage Area will be appropriately screened to ensure it is not visible to the general public.
vi. **Ventilation:** A natural vent will be provided. All vents will be ducted to an external opening so that the Waste Storage Area will not cause an odour nuisance, taking into account the avoidance of nuisance for habitable rooms nearby.
vii. **Signage:** Pictorial signage will be provided to show residents and tenants what wastes can and cannot be placed in each bin. All signage will be provided by the management company appointed.

viii. **Environmental nuisance:** The Waste Storage Area will be in an enclosed area to avoid environmental nuisances such as litter. Regular waste collections will be required from the waste collection providers to prevent any other environmental nuisances such as odour or vermin. The management company appointed will be required to ensure there is adequate vermin control in place.

ix. **Vehicular Access:** The development has been designed to ensure that waste collection vehicles can safely access the development to collect the bins. Vehicular access for waste collection is included in the traffic management plan for the development.

The apartments will be provided with a shared Waste Storage Area containing a four-bin wheelie bin system. Figure 4-2 details the location and the internal layout of the shared Waste Storage Area.

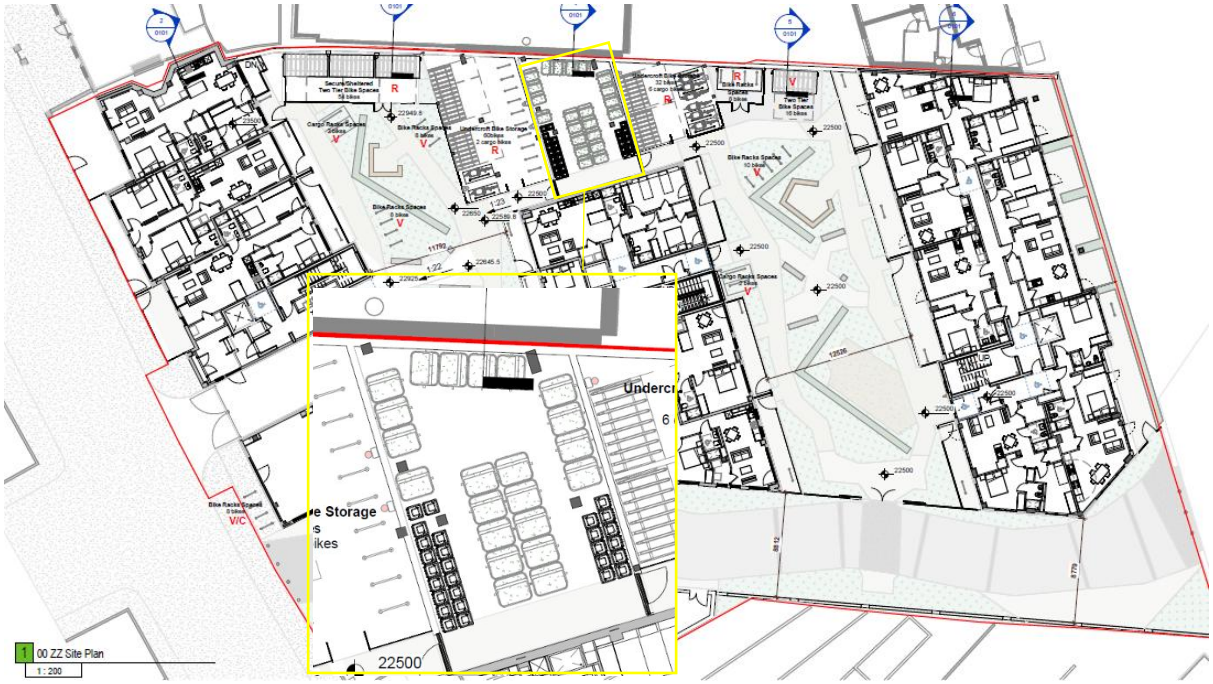

Figure 4-2 Location and Internal Layout of the Shared Waste Storage Area (Yellow)

4.5 Other Waste Materials

Other waste materials such as bulky waste, textiles, printer toner/cartridges, WEEE and batteries and other household hazardous wastes may be generated infrequently by the occupants of the residential units. Residents will be required to suitably store these wastes within their own dwellings and dispose of them appropriately at bring centres or civic amenity facilities. Details of nearby recycling centres and bring banks is available on the Repak.ie website. All occupants will be supplied with information by the management company on the location of recycling facilities in the area.

4.6 Recycling Rates & Targets

The Waste Storage Areas will be provided with receptacles and signage to promote a rate of 30% of the overall waste collected to be Mixed Municipal Waste (MMW) / General Waste and 70% of waste collected recyclable waste streams which will include Dry Mixed Recyclables (DMR) (packaging, papers, cardboards, plastics, aluminium, metals, and tin) and Organic (food) Waste.

