

OPERATIONAL WASTE & RECYCLING MANAGEMENT PLAN

AT

PARKSIDE PHASE 4

CLONGRIFFIN

DUBLIN 13



Prepared for

Cairn Homes Properties Ltd.

Prepared by

Traynor Environmental Ltd

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EXECUTIVE SUMMARY

Traynor Environmental Ltd has been appointed by Cairn Home Properties Ltd. (hereafter referred to as the 'Applicant') to prepare an Operational Waste and Recycling Management Strategy (OWRMP) (hereafter referred to as the 'Strategy') in support of the proposed strategic housing development (hereafter referred to as the 'Proposed Development') located within the administrative boundary of Dublin City Council.

The new development will consist of 282 no. apartments comprised of:

- 94 no. 1 bedroom apartments, 175 no. 2 bedroom apartments and 13 no. 3 bedroom apartments;
- A residential amenity facility, basement and surface car parking, bicycle parking;
- Surface water attenuation, green roof, landscaping and all associated site development works.

The principal aim of this Strategy is to demonstrate how the Proposed Development has taken into account sustainable methods for waste and recycling management during its operation. Furthermore, with regards to waste and recycling management within the Proposed Development, this Strategy has the following aims:

- To contribute towards achieving current and long-term government, Dublin City Council for waste minimisation, recycling and re-use;
- To comply with all applicable legal requirements for handling operational waste;
- To achieve high standards of waste management performance, through giving (and continuing to give) due consideration to the waste generated by the Proposed Development during its operation; and
- To provide the Proposed Development with a convenient, clean and efficient waste management strategy that enhances the operation of the Proposed Development and promotes recycling.

Residential waste storage allows for a weekly (seven day) storage capacity for MDR, food, glass and residual (i.e. nonrecyclable). Residential bins will be provided within dedicated storage rooms within the core of each residential block. On the day of collection, bins from the waste storage areas will be brought to the collection point where all bins will be emptied by the approved waste collector. Once emptied the bins will be returned back to the appropriate waste storage areas.

In particular this OWRMP aims to provide a robust strategy for storing, handling, collection and transport of the wastes generated at site. Additionally, all waste infrastructure introduced to the Development will comply with Dublin City Council's requirements, regulations and guidelines.

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This report refers, within the limitations stated, to the condition of the site at the time of the report. No warranty is given as to the possibility of future changes in the condition of the site. The report as presented is based on the information sources as detailed in this report, and hence maybe subject to review in the future if more information is obtained or scientific understanding changes.

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1.0 INTRODUCTION

This Operational Waste and Recycling Management Strategy (the 'Strategy') has been prepared by Nevin Traynor BSc.Env, HDIP IT, Cert SHWW, IAH of Traynor Environmental Ltd on behalf of Cairn Homes Properties Limited ('The Applicant') in support of the proposed strategic housing development (hereafter referred to as the 'Proposed Development') within Dublin City Council area.

The principal aim of this Strategy is to demonstrate how the Proposed Development has taken into account sustainable methods for waste and recycling management during its operation. Furthermore, with regards to waste and recycling management within the Proposed Development, this Strategy has the following aims:

- To contribute towards achieving current and long-term government, Eastern Midlands Region (EMR) and Dublin City Council targets for waste minimisation, recycling and re-use;
- To comply with all legal requirements for handling operational waste;
- To achieve high standards of waste management performance, through giving (and continuing to give) due consideration to the waste generated by the Proposed Development during its operation; and
- To provide the Proposed Development with a convenient, clean and efficient waste management strategy that enhances the operation of the Proposed Development and promotes recycling.

It is important to note that the Dublin City Council is part of the Eastern Midlands Waste Region. The Eastern Midlands Waste Region comprises of Dublin City Council, Dun Laoghaire – Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Council.

This Strategy provides a review of the requirements placed upon the Proposed Development under national legislation and implemented policy at all levels of government (i.e. national (Ireland), regional (EMR), district and (local (Dublin City Council). Consideration has also been given to requirements included in local standards and guidance documents (i.e. DoEHLG, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2018) in line with the Regional Waste Management Plan and British Standard Waste Management in Buildings, Code of Practice (BS 5906:2005) so as to comply with relevant objectives and targets.

Estimate volumes of waste generated during operation of the Proposed Development have been provided in the report which also includes a breakdown of the waste management process, which details waste handling, storage area provision, and collection arrangements. All waste reduction measures are compliant with BS 5906:2005, Eastern Midlands Region (EMR) and Sustainable Urban Housing: Design Standards for New Apartments which are also discussed in this strategy.

2.0 LEGISLATION/ PLANNING POLICY

A summary of the national regional and local planning policy relevant to the Proposed Development is outlined in section 2.1 below. It should be noted that this summary identifies those elements of the policy or guidance applicable to waste management within the Proposed Development.

