

Appendix 12.5 – *‘Outline Operational Waste Management Plan’*, Atkins,  
2022.

# Coastal Quarter SHD 2

Operational Waste Management Plan

Shankill Property Investments Limited

September 2022



# Notice

This document and its contents have been prepared and are intended solely as information for Shankill Property Investment Ltd. and use in relation to the Operational Waste Management Plan for Coastal Quarter SHD 2.

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This document has 23 pages including the cover.

## Document history

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## List of Acronyms

- ABP - An Bord Pleanála
- C&D - Construction and Demolition
- DLRCC – Dún Laoghaire-Rathdown County Council
- DoEHLG - Department of Environment, Heritage and Local Government
- EPA - Environmental Protection Agency
- EWC - European Waste Catalogue
- LoW - List of Waste
- OWMP – Operational Waste Management Plan
- SHD - Strategic Housing Development
- WCC – Wicklow County Council

# 1. Introduction

This Operational Waste Management Plan (OWMP) has been prepared by WS Atkins Ireland Ltd. (Atkins) on behalf of Shankill Property Investments Limited (the applicant) as part of the supporting documents required for a planning application for a proposed residential development at Ravenswell Bray County Wicklow, referred to as the Coastal Quarter SHD 2.

Shankill Property Investments Limited intent to apply to An Bord Pleanála (ABP) for permission for a Strategic Housing Development (SHD) comprising 586 no. residential units in a mix of apartments, duplexes and houses. In addition, a childcare facility, café, retail unit and 1 no. mixed use commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface, undercroft and basement levels. The proposed houses and duplexes range in height from 2 – 3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units. It is proposed that 274 no. units will be located within the administrative area of Dún Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

Planning permission was granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit subject to compliance with the terms of conditions attached to reference ABP-311181-21. The proposed development includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions and new proposals for Blocks A and B which were previously refused.

The proposed Coastal Quarter lands are the subject of this SHD application to ABP and are hereafter also referred to as ‘the Site’, or the ‘proposed development’. A detailed development description and further details are presented as part of the planning documents and drawings submitted for this planning application.

The principle objective of this operational WMP is to provide a framework for the provision of waste management facilities for the operational phase of the proposed development.

## 1.1. Aim of the Plan

The aim of the plan is to calculate the quantities of waste that may be generated during the operational phase of the proposed development and to ensure that adequate waste storage facilities are incorporated into the design of the development to meet all relevant waste management requirements, as detailed further in Section 3 of this document.

## 1.2. Methodology

This document has been prepared in accordance with the relevant industry standard guidance document

- Environmental Protection Agency (EPA) National Waste Statistics: Guidance for estimating quantity of waste generated on-site (EPA, 2020);
- Waste Storage Guide for Northern Ireland (Building Control Northern Ireland, 2010);
- Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (Department of Housing, Local Government and Heritage 2020);
- Organic Waste Management in Apartments prepared for the EPA (Carey. C., Phelan., W. and Boland., B. 2008); and,
- BS 5906:2005 Waste Management in Buildings – Code of Practice.

In addition, the following relevant best practice guidance documents and Development Plan have also been consulted:

- Design out Waste: Preparation of Waste Reduction Factsheets for Design Teams’ (EPA, 2015);
- EPA National Waste Statistics Summary Report 2020 (EPA 2020);
- Dún Laoghaire-Rathdown County Development Plan 2022 - 2028 (DLRCC 2022);
- Dún Laoghaire-Rathdown County Council (DLRCC), 2022. ‘Appendix 6 - Dún Laoghaire-Rathdown Development Plan 2022-2028’.
- Guidance Notes for Waste Management in Residential and Commercial Developments (DLRCC 2020);
- Wicklow County Council’s Bray Municipal District Local Plan 2018-2024 (WCC, 2018);
- Wicklow County Development Plan 2016 -2022 Development and Design Standards (WCC, 2016); and,
- Draft Wicklow County Development 2022-2028 and proposed amendments (WCC, 2022).

### 1.3. Site Location & Surrounding Land Use

The proposed development site is located in an existing 8.812 hectares (ha) parcel of land within the former Bray Golf Course lands off Ravenswell Road and the Dublin Road, Bray, County Wicklow and County Dublin. For the purposes of this report the site boundary is outlined in red in Figure 1-1 below.

The Site is currently grassed with mature and semi mature trees scattered throughout. The Site is located within 2no. county jurisdictions; Dún Laoghaire-Rathdown County Council (DLRCC) and Wicklow County Council (WCC).

The Site is generally bounded to the north by the existing public open space at Corke Abbey Valley Park and existing housing estate at Corke Abbey, to the east by the Irish Rail Dublin-Rosslare main rail line, to the south and south-west by the River Dargle and Harbour Point Masterplan lands, and to the west by the existing Ravenswell schools campus. An existing underground Irish Water foul storage tank, foul services and existing utilities are also currently present within the Site boundary.