All of the Mixed Municipal Waste (MMW) collected will be transported for further recovery. All MMW will be consigned to a recovery facility where it will undergo mechanical waste recovery, or it will be consigned to a facility for energy recovery. No MMW will be transported directly to landfill.

On review of bin usage by the appointed Management Company, MMW bins may be replaced with additional Organic (food) Waste or Dry Mixed Recyclables (DMR) bins to further increase waste segregation at source.

The ratio of bins detailed in this OWMP is in line with the European Commission's proposal to introduce 70% plus re-use and recycling targets for Mixed Municipal Waste (MMW) by 2030. This waste collection proposal also provides a waste management solution that has sufficient flexibility to support future targets and legislative requirements.

4.7 Bin Weight Limits & Dimensions

The DCC bye-laws state that waste presented for collection by a holder shall not be overloaded. Due to the capacity of bins being provided, bins will not be overloaded and will comply with the Bye-laws.

For the shared Waste Storage Areas, it is intended to use 1,100L bins of approximately 1300mm x 1000mm x 1300mm with a load capacity of no more than 240kg which will comply with IS EN 840 1997 for Dry Mixed Recyclables (DMR) and Mixed Municipal Waste (MMW), and 140L bins of 1060mm x 480mm x 550mm for Organic (food) Waste.

All bins will be color-coded and labelled to avoid cross-contamination, **green bins** for Dry Mixed Recyclables (DMR), **brown bins** for Organic (food) Waste, **black bins** for Mixed Municipal Waste (MMW) / General Waste, and **blue bins** for Glass (in accordance with the Waste Action Plan for Circular Economy). Use of and access to the Waste Storage Areas will be restricted to residents and waste contractors only. The Waste Storage Areas will not be visible to the public and will conform to the requirements of *BS 5906: 2005 – Waste Management in Buildings – Code of Practice*.

It is envisaged that residents of the apartments and duplexes will be subjected to a service management company service charge where waste management will be included in the fee.

5 WASTE COLLECTION

All collections must take place in compliance with conditions of the Waste Contractor's Waste Collection Permit for the region and in line with the Local Authority bye-laws and the Waste Management (Waste Collection Permit) Regulations 2007 as amended. All residents are obliged by law to avail of the waste management service and must comply with local bye-laws and Statutory Instruments in relation to the presentation of waste for collection. Waste collections for a four bin system service will be available from the time of first occupancy (i.e. even if all dwellings are not occupied).

A waste collection service will be available to all occupants from first occupancy, irrespective of whether all units have been filled or not. It will be the responsibility of the developer to engage in a contract with a suitably authorised Waste Contractor.

In all cases, waste collection vehicles will service the bins and the empty bins will be returned to the Waste Storage Areas. Bins will never be left outside the curtilage of the development. Access and egress of the waste collection vehicles will be in accordance with the Traffic Management Plan for the facility which has ensured the design allows for free-flowing movement of refuse collection vehicles throughout the development. BS 5906: 2005 – Waste Management in Buildings – Code of Practice has been taken into consideration when detailing vehicular access and egress to the development for the purposes of waste collection.

Vehicular access to the servicing area shall be from Prussia Street. Refuse vehicles shall approach the site from the north and shall reverse from Prussia Street into the servicing area. On completion of refuse collection, the refuse vehicle shall exit the servicing area in a forward gear. There will be gates to the front and rear of the servicing area for safety. See figure 5-2 for Swept Path Analysis.

All bins in the shared Waste Storage Area will be accessible for collection by the waste management contractor. It will be the responsibility of the management company to ensure that bins are accessible for collection from the Waste Storage Areas by the waste management operatives and to assist on collection day to wheel out and replace bins during collection where required. The ground floor design includes a dedicated area for bin storage within block B. For collection of refuse from the proposed development, a dedicated servicing area has been formed within Block A which shall facilitate off-street refuse collections for all sizes of refuse collection lorry. A clear and level route is provided through the central courtyard for the fetching of bins to the servicing area for collection as shown in figure 5-1 below.

The servicing area shall include gates at the rear of the servicing area to avoid conflict with residents of the development in the courtyard space. Gates shall also be provided at the streetside entrance to the servicing area, as would be common practice in similar schemes across the city. From an operational perspective, it is intended that management will have the gates open daily 8am-8pm (or earlier or later if required) to facilitate refuse collection days. The appointed refuse collector shall also have fob/pin access to the gates.

Records of the collections from the apartments will be maintained by the management company for the development including reports from the facilities to which the waste is taken.