2.1 National Legislation

The Government issued a policy statement in September 1998 titled as '*Changing Our Ways*' which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, Changing Our Ways stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document '*Preventing and Recycling Waste – Delivering Change*' was published in 2002. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled '*Making Irelands Development Sustainable – Review, Assessment and Future Action*'. This document also stressed the need to break the link between economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled '*Taking Stock and Moving Forward*'. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services. The most recent policy document was published in July 2012 titled '*A Resource Opportunity*'. The policy document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions, including the following:

- A move away from landfill and replacement through prevention, reuse, recycling and recovery.
- A Brown Bin roll-out diverting 'organic waste' towards more productive uses.
- Introducing a new regulatory regime for the existing side-by-side competition model within the household waste collection market;

- New Service Standards to ensure that consumers receive higher customer service standards from their operator;
- Placing responsibility on householders to prove they use an authorised waste collection service.
- The establishment of a team of Waste Enforcement Officers for cases relating to serious criminal activity will be prioritised;
- Reducing red tape for industry to identify and reduce any unnecessary administrative burdens on the waste management industry;
- A review of the producer responsibility model will be initiated to assess and evaluate the operation of the model in Ireland;
- Significant reduction of Waste Management Planning Regions from ten to three.

While a *resource opportunity* covers the period to 2020, it is subject to a mid-term review in 2016 to ensure that the measures are set out properly and to provide an opportunity for additional measures to be adopted in the event of inadequate performance. Since 1998, the Environmental Protection Agency (EPA) has produced periodic '*National Waste (Database) Reports*' detailing among other things estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The 2018 National Waste Statistics, which is the most recent study published, reported the following key statistics for 2016:

- 2,763 kilotons of municipal waste were managed in 2016 (6% increase compared to 2014).
- 74% of managed municipal waste was recovered (79% in 2014). Recovery includes treatment processes such as recycling, use as a fuel (incineration and co-incineration) and backfilling.
- 41% of managed municipal waste was recycled (41% in 2014). Recycling includes reprocessing of waste materials into products, composting and anaerobic digestion.
- 26% of managed municipal waste was landfilled in 2016.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dublin City Council. The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the Dublin City Council area which was published in May 2015. This plan replaces the previous Dublin region plan due to changing National policy as set out in *A Resource Opportunity: Waste Management Policy in Ireland* and changes being enacted by the *Waste Framework Directive (2008/98/EC)*.

The regional plan sets out the following strategic targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015*. The *Dublin City Council Development Plan 2016 – 2022* sets out a number of objectives and actions for the Dublin City area in line with the objectives of the regional waste management plan.

Waste objectives and actions with a particular relevance to this development are:

Waste Management Objectives

- **SI19** To support the principles of good waste management and the implementation of best international practice in relation to waste management in order for Dublin city and the region to become self-reliant in terms of waste management.
- **SI20** To prevent and minimise waste and to encourage and support material sorting and recycling.
- **SI21** To minimise the amount of waste which cannot be prevented and ensure it is managed and treated without causing environmental pollution.
- **SI22** To ensure that effect is given as far as possible to the ‘polluter pays’ principle.
- **SI015** To provide for municipal/public recycling and recovery facilities in accessible locations throughout the city.
- **SI016** To require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.
- **SI017** To promote the re-use of building materials, recycling of demolition material and the use of materials from renewable sources. In all developments in excess of 10 housing units and commercial developments in excess of 1000 sq.m, a materials source and management plan showing type of materials/proportion of re-use/recycled materials to be used shall be implemented by the developer.
- **SI018** To implement the current Litter Management Plan through enforcement of the litter laws, street cleaning and education and awareness campaigns.
- **SI019** To implement the Eastern-Midlands Regional Waste Management Plan 2015–2021 and achieve the plan targets and objectives.

Actions:

- Support and facilitate the separation of waste at source into organic and non-organic streams or other waste management systems that divert waste from landfill and maximise the potential for each waste type to be re-used and recycled or composted and divert organic waste from landfill, in accordance with the National Strategy on Biodegradable Waste (2006).
- Implement the objectives of the National Waste Prevention Programme at a local level with businesses, schools, householders, community groups and within the Council’s own activities.
- Promote an increase in the amount of waste re-used and recycled consistent with the Regional Waste Management Plan and Waste Hierarchy and facilitate recycling of waste through adequate

provision of facilities and good design in new developments.

- Implement the Dublin City Council Litter Management Plan 2016 – 2018.

2.3 Legislative Requirements

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

Waste Management Act 1996 (No. 10 of 1996) as amended and associated legislation includes:

- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended by the Litter Pollution Regulations 1999 (S.I. No. 359 of 1999) and Protection of the Environment Act 2003;
- European Communities (Transfrontier Shipment of Waste) Regulations, 1994 (S.I. No. 221 of 1994);
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015 (S.I. No. 233 of 2015);
- Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010);
- European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014);
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997);
- Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015);
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014);
- European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 and 2016 (S.I. No. 323 of 2011);
- Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016);
- Waste Management (Facility Permit and Registration) Regulation 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015);
- Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015);
- Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015);
- European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015);
- Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000); and

- Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)

2.4 Responsibilities of the Waste Producer

The waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) Waste contractors will be employed to physically transport waste to the final waste disposal / recovery site.

It is therefore critical that the residents, commercial tenants and the proposed management company undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licenced 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.

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

2.5 Dublin City Council Bye-Laws

These Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste were brought into force by Dublin City Council in December 2018. The Bye-Laws place legal obligations on the waste producer in terms of the way waste is stored and managed on a site/premises. Dry recyclables must be segregated at source, and bio-waste (organic) must be segregated if a collection service is available. Waste must be presented in approved containers that are kept in a reasonable state and only presented for collection in approved areas and times by the Council.