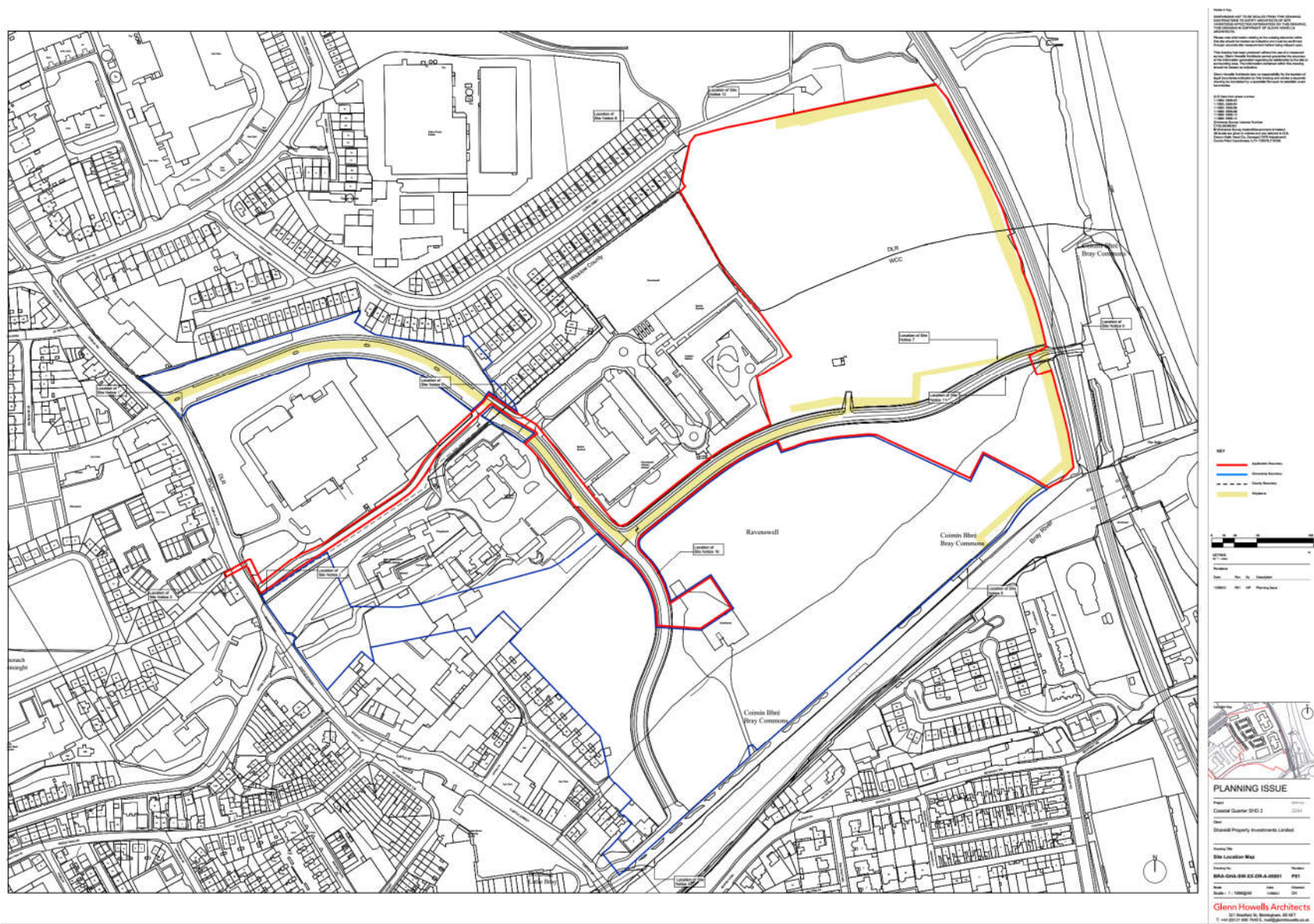


Figure 1-1 – Site Location (showing red-line application / site boundary for the Coastal Quarter) (blue-line denotes overall ownership boundary).

## 2. Project Description

### 2.1. Location, Nature and Scale of the Development

The proposed development will provide 586 no. residential units in a mix of apartments, duplexes and houses. In addition, a childcare facility, café, retail unit and 1 no. mixed use commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface, undercroft and basement levels. The proposed houses and duplexes range in height from 2 – 3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units. It is proposed that 274 no. units will be located within the administrative area of Dún Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

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The layout of the proposed development is presented in Figure 2-1. Further details of the proposed development are presented in the planning documents and drawings submitted as part of this planning application. No demolition works will be required on this project.



Figure 2-1 - Proposed Site Layout Plan for the Coastal Quarter



## 2.2. Operational Phase Waste

### 2.2.1. Details of the Non-Hazardous Wastes to be produced

Waste materials generated during the Operational Phase will primarily comprise household waste (including dry recyclables (paper, plastic etc.), glass, food, organic waste and domestic refuse) and occasional maintenance waste (including general waste and green waste). It is assumed that the majority of waste produced during the Operational Phase will be non-hazardous.

In the event that any hazardous materials are brought to site for maintenance purposes, the volumes of paints, varnishes, glues, adhesives etc. will be minor, and will be removed offsite and disposed of appropriately by the relevant maintenance contractor. Hazardous wastes (such as waste fuel, oil or chemicals) will therefore not be generated onsite during the Operational Phase.

### 2.2.2. Summary of Potential Waste Streams (LoW / EWC Codes)

A summary of the main non-hazardous waste streams which could arise during the Operational Phase is presented in Table 2-1, along with the relevant List of Waste (LoW) code. The LoW code (also referred to as European Waste Catalogue (EWC) code) serves as a common method of characterising various waste streams. Assignment of waste codes will determine how and where the generated waste can be disposed of. LoW codes must be selected for each waste type – a full description of each code is available on the EPA website.

It should be noted that the summary list presented in Table 2-1 is a non-exhaustive list and it will be the Developers responsibility to ensure all waste streams generated onsite during the Operational Phase of the development are appropriately characterised, managed and disposed of in accordance with all relevant waste management legislation.