The staff of the commercial facility will be responsible for arranging their own waste collection. It is the responsibility of the commercial facility staff to ensure that their bins are available for collection by the waste management operatives and to that they are returned to the Waste Storage Area following collection.



Figure 5-1 Bin store and route through central courtyard for bin collections in servicing area

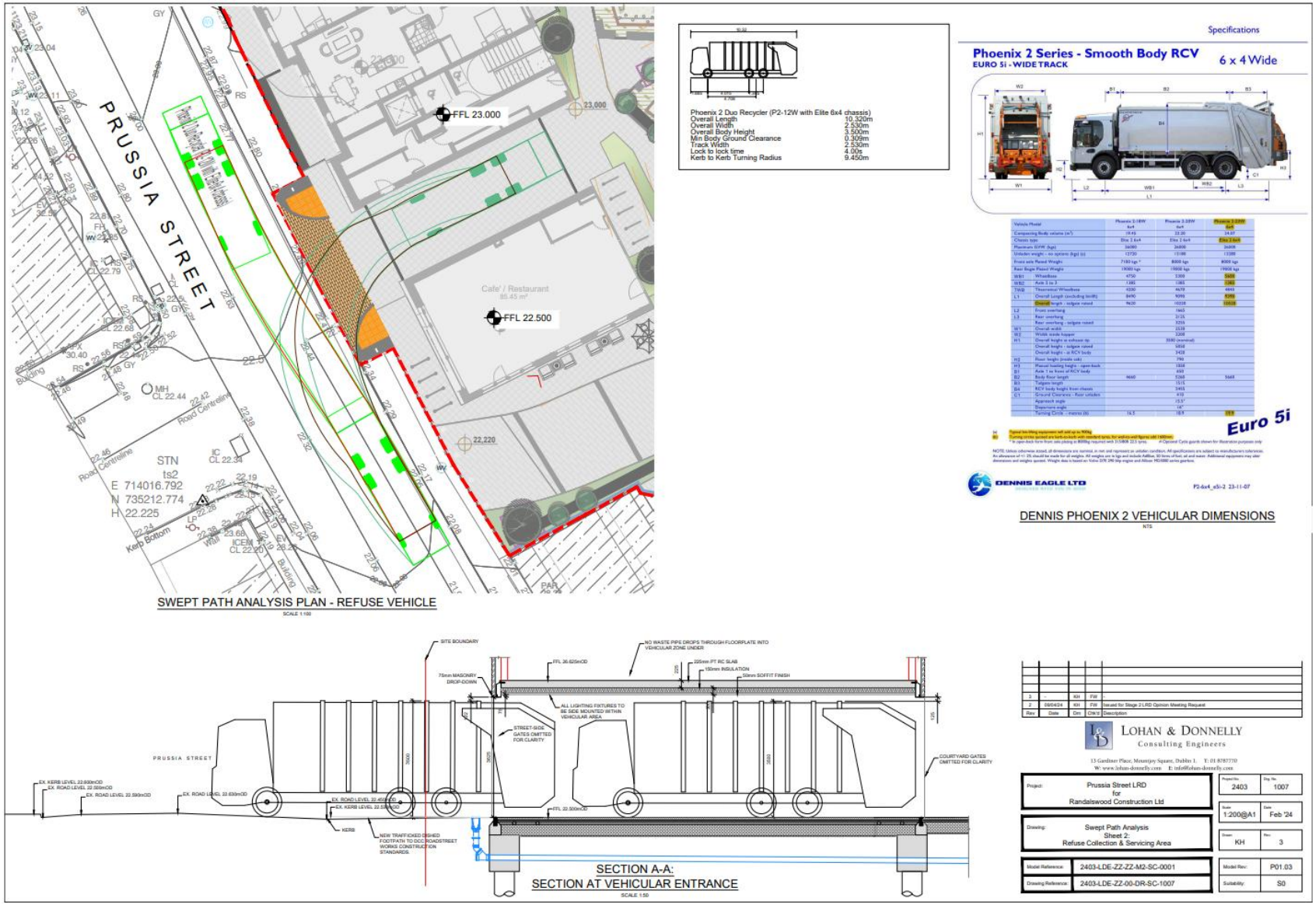

Figure 5-2 Swept Path Analysis (2403-LDE-ZZ-ZZ-DR-SC-1007)

6 MANAGEMENT SYSTEM

6.1 Information and Communication

Written information will be provided by the appointed management company, to each tenant or other occupier about the arrangements for waste separation, segregation, storage, and presentation prior to collection. The information pack will also contain information about nearby recycling facilities. This information will also be included in information booklets provided to new occupants of properties on the development.