2.6 Regional Waste Management Service Providers & Facilities

Various contractors offer waste collection services for the residential and commercial sector in the Dublin City Council. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the new regional waste management plan, there is a decreasing number of landfills available in Ireland. Only three municipal solid waste landfills remain operational and are all operated by the private sector. There are a number of other licensed and permitted facilities in operation in the region including

waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second facility in Poolbeg in Dublin. A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPD website and all waste/IED licenses issued are available from the EPA.

The closest Bring Bank center is Fingal Cemetery Dublin located 1.4km from the site. Thornton's Recycling provide a three-waste stream collection service. Thornton's collection service for the Dublin 13 area is (once a week for Recycling Waste Streams and Compost Bin Collection and every two weeks for General Waste).

2.7 Policy Context

Development Plan Policy generally sets out guidelines for waste management which conform to the European Union and National Waste Management Hierarchy as follows:

- Waste Prevention
- Minimisation
- Re-use
- Waste Recycling
- Energy Recovery
- Disposal



This guidance is subject to economic and technical feasibility and environmental assessment. Council's Waste Management Strategy is firmly grounded in EU and National policy and can be summarised by the waste hierarchy of prevention, recycling, energy recovery and disposal.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The proposed development consists of 282 no. apartments comprised of:

- 94 no. 1 bedroom apartments
- 175 no. 2 bedroom apartments
- 13 no. 3 bedroom apartments

The development also includes residential amenity facility, basement and surface car parking, bicycle parking; surface water attenuation, green roof, landscaping and all associated site development works on lands measuring approximately 3.00 hectares.

DESCRIPTION	NO. OF UNITS PER LEVEL							
	GF	FF	2nd	3rd	4th	5th	6th	TOTAL
Core 1 – Block A	12	12	12	12	11	10	0	69
Core 2 – Block B	6	12	12	12	11	10	0	63
Core 3 – Block C	12	12	12	12	11	10	0	69
Core 4 – Block D	8	8	8	8	7	7	0	46
Core 5 – Block D	5	6	6	5	5	5	3	35
							TOTAL	282

Table 1.0 Residential Development Unit Mix

Non-Residential Floor Areas	Location	Area (m ²)
Communal Amenity A	Area A	850
Communal Amenity B	Area B	1100
Total		1950

Table 2.0 Mixed Development Details Non-Residential Floor Areas

3.2 Typical Waste Categories

The predicted waste types that will be generated at the proposed development include the following:

- **Dry Mixed Recyclables (DMR)** – includes Newspaper / General paper Magazines, Cardboard Packaging, Drink (Aluminium) Cans, Washed Food (Steel/Tin) Cans, Washed Tetra Pak Milk & Juice Cartons, Plastic Bottles (Mineral/Milk/Juice/Shampoo/Detergents), Rigid Plastics. (Pots/Tubs/Trays*)
- **Mixed Non-Recyclables (MNR) / All General Waste** – Nappies, soiled food, packaging, old candles, plasters, vacuum cleaner contents, broken delph, contaminated plastics

- **Organic (food) Waste** – Leaves, weeds and mosses (not sprayed with weed killer), Dead plants and flowers, Grass and hedge cuttings (finger sized twigs), Bread, pasta and rice, Meat, fish, poultry bones, Out of date food (no plastic packaging), Tea Bags, Coffee grounds and paper filters. Fruit and vegetables (cooked and uncooked). Food soiled cardboard or paper (no coated paper) Eggs and dairy products (no plastic packaging) Paper napkin and paper towels.
- **Glass**

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:

- Textiles
- Batteries
- Waste electrical and electronic equipment (WEEE)
- Chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.)
- Fluorescent tubes and other mercury containing waste
- Furniture (and from time to time other bulky wastes)

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3 European Waste Codes

In 1994, the *European Waste Catalogue* and *Hazardous Waste List* were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List*, which was a condensed version of the original two documents and their subsequent amendments. This document has been replaced by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' which became valid from the 1st June 2015. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, COR's, permits and licences and EPA National Waste Database. Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also 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 the Table below.

Waste Material	LoW Code
Paper and Cardboard	20 01 01
Plastic	20 01 39
Metals	20 01 40
Mixed Municipal Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25/26*
Biodegradable garden and park waste	20 02 01
Textiles	20 01 11
Batteries and accumulators*	20 01 33*-34
Printer Toner / Cartridges*	20 01 27* -28
Green Waste	20 02 01
Waste electrical and electronic equipment*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents etc) *	20 01 13 / 19 / 27 / 28 / 29* 30
Fluorescent tubes and other mercury containing waste*	20 01 21*
Bulky wastes	20 03 07

Table 3.0 LoW Codes

3.4 Methodology

3.4.1 Residential Calculation Methodology

Waste arisings were calculated in accordance with BS 5906:2005 and included a provision of 5 litres (L) of food waste per residential unit per week. These guidelines determine the minimum capacity for waste storage space to be allocated and are as follows:

- 30 litres (L) per unit + 70L per bedroom (see Table 4 for further details);
- Split 50:50 between MDR and residual waste; and
- 5L per residential unit for food waste.