**Table 2-1 - Summary list of LoW Codes which may be relevant to the site during the Operational Phase**

Municipal Waste Material	LoW Code
Paper and Cardboard	20 01 01
Plastic	20 01 39
Wood	17 02 01
Metals	20 01 40
Mixed Municipal Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Biodegradable garden and park waste	20 02 01
Textiles	20 01 11
Bulky wastes	20 03 07

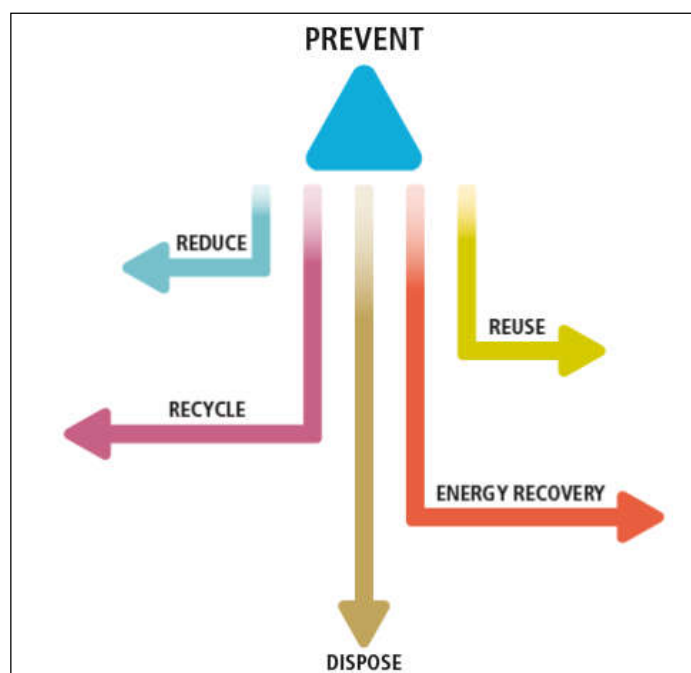
## 3. Waste Management – Policies, Legislation and Guidance

### 3.1. National Level

The implementation of the Waste Management Act in 1996 provided a legal basis for waste management, practice and infrastructure in Ireland. Following the implementation of this Act, government policy moved from primarily relying on landfill disposal towards a more sustainable system of waste treatment through the promotion of recycling and recovery. The policy document entitled 'Changing our ways' (DoEHLG, 1998) set specific targets for recycling and consolidated the now familiar waste hierarchy of prevention, minimisation, reuse/recycling, energy recovery and disposal. This approach was supported by subsequent legislation.

In 2002, the policy statement 'Preventing and Recycling Waste: Delivering Change' (DoEHLG, 2002) specifically focused on waste prevention and recycling. This document emphasised the importance of adopting a hierarchical approach, with prevention highlighted as the most desirable option. Various national waste prevention programmes and best practice guidance documents were subsequently delivered by the government.

In 2011 the revised EU Waste Framework Directive was transposed into Irish law by the European Commission (Waste Framework Directive) Regulations 2011 (SI 126 of 2011) (EC, 2008). The Waste Framework Directive focussed on sustainable and efficient materials management strategy and provides a legal basis for the waste hierarchy. Therefore, the waste hierarchy presented in Figure 3-1 should be applied as a priority in Ireland.



**Figure 3-1 - Accepted Best Practice Waste Hierarchy (EPA, 2018)**

In 2012 the Government published a new policy document entitled 'A Resource Opportunity - Waste Management Policy in Ireland' (DoECLG, 2012). This document sets out the steps to be implemented on a national scale in order to make further progress on resource efficiency and seeking the elimination of landfilling of municipal waste in Ireland. This approach is further supported by subsequent guidance including the EPA publication 'Green Procurement: Guidance for the Public Sector' (EPA, 2014), which clearly states the following Core Green Public Procurement Criteria for the Construction sector:

- Construction environmental management plan;
- Staff training;
- Management of fuel and hazardous substances;
- Use of secondary aggregate and recycled materials;
- Water Management; and,
- Waste Management.

In 2020 the Government published the document ‘Sustainable Urban Housing: Design Standards for New Apartments’ Guidelines for Planning Authorities (DoHLGH, 2015). This document states that the provision should be made for storage and collection of waste within apartment schemes. *‘Refuse facilities shall be accessible to each apartment stair/ life core and designed with regard to the projected level of waste generation and types and quantities of receptacles required. Within apartments, there should be adequate provision for the temporary storage of segregated materials prior to deposition in communal waste storage and in-sink macerators are discouraged as they place a burden on drainage systems.’* The document highlights the fact that design considerations need to take into account refuse storage facilities as follows:

- *“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” (DoHLGH, 2020).*

The Department of the Environment, Climate and Communications recently published ‘A Waste Action for a Circular Economy – Ireland’s National Waste Policy 2020-2025’ report in September 2020. This document was prepared in response to the ‘European Green Deal’ and sets out a roadmap for a transition to a new economy where climate and environmental challenges are turned into opportunities. This report replaces the previous National Waste Management Plan ‘A Resource Opportunity Waste Management Policy in Ireland’ (2012). The ‘Waste Action for a Circular Economy’ report focuses on transition to a circular economy.

## 3.2. Regional Level

The relevant Regional Waste Management Plan for Dún Laoghaire-Rathdown County Council (DLRCC) and Wicklow County Council (WCC) is the Eastern-Midlands Region Waste Management Plan 2015-2021. The Eastern-Midlands Region encompasses the following local authorities: Dublin City, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow. The regional plan, which was launched in May 2015, provides the framework for waste management up to 2021 and sets out a range of policies and actions in order to meet mandatory and performance targets. The key objectives of this plan are as follows:

- Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan;
- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020; and,
- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.