It shall be a condition of contract with the appointed management company to ensure that all residents will be provided with an information pack from the waste collection provider. This information pack will detail the waste streams that can and cannot be placed in the bins provided in the waste compound so that waste segregation is actively encouraged and the specific dates on which the bins will be collected are clearly identified.

A clause will be included in the contract with the waste collection provider to provide this information pack to new residents.

6.2 Waste Management Contracts

It will be a condition of any management contract at the development that adequate budgets are in place for the provision of all required waste management services including a four-bin system for the collection of separate Organic (food) Waste, Dry Mixed Recyclables (DMR), Mixed Municipal Waste (MMW) / General Waste and Glass from the apartments and duplexes.

In addition to the requirements set out in Section 6.1 Information and Communication, the Management Company appointed will be required to continually monitor the performance of the waste management system. This will include routine visual checks of the Waste Storage Areas to ensure that all bins collected are returned to the Waste Storage Areas and to ensure this area is maintained so as not to cause any environmental nuisance to residents. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified.

Provision for bin cleaning will be included in the contract with the waste management contractor appointed to ensure the provision of bin cleaning services or replacement of clean bins by the waste contractor.

The Management Company will review all annual waste reports from the Waste Collection Company appointed to ensure that the waste collected is in line with the European recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all residents which will include information on what materials can be recycled and the waste streams that can be placed in bins. Residents will also be reminded of legal obligations where applicable. Further communication strategy to engage tenants and owner occupiers in good waste management practices will be adopted if deemed necessary.

Contingency policies will be in place to ensure continuity of service.

7 CONCLUSIONS

By implementing design and actions outlined in this OWMP, a high level of recycling, reuse and recovery will be achieved at the development in line with European targets. Dry Mixed Recyclables (DMR) and Organic (food) Waste will be segregated at source to reduce the quantity of residual waste materials requiring off-site recovery or disposal.

The source segregation of waste types as detailed in this report will help to achieve the targets set out in the *National Waste Management Plan for a Circular Economy 2024-2030*.

The design of the Waste Storage Areas will meet the requirements as detailed in the "*Sustainable Urban Housing: Design Standards for New Apartments",* July 2023.

8 REFERENCES

Dublin City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws, 2018 as amended.

Dublin City Development Plan 2022-2028.

National Waste Management Plan for a Circular Economy 2024-2030.

Waste Management Acts 1996, as amended.

Protection of the Environment Act 2003 as amended.

Litter Pollution Act 1997 as amended.

Guidance Notes for Waste Management in Residential and Commercial Developments, Dun Laoghaire-Rathdown County Council, February 2020.

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste).

European Communities (Waste Directive) Regulations 2011, S.I. No. 126/2011.

Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.

Waste Management: Changing Our Ways, The Department of the Environment and Local Government, 1998.

Preventing and Recycling Waste: Delivering Change, The Department of the Environment and Local Government, 2002.

Taking Stock & Moving Forward, The Department of the Environment and Local Government, 2004.

National Strategy on Biodegradable Waste Management, Department Environment, Heritage and Local Government, 2006.

A Resource Opportunity – Waste Management Policy in Ireland, Department of the Environment, Community and Local Government, 2012.

Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025, Department of the Environment, Climate and Communications, 2020.

European Waste Catalogue, European Commission, 2002.

Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous, Environment Protection Agency, 2018.

Sustainable Urban Housing: Design Standards for New Apartments, Department of Housing, Planning and Local Government, July 2023.

Waste Management in Buildings – Code of Practice, British Standard, BS 5906:2005, 2005.

Mobile Waste and Recycling Containers Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices — Dimensions and design, British Standard, BS EN 840-1:2012, 2012.

Mobile waste containers. Containers with four wheels with a capacity from 750 l to 1700 l with flat lid(s), for wide trunnion or BG-and/or wide comb lifting devices. Dimensions and design, British Standard, BS EN 840-4:1997, 1997.

Municipal Waste Statistics for Ireland, EPA Waste Data Release, September 25th, 2020.



Head Office
3D, Core C, Block 71, The Plaza, Park West, Dublin 12, D12F9TN, Ireland.
Tel: +353 1 565 4730
Email: bes.info@dnv.com

South West Regional Office
19 Henry Street, Kenmare, County Kerry, V93 CVH0, Ireland.
Tel: +353 646 641932
Email: bes.info@dnv.com

South East Regional Office
M10 Wexford Enterprise Centre, Strandfield Business Park, Rosslare Rd, Strandfield, Kerlogue, Co. Wexford, Y35 W5RD, Ireland.
Tel: +353 1 565 4730
Email: bes.info@dnv.com