Number of Bedrooms	Weekly Waste Arisings per Unit (L)			
	DMR (Recycling)	Food Waste	MNR (Residual)	Total
1 Bedroom	50	5	50	105
2 Bedrooms	85	5	85	175
3 Bedrooms	120	5	120	245

Table 4.0 Weekly Waste Arisings Methodology

3.4.2 Commercial Calculation Methodology

BS 5906:2005 provides a methodology for the calculation of waste arisings from communal areas and retail. These calculation methodologies are outlined within Table 5 of this Strategy. A 50:50 split between MDR and residual waste has been assumed for the retail land uses and community space.

Land Use Class	Waste Storage Requirements	Waste Stream Ratios
A&B – Communal Area	5L per m ² NIA	50: 50 MDR: Residual

Table 5.0 Communal Waste Arising Calculations (Weekly)

4.0 ESTIMATED WASTE ARISING

A waste generation spreadsheet was developed by Traynor environmental Ltd and has been used to predict waste types, weights and volumes arising from operations within the proposed development. The spreadsheet incorporates building area and use and combines these with BS 5906:2005 waste generation rates. The estimated quantum/volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units. The waste generation for the Commercial / Community units is based on waste generation rates per m² of floor area for the proposed area uses.

The estimated quantum/volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units and is presented in table 6.0 below.

	Waste Volume (L/week)					
Waste type	Block A (Core 1)	Block B (Core 2)	Block C (Core 3)	Block D (Core 4)	Block D (Core 5)	Totals (L)
Organic Waste	345	315	345	210	175	1390
Mixed Dry Recyclables	5060	4585	5025	3700	2940	21310
Glass	345	315	345	210	175	1390
Mixed Municipal Waste	5060	4585	5025	3700	2940	21310
Total	10810	9800	10740	7820	6230	45400

Table 6.0 Residential Waste Prediction (L/per week)

Non-Residential Floor Areas	Location	Area (sq.)	Area (NIA)	DMR (Recycling)	Food Waste	MNR (Residual)	Glass	Total (L)
Communal Amenity A	Area A	850	654.5	1636.25	-	1636.25	-	3272.5
Communal Amenity B	Area B	1100	847	2117.50	-	2117.50	-	4235.0
Total		1950	1501.5	3753.75	-	3753.75	-	7507.5

Table 7.0 Commercial / Community Unit Waste Prediction (L/per week)

4.1 Waste Storage and Collection

This section provides information on how waste generated within the development will be stored and how the waste will be collected from the development. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements including those of Dublin City Council. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- EMR Waste Management Plan 2015 – 2021;
- Dublin City Council, *Presentation and Storage of Waste Bye-Laws* (2018);
- DoEHLG, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2018).

4.2 Residential Waste and Recycling Management and Storage Strategy

It is required that space be provided for recycling bins to accommodate 50% of the total weekly volume. This is in line with the BS5906:2005 requirements. Residual waste (MNR) is required for 87.5% of the total weekly arising. For the purpose of the strategy Glass and Organic Waste is required for 87.5% of the total weekly arising.

Area/Block	Number of Bins Required for a Weekly Collection				
	MNR (Residual)	Organic	DMR (Recycling)	Glass	Total
Core 1 – Block A	3 x 1100L	2 x 240L	4 x 1100L	1 X 240L	7 x 1100L 3 x 240L
Core 2 – Block B	3 x 1100L	2 x 240L	4 x 1100L	1 X 240L	7 x 1100L 3 x 240L
Core 3 – Block C	3 x 1100L	2 x 240L	4 x 1100L	1 X 240L	7 x 1100L 3 x 240L
Core 4 – Block D	2 x 1100L	2 x 240L	3 x 1100L	1 X 240L	5 x 1100L 3 x 240L
Core 5 – Block D	2 x 1100L	2 x 240L	3 x 1100L	1 X 240L	5 x 1100L 3 x 240L

Table 8.0 Storage Requirements

Area	Number of Bins Required for a Weekly Collection			
	MNR (Residual)	Organic	DMR (Recycling)	Glass
Communal Area A (Block A & B)	2 x 1100L	1 x 240L	2 x 1100L	1 x 240L
Communal Area B (Block C & D)	2 x 1100L	1 x 240L	2 x 1100L	1 x 240L

Table 9.0 Commercial Storage Requirements

4.3 Waste Storage Residential Units

4.3.1 Block A

Residents will be expected to take all waste arisings from their units to the appropriate residential waste storage area. Residents will be required to segregate their waste into the following waste categories within their own apartment units:

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

The proposed Waste Storage Area is located in the basement area under Block A as per Figure 1.0. It is recommended that all WSAs should have secure access with either key or fob to ensure only residents may place waste in the respective WSA.