The Development and Design Standards within the Wicklow County Development Plan 2016 – 2022 (WCC, 2016) and Draft Wicklow County Development Plan 2022 - 2028 and proposed amendments (WCC, 2022) highlights the requirement of areas of waste storage within residential developments. *‘For traditional housing layouts, this will normally require the inclusion of sufficient space to the side or rear of a dwelling for the storage of waste, including up to 4 wheelie bins (recyclables, glass, organic and residual waste) (WCC, 2016). For apartment developments ‘communal bin storage and composting areas’ should be provided (WCC, 2016, 2022). These considerations have been incorporated where relevant within this Operational WMP. The waste storage area will be ‘designed and screened so as not to cause any adverse visual impact on the proposed complex and located so as not cause noise impact’ (WCC, 2016, 2022).*

### 3.2.1. Statement of Policy

The Dún Laoghaire-Rathdown County Development Plan 2022 - 2028 specifically states the following with regards to operational waste management:

#### **Policy Objective EI11: Resource Management -**

- It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

#### **Policy Objective EI12: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling (Circular Economy approach) -**

- To aim to provide a supporting waste management infrastructure in the County for the processing and recovery of waste streams such as mixed municipal waste in accordance with the proximity principle.
- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.
- To aim to provide a supporting waste management infrastructure in the County for the processing and recovery of waste streams such as mixed municipal waste in accordance with the proximity principle.
- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.
- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.
- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential development, where appropriate.
- To require the inclusion of such centres in all large retail developments to maximise access by the public.
- To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities (an excerpt of which is contained in Appendix 6 of the Plan).

#### **Policy Objective EI13: Hazardous Waste -**

- It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

The Wicklow County Development Plan 2016 – 2022 specifically states the following with regards to operational waste management:

#### **Objective WE2 -**

To require all new developments, whether residential, community, agricultural or commercial to make provision for storage and recycling facilities (in accordance with the standards set out in Development & Design Standards of this plan).

#### **Objective WE5 -**

To have regard to the Council's duty under the 1996 Waste Management Act (as amended), to provide and operate, or arrange for the provision and operation of, such facilities as may be necessary for the recovery and disposal of household waste arising within its functional area.

#### **Objective WE6 -**

To facilitate the development of sites, services and facilities necessary to achieve implementation of the objectives of the Regional Waste Management Plan.

#### **Objective WE7 -**

To facilitate the development of sites, services and facilities for the disposal of hazardous household wastes in accordance with the objectives of the Regional Waste Management Plan.

An additional objective for operational waste management within the Draft Wicklow County Development Plan 2022-2028 is as follows:

**CPO 15.3 -**

To facilitate the development of existing and new waste prevention and recovery facilities and in particular, to facilitate the development of 'green waste' recovery sites.

## 4. Waste Management

### 4.1. Waste Generation

The proposed development comprises 4no. apartment blocks (Blocks A, B, C and D), duplex units and houses. Apartment Block A comprises 162no. 1-bed, 2-bed, 3-bed apartments, duplex 2-bed apartments and duplex 3-bed apartments with a maximum occupancy of 497 persons.

Apartment Block B comprises 190no. 1-bed, 2-bed and 3-bed apartments with a maximum occupancy of 582 persons.

Apartment Block C comprises 80no. 1-bed, 2-bed and duplex 2-bed apartments with a maximum occupancy of 223 persons.

Apartment Block D comprises 26no. 1-bed and 2-bed apartments with a maximum occupancy of 64 persons.

The duplex units comprise 52no. units with a maximum occupancy of 234 persons.

76no. houses will be constructed with a maximum occupancy of 403 persons.

**Table 4-1 - Annual Waste Quantities for the Operational Phase of the Proposed Development**

Waste Type	Block A	Block B	Block C	Block D	Duplex Units	Houses	Total (Kg / annum per waste type)
Residual (Kg/ annum)	48308	56570	21676	6221	22743	39172	194690
Dry Recyclable (Kg/ annum)	56360	65999	25288	7258	26533	45700	227138
Organic Waste (Kg/ annum)	56360	65999	25288	7258	26533	45700	227138
<b>Total (Kg/ annum)</b>	<b>161028</b>	<b>188568</b>	<b>72252</b>	<b>20736</b>	<b>75809</b>	<b>130572</b>	<b>648965</b>

### 4.2. Waste Storage Requirements

The waste storage areas will not be visible to the public and have been designed taking account of the requirements of BS 5906: 2005 – Waste Management in Buildings – Code of Practice. This Code of Practice which states that *'to calculate the storage, containment and equipment requirements for effective waste management, the following should be considered:*

- *'Need for a temporary designated collection point;*
- *Volume and composition of waste;*
- *Frequency of collection;*
- *Degree of waste segregation required;*
- *Degree of container separation required; and,*
- *Type of on-site treatment proposed'.*

#### 4.2.1. Residential

##### 4.2.1.1. Housing

Individual houses will have their own storage areas for waste bins and therefore there is no necessity to calculate the area required for waste storage at individual houses.

It is expected that residents with external access to the rear of the property will store the wheeled bins to the rear of the houses. Houses with no external rear access will store the wheeled bins to the front of the house in a covered area. Each house will have storage capacity for 2no. 240L wheeled bins for residual waste and dry recyclable waste and 1no. 140L wheeled bin for organic waste. Waste will be collected on a one collection per fortnight basis as per the collection schedule of local waste collection companies within the Dublin and Wicklow regions.