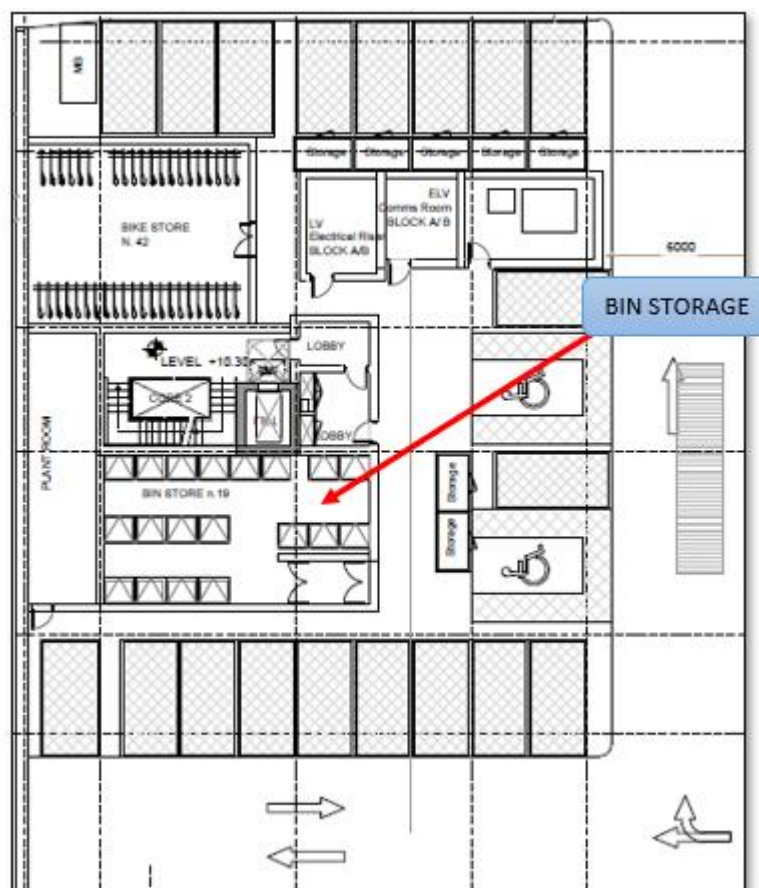


Figure 1.0 Waste Storage Area Block A

4.3.2 Block B

Residential tenants will be required to segregate their waste into the following waste categories within their own units:

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

The proposed WSA to service Block B is located in the basement area under Block B as per figure 2.0. Each WSA is titled “Bin Storage”. It is recommended that all WSAs should have secure access with either key or fob to ensure only residents may place waste in the WSA’s.

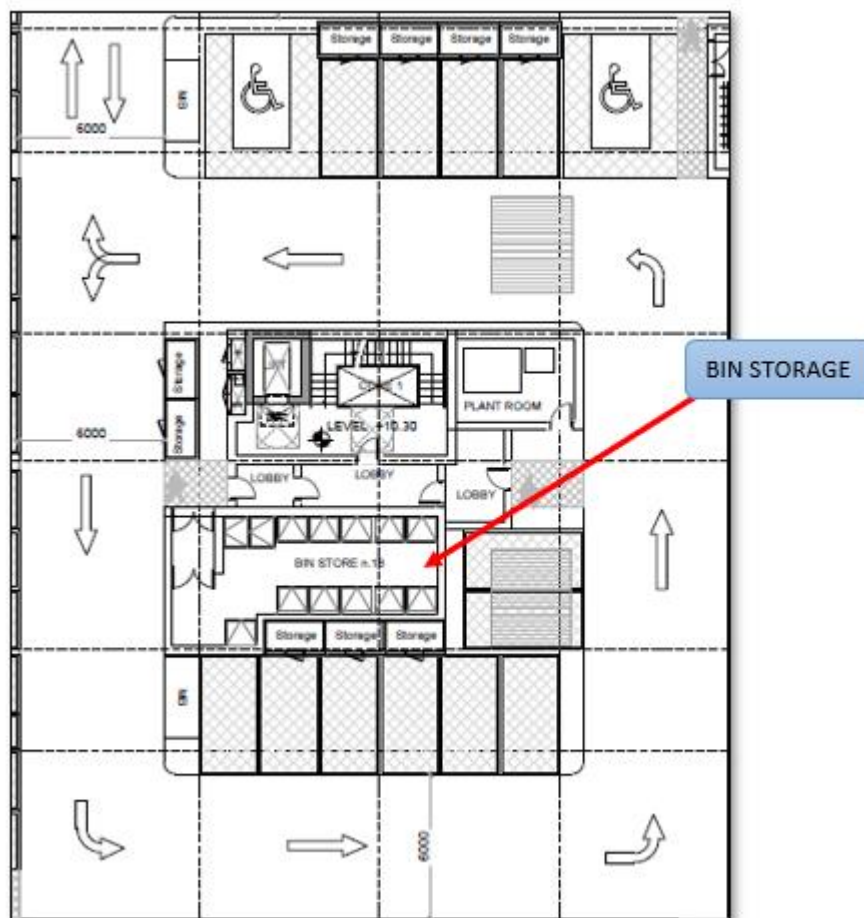


Figure 2.0 Waste Storage Block B

4.3.3 Block C

Residential tenants will be required to segregate their waste into the following waste categories within their own units:

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

The proposed WSA to service Block C is located in the basement area under Block C as per figure 3.0. Each WSA is titled “Bin Storage”. It is recommended that all WSAs should have secure access with either key or fob to ensure only residents may place waste in the WSA’s.

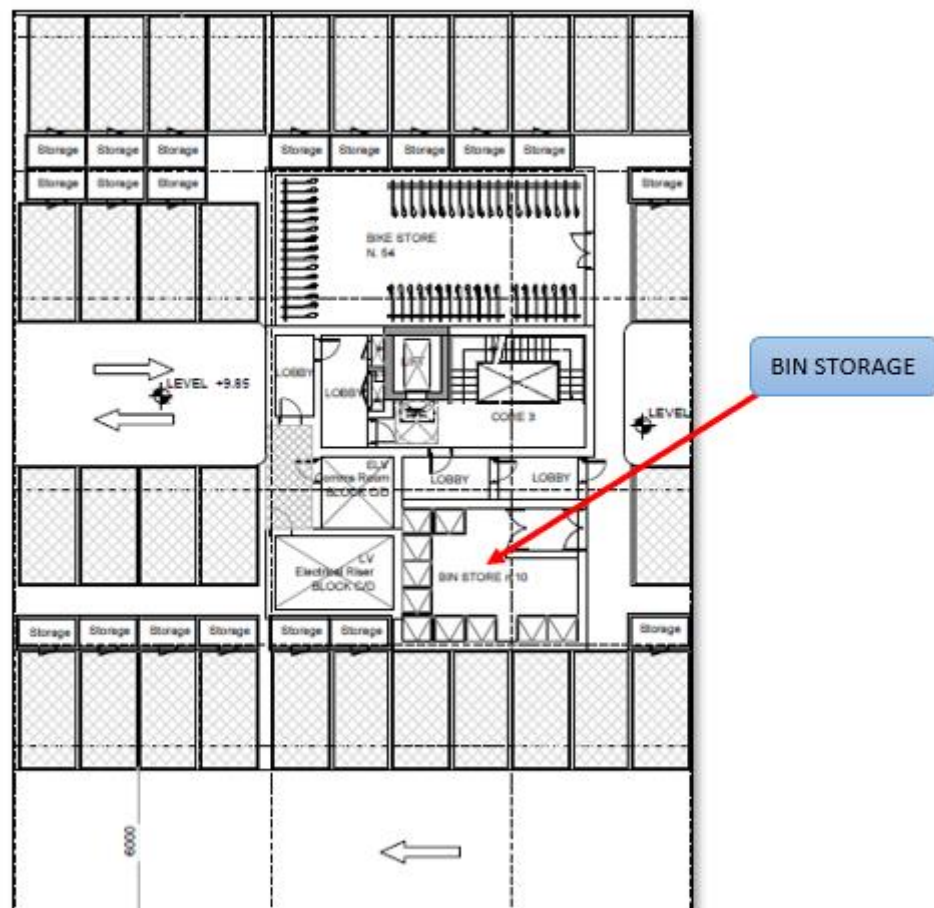


Figure 3.0 Waste Storage Block C

4.3.3 Block D

Residential tenants will be required to segregate their waste into the following waste categories within their own units:

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

The proposed WSA to service Block D is located in two areas in the basement area under Block D as per figure 3.0. Each WSA is titled “Bin Storage”. It is recommended that all WSAs should have secure access with either key or fob to ensure only residents may place waste in the WSA’s.