The Wicklow County Development Plan 2016 – 2022 and Draft Wicklow County Development Plan 2022-2028 states that traditional housing layouts *'require the inclusion of sufficient space to the side or rear of a dwelling for the storage of waste, including up to 4 wheelie bins (recyclables, glass, organic and residual waste)'*. However it is noted that the waste service providers within the area of the proposed development do not provide domestic glass collection, and there is an extensive network of "Bring Bank" facilities (including recycling glass facilities) within the immediate area. Therefore sufficient refuse storage will be required for the following waste streams and sizes of wheeled bins for each house (3no. wheelie bins per house in total):

- Residual waste - will be collected in 1no. 240L wheeled bins;
- Dry recyclable waste - will be collected in 1no. 240L wheeled bins; and,
- Organic waste - will be collected in 1no. 140L wheeled bins;

#### 4.2.1.2. Apartment Blocks and Duplexes

The following section outlines the waste storage requirements at the 4no. apartment blocks and the 52no. duplexes. The Department of Housing, Local Government and Heritage (2020) Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities guidance states that *'the following general design considerations should be taken into account in the provision of 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; and,*
- *In larger apartment schemes, consideration should also be given to the provision of separate collection facilities for other recyclables such as glass and plastics'.*

However, as previously noted, the waste service providers within the area of the proposed development do not provide domestic glass collection, and there is an extensive network of "Bring Bank" facilities (including recycling glass facilities) within the immediate area. Therefore 3no. separate bins will be required for the following waste streams for the apartments and duplexes:

- Residual waste;
- Dry recyclable waste; and,
- Organic waste.

The 3no. separate bin system is in line with the DoHPLH (2020) guidelines as there will be sufficient communal storage area for the 3no. bin collection of mixed dry recyclables, organic waste and residual waste. The following assumptions have been made in relation to the calculated areas required for the storage of bins and are in line with Carey. C., Phelan., W. and Boland., B. (2008) *'Organic Waste Management in Apartments'* report prepared for the EPA and the Dún Laoghaire-Rathdown County Council (2020) *'Guidance Notes for Waste Management in Residential and Commercial Developments'* for both the apartment blocks and the Duplexes:

##### Apartment Blocks:

- Waste is collected on a one collection per weekly basis as per the collection schedule of local waste collection companies within the Dublin and Wicklow regions;
- Residual waste will be collected in 1100L wheeled bins;
- Dry recyclable waste will be collected in 1100L wheeled bins;
- Organic waste will be collected in 240L wheeled bins; and,
- Communal waste storage will be provided in each apartment block within designated core areas as follows:
  - Block A = 4no. communal waste storage areas (Core A1, Core A2; Core A3 and Core A4);
  - Block B = 4no. communal waste storage areas (Core B1, Core B2, Core B3, and Core B4);
  - Block C = 2no. communal waste storage areas (Core C1; Core C2); and,
  - Block D = 1no. communal waste storage area (Core D1).
- The wheeled bin storage areas will be organised in an opposing row layout within each core per block and will be organised such that each bin can be moved without having to move an adjacent bin.

##### Duplexes:

- Waste is collected on a one collection per fortnight basis as per the collection schedule of local waste collection companies within the Dublin and Wicklow regions;
- Residual waste will be collected in 240L wheeled bins;
- Dry recyclable waste will be collected in 240L wheeled bins;

- Organic waste will be collected in 140L wheeled bins; and,
- The wheeled bins will be located to the front of each duplex block (i.e. 2no. duplex units) in a single row and will be organised such that each bin can be moved without having to move an adjacent bin.

### Apartment Blocks

Table 4-2 to 4-5 outline the areas required for the storage of wheeled bins based on the above assumptions and the occupancy capacity of each core per Apartment Blocks.

**Table 4-2 – Wheeled Bin Storage Requirements for Each Core per Apartment Block A**

Block A								
Waste Type	Core A1		Core A2		Core A3		Core A4	
	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)
Residual (1100l Bin)	1	7	2	7	2	7	2	7
Dry Recyclable (1100l Bin)	3	14.4	5	21.1	6	21.1	4	14.1
Organic Waste (240l Bin)	2	3.4	3	3.4	4	3.4	3	3.4
<b>Total</b>	<b>6</b>	<b>25</b>	<b>10</b>	<b>32</b>	<b>12</b>	<b>32</b>	<b>9</b>	<b>25</b>

**Table 4-3 - Wheeled Bin Storage Requirements for Each Core per Apartment Block B**

Block B								
Waste Type	Core B1		Core B2		Core B3		Core B4	
	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)
Residual (1100l Bin)	1	7	2	7	3	14.1	1	7
Dry Recyclable (1100l Bin)	3	21.1	6	21.1	9	35.5	3	14.1
Organic Waste (240l Bin)	2	3.4	4	3.4	5	5	2	3.4
<b>Total</b>	<b>6</b>	<b>25</b>	<b>12</b>	<b>32</b>	<b>17</b>	<b>55</b>	<b>6</b>	<b>25</b>

**Table 4-4 - Wheeled Bin Storage Requirements for Each Core per Apartment Block C**

Block C				
Waste Type	Core C1		Core C2	
	No. of Bins	Area (m2)	No. of Bins	Area (m2)
Residual (1100l Bin)	2	7	1	7
Dry Recyclable (1100l Bin)	5	21.1	4	14.1
Organic Waste (240l Bin)	3	3.4	2	3.4
<b>Total</b>	<b>9</b>	<b>32</b>	<b>7</b>	<b>25</b>



**Table 4-5 - Wheeled Bin Storage Requirements for Each Core per Apartment Block D**

Block D		
Waste Type	Core D1	
	No. of Bins	Area (m2)
Residual (1100l Bin)	1	7
Dry Recyclable (1100l Bin)	2	7
Organic Waste (240l Bin)	1	3.4
<b>Total</b>	<b>4</b>	<b>17</b>

**Block A:**

We note that the average bin storage on the design drawings (submitted as part of this application) are bigger compared to the required bin storage area for the apartments within Block A (Table 4-2), with the exception of Block A Core A1 (where the designed bin storage area is 24m<sup>2</sup>) as shown on drawing BRA-GHA-ZA-00-DR-A-05100. The required bin storage area for Core A1 is 25m<sup>2</sup>. The total designed bin storage for Block A is 124m<sup>2</sup>, the total required bin storage area for Block A is 114m<sup>2</sup>, shown in Table 4.2. Therefore the total designed bin storage areas in Block A more than make up for the minor reduction at Core A1.