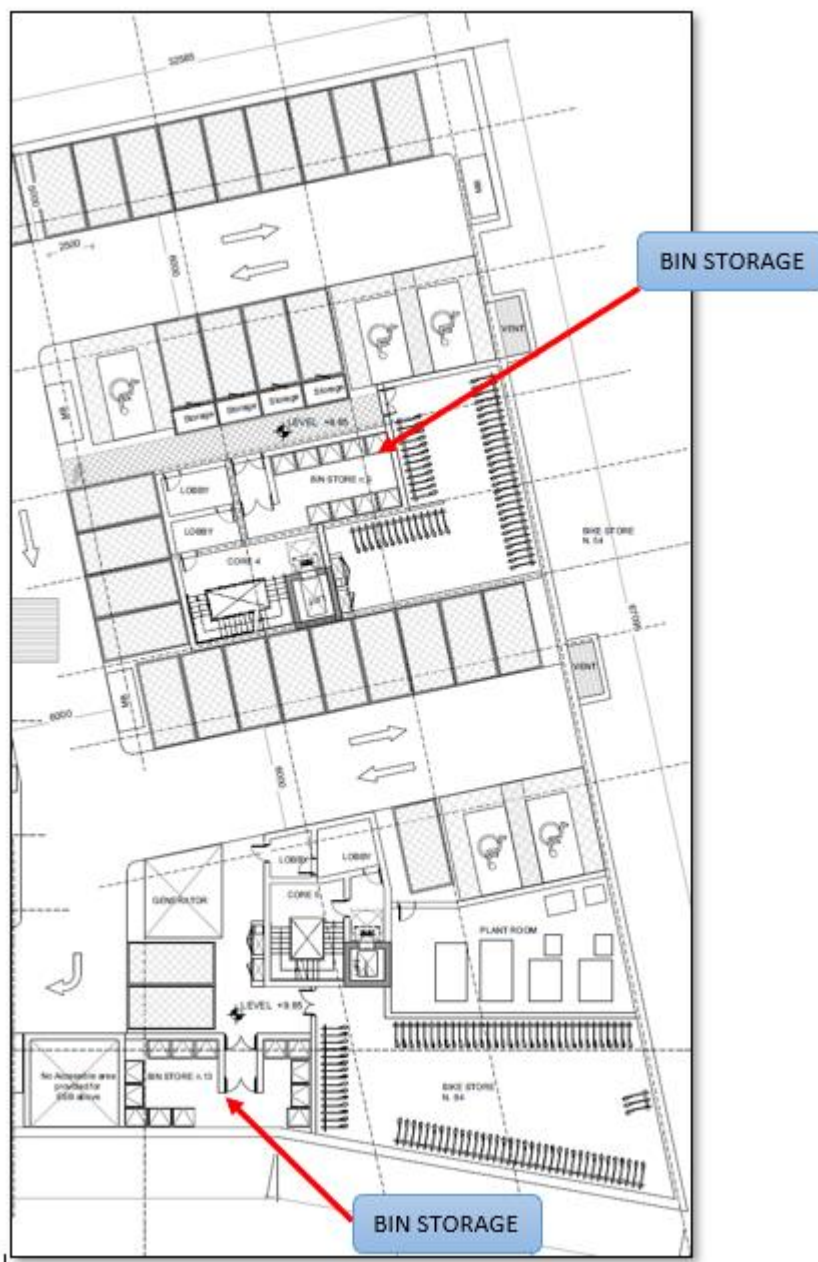


Figure 4.0 Waste Storage Block D

4.3.3 Communal Area

Bins will be strategically located within the communal area as required by the occupiers to facilitate segregation and temporary storage of waste. The main types generated within these areas are anticipated to be DMR, MNR and glass. As required, the building management company/ caretakers will need to bring segregated DMR, MNR and organic waste to the dedicated WSA of each Block.

All bin/containers will be clearly labelled, and colour coded to avoid cross contamination of the different waste streams. Signage should be posted on or above the bins to show which wastes can be put in each bin. Suppliers for the communal areas should be requested by the tenants to make deliveries in reusable containers, minimise packaging or to remove any packaging after delivery where possible, to reduce waste generated by the development. Glass waste should be brought to the nearest bottle bank or civic amenity centre by the residents.

4.4 Waste Collection

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

Internal management staff will bring out the waste bins to the road marshalling area where bins will be collected by the companies. The empty bins will be promptly returned to the appropriate WSAs.

All waste receptacles presented for collection will be clearly identified as required by waste legislation and the requirements of the Dublin City Waste Bye-Laws 2018. Also, waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter.

4.5 Additional Waste Materials

There is likely to be a small component of the overall waste arisings from the Proposed Development that will comprise other waste streams, such as WEEE, printer and toner cartridges, and fluorescent light tubes. Building maintenance will also give rise to materials such as paints and waste lubricating oils, which will require separate storage in dedicated sealed containers. This type of waste is termed “unique” as it will not be produced on a regular basis and therefore its management will be on special arrangement with a registered waste handler for the specific waste that is produced. However, separate space will be provided within the Proposed Development to handle and manage this waste, through battery recycling boxes, fluorescent lighting tube ‘coffins’, and other applicable storage containers (e.g. if a liquid is to be stored, even within its own container, this will need to be stored within a second container which holds 110% capacity of the volume of the liquid being stored). Separate arrangements will be made for the storage and safe disposal of these waste streams, as covered by the Hazardous Waste Regulations. It is envisioned that unique waste arisings generated by the Proposed Development will be minimal.

4.6 Waste Storage Area Design

In accordance with BS 5906:2005 all waste containers will be stored under cover in specially designed waste storage rooms, or stores, which will be built to the same general standard for both domestic and commercial premises. The walls and roofs of these stores will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour.

- All containers for waste, including recyclable material, will be easily accessible to both the occupier and waste collector;
- Waste stores will be designed and located in such a way as to limit potential noise disturbance to residents;
- Storage areas for waste and MDR will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings;
- Waste storage sites will include areas for instructional signage detailing correct use of the facilities;
- The entrance of the waste storage room will be free from steps and projections;
- Where the area is to be enclosed in a roofed building, adequate ventilation will be provided. Permanent ventilators will be provided giving a total ventilation area of not less than 0.2m²;
- Contain electrical lighting by means of sealed bulkhead fittings (housings rated to IP65 in BS EN 60529:199 for the purpose of cleaning down with hoses and inevitable splashing. Luminaires will be low energy light fittings or low energy lamp bulbs, controlled by proximity detection or a time delay button to prevent lights being left on; and
- Gullies for wash down facilities will be positioned so as not to be in the track of container trolley wheels.