**Block B:**

We note that the average bin storage on the design drawings (submitted as part of this application) are bigger compared to the required bin storage area for the apartment within Block B (Table 4-3), with the exception of Block B - Core B3 (where the required bin storage area is 55m<sup>2</sup>) as shown in Table 4.3. The total required bin storage area for Block B is 137m<sup>2</sup>, as shown in Table 4.3. The total designed bin storage for Block B is 168m<sup>2</sup>. Therefore the additional designed bin storage areas for Block B more than make up for the minor reduction at Core B3.

**Duplex Units**

There are 52no. duplex units with 4no. different duplex types (H1 / H2 / H6 / H8) within the proposed development, as follows:

- 12no. H1 (6no. 2Bed 4Person (2B4P) and 6no. 3B5P);
- 24no. H2 (12no. 2B4P and 12no. 3B5P);
- 2no. H6 (1no. 2B4P and 1no. 3B5P); and,
- 14no. H8 (7no. 2B4P and 7no. 3B5P).

The layout of each duplex type within the proposed development comprises the following general arrangement:

- 1no. 2B4P unit on the Ground Floor and 1no. 3B5P unit on the First and Upper Floor.

Figure 2-1 illustrates the general layout of each housing type.

Table 4-6 outlines the area required for the storage of wheeled bins based on the above assumptions, the layout of each duplex type within the proposed development, and the occupancy capacity of each of the duplex units.

**Table 4-6 - Wheeled Bin Storage Requirements for each Duplex Type / Units as per layout**

Waste Type	Duplex - H1 (2no. units)		Duplex - H2 (2no. units)		Duplex - H6 (2no. units)		Duplex - H8 (2no. units)	
	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)	No. of Bins	Area (m2)
Residual (240 L Bin)	2	3.6	2	3.6	2	3.6	2	3.6
Dry Recyclable (240 L Bin)	3	3.6	3	3.6	3	3.6	3	3.6

Organic (140L Bin)	1	3.6	1	3.6	1	3.6	1	3.6
<b>Total</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>11</b>

#### 4.2.2. Commercial

It is anticipated that for the proposed scheme there is 1no. mixed commercial unit, which will comprise of a gym with a juice bar. Also, within the proposed scheme there is a café, retail unit and childcare facility. Separate bins will be required for the following waste streams:

- Residual waste;
- Dry recyclable waste; and,
- Organic waste.

Commercial waste is collected on a one collection per weekly / fortnightly / monthly / call-out basis as per the collection schedule of local waste collection companies within the Dublin and Wicklow regions.

The commercial components of the proposed scheme comprise the following:

- 1no. mixed commercial unit (gym with a juice bar) within Block B;
- 1no. retail unit within Block C;
- 1no. childcare facility within Block C; and,
- 1no. café within the Block C.

It is proposed that the commercial / non-residential facilities within Block B and C will have dedicated bin storage within the proposed scheme. The number of bins and the area of bin storage for the Class 2 - commercial areas, convenience store and café have been calculated in accordance with the BS 5906:2005 Waste Management on Building – Code of Practice and is based on an assumed weekly collection frequency.

The number of bins and the area of bin storage for the childcare facility has been conservatively calculated based on the approximate number of anticipated staff and children (based on the assumption that the childcare facility is operating at full capacity with a staffing rate of 1:5) and is also based on an assumed weekly collection frequency.

Refer to Table 4-7 for the wheeled bin storage requirements for the commercial/ non-residential areas within the proposed scheme.

**Table 4-7 – Wheeled Bin Storage Requirements for Commercial / Non-residential Areas**

Waste Type	Commercial (Gym with juice bar - Block B)		Retail (small) - (Convenience Store - Block C)		Restaurant - (Café - Block C)		Childcare Facility ( Block C)	
	No. of Bins	Area (m <sup>2</sup> )	No. of Bins	Area (m <sup>2</sup> )	No. of Bins	Area (m <sup>2</sup> )	No. of Bins	Area (m <sup>2</sup> )
Residual (1100L Bin)	1	7	1	7	1	7	1	7
Dry Recyclable (1100L Bin)	1	7	1	7	1	7	3	14.1
Organic Waste (240L Bin)	1	3.4	2	3.4	1	3.4	2	3.4
<b>Total</b>	<b>3</b>	<b>17</b>	<b>4</b>	<b>17</b>	<b>3</b>	<b>17</b>	<b>6</b>	<b>25</b>

#### 4.2.3. Local Recycling / Bring Centre Facilities

Dún Laoghaire-Rathdown County Council and Wicklow County Council manage an extensive network of “Bring Bank” facilities across the County areas for recycling glass, cans and textiles. These include sites at shopping centres and public car parks, that are all provided free of charge to the public.

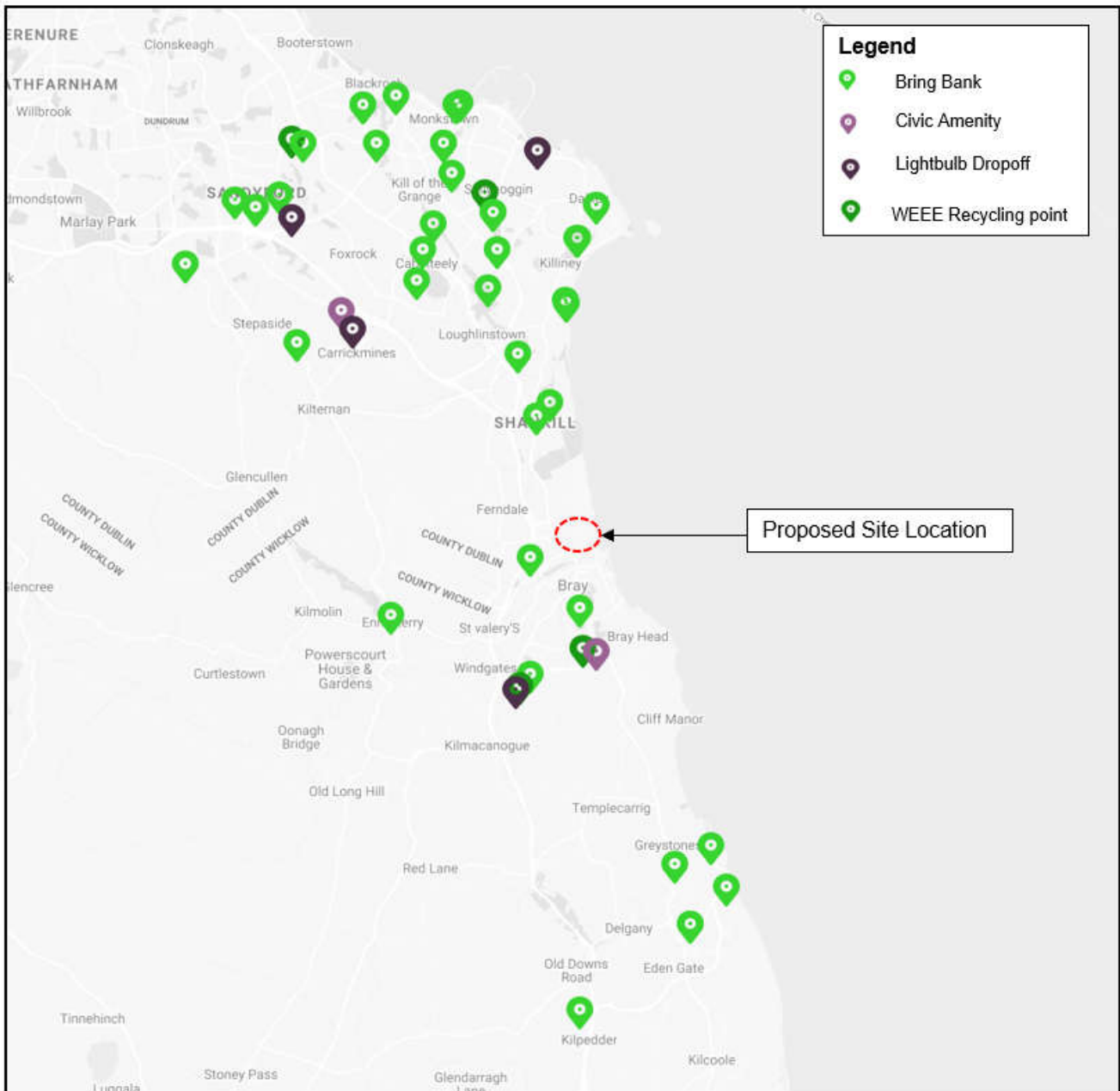
The closest bring bank centre is Greenstar bring bank located in Fassaroe, Bray in Wicklow. This facility is located ca. 2.00 km south east of the proposed development. Greenstar bring bank is open Monday to Friday from 8am – 6pm, and closed Saturday and Sunday. Materials accepted include wood, clean cardboard, newsprint, magazines, plastic bottles, glass, drink cans, textiles, beverage cartons. The closest civic amenity site to the proposed development is Bray Recycling Centre located in 21 Beechwood Close, Kilruddery Demesne East, Bray in Wicklow. This facility is located ca. 2.40 km south of the proposed development. Bray Recycling Centre is open Monday to Friday from 10am – 4pm, and Saturday from 10am – 1.45pm. Materials accepted include clean cardboard, newsprint, magazines, plastic bottles, glass, drink cans, textiles and beverage cartons.

PowerCity in Bray is a WEEE recycling point, which is located ca. 2.40 km south of the proposed development and Woodies DIY in Bray is a lightbulb drop off point which is located 3.60 km south of the proposed development.

In Dún Laoghaire-Rathdown the closest 2no. bring centres to the proposed development is in Lidl Car Park in Shankill, Dublin and within the Dart Station at Rathsallagh Park in Shankill, Dublin which are both located ca. 2.60km north of the proposed development. Materials accepted include clean cardboard, newsprint, magazines, plastic bottles, glass, drink cans, textiles and beverage cartons. Ballyogan Recycling Park in Ballyogan is the main recycling and disposal facility within Dún Laoghaire-Rathdown Council lands. Ballyogan Recycling Park is located ca. 7.00km north of the proposed development and accepts a wide range of household waste types; kitchen appliances, light bulbs, gas cylinders, fire extinguishers, waste oils, WEEE, metals, sheet/plate glass, wood, bulky items, general waste, green garden waste, household hazardous waste. The facility is open to the public 7 days a week, with several waste streams accepted free of charge.

Existing bring bank, civic amenity sites, lightbulb drop-off and WEEE recycling points within the general vicinity of the proposed development are illustrated in Figure 4-2.

Having regard to the scale of the development, the potential to provide a local bring centre as part of the scheme was considered during the preliminary design stage. However taking account of the existing Bring Centres, Civic Amenity and Recycling Centre facilities already in place in Bray and within Dún Laoghaire-Rathdown, and the proximity of the proposed development to these facilities (which many are open to the public six days a week) it is considered that sufficient facilities are already well established, with easy access available to the residents of the proposed development. Therefore, the provision of an onsite Recycling Centre (for textiles, drink cans, electrical items, batteries etc.) is not warranted as part of the proposed development.