In addition to the above requirements, past experience and best practice for the storage of waste materials will include the following provisions:

- Waste storage facilities will not block any utility service points;
- Waste storage areas will not obstruct sight lines for pedestrians, drivers and cyclists, if doors open outwards they will not open onto a road or highway;
- Waste containers will be inside or at least enclosed. If bins are outside, they will be secured in a compound;
- Information packs will be provided to residents to include full information on available recycling facilities;
- Colour coding will be used for bins of different streams; and Any internal storage areas adjacent to a fire escape route will be fitted with fire doors, automatic fire detection and a sprinkler system and comply with the Building Regs;
- A defined pedestrian route from apartments areas to the nearest waste storage area will be provided;
- Adequate mechanical ventilation to avoid the creation of stagnant or foul odours;

- Waste storage facilities will have appropriate sensor controlled lighting;
- CCTV cameras to allow monitoring of the patterns of use of the storage facilities;
- Adequate space for separate storage of general mixed waste, general recyclable waste, organic waste and glass waste;
- Designation of access routes to common waste storage areas to ensure safe access from the department units by mobility impaired persons; and
- The facilities management company will be required to maintain the bins and their WSAs in good condition. All residents should be made aware of the waste segregation requirements and waste storage arrangements.

4.7 Recommendations

The following recommendations are required within residential units:

- Provision of sufficient space for the storage of general domestic waste, green recyclable waste and organic waste;
- Each apartment shall include individual waste storage bins which shall be sized to allow their easy manual handling to be brought to the central waste storage area; and
- Provision of a Waste Management Plan document, prepared by the Facilities Management company to all residential units, which shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the development.

5.0 Waste Collection Requirements

In line with BS 5906:2005 and Dublin City Bye Laws 2018 guidance, the following collection requirements have been designed into the Proposed Development in order to comply with all mandatory waste storage requirements:

5.1 Dublin City Council Bye Laws 2018

- Holders of waste must have their waste collected by an approved collector or disposed of at an approved facility.
- Segregation of organic waste (Brown Bin) is required for holders of household & commercial waste.
- Recommended List of Acceptable Materials for a Household Brown Bin Scheme
- Holder of waste and authorised waste collector for a household or commercial premises must be clearly identified from the waste container itself (includes bag collections).
- Waste Collectors must offer Household and Commercial customers the same service frequency in the Central Commercial District.
- If a customer has storage space restrictions the priority of bins is as follows, 1.Organic 2.General 3.Recyclables.
- Within the Central Commercial District (CCD) waste collection is only to take place between 7pm & 12pm on collection day. Waste is not to be presented for collection before 5pm.
- Outside the CCD collections are only to take place between 6.00 am & 9.00 pm. This is restricted to 8.00 am to 8.00 pm at weekends and Bank Holidays. Waste is not to be presented for collection before 6pm on the day before collection.
- Waste Operators will only be able to collect waste in defined areas on a designated day which can be determined by the City Council.
- Provision is made for an on-the-spot fine of €75 for breaches of the Bye-Laws.

5.2 BS 5906 2005

All paths used to transport bins from the storage area to the collection point will have a minimum width of 2m, be free from kerbs or steps, have a solid foundation and be finished with a smooth, continuous finish. Based on the clearance height and tonnage specified by the dimensions of a standard refuse vehicle have been used to undertake the swept path analysis.

Dimensions	
Width	2.53 metres
Gross vehicle weight	26 tonnes
Length	11.2 metres
Clearance Height	4.75m (Any part of a building through which a waste collection vehicle passes must have a minimum clear height of 4.75 m, to allow for overhead fixtures and fittings)
Turning Circle (diameter)	9.5 metres

Table 10.0 *Collection Vehicle Dimensions: Waste/Recycling Collection Vehicle*

6.0 SUMMARY AND CONCLUSIONS

The Proposed Development will be sustainable with high standards of waste management performance. As such, due consideration has been given to waste which will be generated by the Proposed Development during its operation. Waste management within the Proposed Development has the following aims:

- To contribute towards achieving current and long-term government, Dublin City Council and EMR targets for waste minimisation, recycling and reuse;
- To allow that all legal requirements for the handling and management of waste during the operation of the Proposed Development are complied with; and
- To provide tenants with convenient, clean and efficient waste management systems that enhance the operation of the buildings and promote high levels of recycling.

Once operational, the Development is anticipated to produce approximately 45400L residential and 7507.5L commercial waste from all land uses per week. Residential waste storage allows for a weekly (seven day) storage capacity for MDR, food, glass and residual (i.e. nonrecyclable). Residential bins will be provided within dedicated storage rooms within the core of each residential block. On the day of collection, the waste bins will be brought out to the road marshalling area where bins will be collected by the waste collection companies.

Separate storage will be provided for commercial MDR, glass, food waste (if applicable to final land use) and residual waste within the curtilage of each unit and within dedicated combined bin stores. Additional capacity will also be provided to take into account missed collections due to bank holidays, industrial action, vehicle failure and adverse weather conditions. All waste arisings will be stored in bins proportionate to the volume of waste produced. Furthermore, the commercial waste management element of this Strategy has been developed to allow for a degree of flexibility to address any alterations in future waste arisings as a result of commercial land use changes. These provisions will result in the handling of waste produced by the Proposed Development once it is complete and operational in accordance with Dublin City Council Bye-Laws, *Waste Management (Food Waste) Amendment Regulations 2015 (S.I. No. 190 of 2015)* and the *European Union (Household Food Waste and Bio-Waste) Regulations 2015 (S.I. No. 191 of 2015)*.

In summary, this OWRMP presents a waste strategy that complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.