**Figure 4-1 – Recycling Centres and Bring Banks within the vicinity of the proposed scheme (Repak.ie, 2022)**

#### 4.2.4. Proposed Management Strategy for each Waste Stream Option

Waste materials will be segregated onsite into the various waste streams, via. dedicated bins and storage areas as outlined in Table 4-2 to Table 4-7. All residents will be required to separate waste into different waste categories, as follows;

- Residual Waste;
- Dry Recyclables; and,
- Organic waste.

As previously noted, bin stores are included in the proposed design for all apartments, duplexes and commercial / non-residential units. Each of the bins within the dedicated bin stores will be clearly labelled and colour coded to ensure that cross contamination of materials does not occur. These bins will be collected on a fortnightly basis for residential units and duplexes, and on a weekly basis for apartment blocks and commercial units, as previously detailed. Bin storage areas for the apartments and commercial units will be communal facilities which will be locked (ensuring that only residents have access) to prevent the contamination of waste and any unauthorised dumping.

The document 'Organic Waste Management in Apartments' prepared for the EPA (Carey. C. et al., 2008) recommends the following general management considerations for communal bins, specifically in relation to organic waste:

- “An underground car park is not a preferred waste storage area in which to store organic waste, for a number of reasons, including health and safety, access and potential odour and vermin.
- Waste storage areas should be adequately vented to minimise odours and potential vermin/flies.
- Ground-level bin storage bays/sheds should be adequately fenced or screened off to reduce visual impact.
- Communal external areas on ground level are preferable although other issues such as access and security should be considered.

*Purpose-built deep collection waste bin systems may be appropriate in certain circumstances. These alternative bins are above and below ground with about two-thirds of the bin's capacity stored underground. These types of bin units have been seen to work successfully especially where space constraints are an issue. A space footprint of 5 m<sup>2</sup> can provide enough storage capacity for four different waste bins and serve 50–80 apartments. The servicing of these bins is relatively straightforward. The bin unit or internal bag is lifted out of the ground using a mechanical hoist arm attached to the waste collection vehicle. The bin or bag is held over the collection vehicle and the waste emptied into the vehicle. The emptied bag or bin is then fixed back into its position and the bin secured” (Carey. C. et al., 2008).”*

In addition to the typical waste materials which are generated on a daily basis from residential and commercial developments, some additional waste types will also be created on an infrequent basis. As previously outlined, there are sufficient recycling / waste disposal facilities within the immediate vicinity of the proposed development for correct waste management of the following waste streams.

#### Waste Electrical and Electronic Equipment (WEEE)

Under the WEEE Directive 2002/96/EC and associated European Communities (Waste Electronic Equipment) Regulations, retailers are required to accept WEEE from their customers. WEEE can also be disposed of by the residents of the proposed development at the nearest recycling centre / Local Authority centre (e.g. Ballyogan Recycling Park).

#### Batteries

Arising from the Waste Management (Batteries and Accumulators) Regulations 2014 (as amended), a recovery service for waste batteries and accumulators) is in place; the producer of the battery is responsible for the financing of the separate collection for recycling and recovery of these products. Batteries can be disposed of by the residents of the proposed development at the nearest recycling centre / Local Authority centre (e.g. Bray Recycling Centre and Ballyogan Recycling Park).

#### Fluorescent Tubes

Fluorescent tubes can be disposed of by the residents of the proposed development at the nearest recycling centre / Local Authority centre (e.g. Ballyogan Recycling Park).

#### Furniture

Furniture and other bulky waste items which may arise occasionally can be brought by the residents of the proposed development to the nearest recycling centre / Local Authority centre for recycling (e.g. Ballyogan Recycling Park).

#### Chemicals

Any chemicals used on site will be generated by external contractors who carry out any maintenance works. These contractors will be responsible for the off-site removal and disposal of any waste materials that may be generated in accordance with all relevant waste management legislation.

#### Textiles

Waste textiles should be recycled or donated to a charity organisation for reuse where possible. In addition waste textiles can be brought by the residents of the proposed development to the nearest recycling centre / Local Authority centre for recycling (e.g., Bray Recycling Centre, Tesco car park in Bray, Dart Station car park in Shankill, and Ballyogan Recycling Park).

Dún Laoghaire-Rathdown County Council have issued Guidance Notes for Waste Management in Residential and Commercial Developments (DLRCC, 2020). According to this guidance the following elements should be included in the design of a common waste storage area:

- A defined pedestrian route from apartment areas to the nearest waste storage area;

- Waste storage areas should not present any safety risks to users;
- A non-slip surface should be provided within the waste storage area;
- Adequate ventilation should be provided to avoid the creation of stagnant air or foul odours;
- Appropriate sensor controlled lighting;
- Suitable wastewater drainage points and water supply points should be installed in the bin storage area for cleaning and disinfecting;
- Provision of appropriate graphical signage to inform residents of their obligation to reduce waste, segregate waste and in the correct bin;
- Measures to control and monitor access to waste storage areas;
- Identification of space required for separate storage of waste segregated into general mixed waste, dry recyclable waste, organic/food waste, glass and in the case of larger developments, WEEE and hazardous waste, as appropriate, based on weekly collection of the main waste streams; and
- Worst case sizing of waste storage containers with reference to BS 5906:2005.Waste Management in Buildings – Code of Practice.

#### 4.2.5. Tracking and Documentation Procedures for Off-Site Waste

All waste transport and disposal / recovery must be carried out in accordance with all relevant waste management legislation and any subsequent future legislation which may apply. All of the appointed waste collection providers during the Operational Phase must hold a valid waste collection permit for the waste type they will be collecting. The facilities that these contractors use to dispose of the municipal waste must be a registered waste facility with a valid waste permit / waste licence. All waste disposal / recycled records should be maintained by the Developer / appointed maintenance company.

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