



Operational Waste Management Plan

*Carmanhall Road Strategic Housing Development,
Sandyford Industrial Estate, Dublin 18*

Prepared for:

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1.0 INTRODUCTION

Atlas GP Limited ('Atlas', 'the Client', 'the Applicant') has commissioned Golder Associates Ireland Limited (Golder) to prepare an Operational Waste Management Plan (OWMP) for their proposed Strategic Housing Development at the Former Avid Technology International Site, Carmanhall Road, Sandyford Industrial Estate, Dublin 18. (hereafter referred to as the 'Site' or the 'development').

The proposed development consists of 428 No. residential apartments, associated amenity areas. These areas are summarised as follows:

Residential Units:

- 41 No. Studio apartments;
- 285 No. 1 Bed apartments;
- 94 No. 2 Bed apartments; and
- 8 No. 3 Bed apartments.

Amenities and infrastructure:

- Concierge / Meeting Room;
- Office Space;
- Residents' Childcare Facility;
- Residents' Meeting / Games Room;
- Storage Area;
- Residents' Café/Lounge;
- Cinema;
- Gym;
- Yoga Studio; and
- Laundry.

The OWMP shall detail how waste will be managed during the operational phase of the development. The objective of this plan is to ensure that the development's waste is managed in accordance with applicable legislation, local authority plans and policies and regional waste management targets.

This plan will also specify the required waste infrastructure and storage areas required for effective waste management, segregation and collection services for the development. This provision will ensure that sufficient waste management infrastructure is included in the design of the development to assist the residents and management company of the Proposed Development minimise the generation of mixed waste streams.

Operational waste management practices at the Proposed Development should undergo periodic review by the management company. Such reviews will ensure that practices and systems undergo continual improvement and that the Proposed Development is achieving a residential recycling rate of 50% of managed municipal waste by 2020 in accordance with the Eastern-Midlands Region Waste Management Plan 2015-2021. Waste management review at the Proposed development should also identify changes in other regional waste targets and implement them.

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

In 2012, the Department of Environment, Community and Local Government published 'A Resource Opportunity, Waste Management Policy in Ireland', which set out the measures through which Ireland is to make the further progress necessary to become a recycling society, with a clear focus on resource efficiency and the virtual elimination of landfilling of municipal waste. This document established a new framework for the provision of effective and efficient waste management services through the establishment of three new Waste Management Planning Regions.

The development is located in the Eastern-Midlands Region which serves the administration Council areas of Dublin City, Dún Laoghaire Rathdown, South Dublin, Fingal, Wicklow, Kildare, Meath, Louth, Longford, Westmeath, Laois and Offaly.

Further actions defined in this document included:

- A clear expression of Ireland's commitment to reduce the impact of waste on the environment and implementation of the waste hierarchy of prevention, reuse, recycling and recovery;
- A focus on reducing administrative burdens on waste management firms, while maintaining an appropriate balance with the need for effective oversight and reporting;
- Introducing and the strengthening of the regulatory and permitting regime for the household waste collection market;
- The introduction of mandatory service standards for household waste collection will progressively increase the degree of segregation of household waste;
- The obligation of households to demonstrate that they are availing of an authorised waste collection service;
- The establishment of a team of Waste Enforcement Officers for deployment in cases relating to serious criminal activity will be prioritised in consultation with An Garda Síochána;
- The introduction of a 'Brown Bin' for the diversion of food and organic waste towards more productive uses; and
- The implementation of a producer responsibility model to encourage and facilitate the re-use and recycling of specific waste stream.

The document covers the period to 2020, and was subject to a mid-term review in 2016 to ensure that the measures set out are delivering waste action for Ireland, and also to provide an opportunity for additional measures to be adopted. An updated plan has not yet been issued.

2.2 Regional Level

As noted, the proposed development is located within the Dun Laoghaire-Rathdown County Council (DLR) local authority area, which is within the Eastern-Midlands Region (EMR).

The EMR 'Waste Management Plan 2015–2021' provides a framework for the prevention and management of waste in a sustained manner. The plan was developed in consultation with the Department of the Environment, Community & Local Government (DECLG), the Environmental Protection Agency (EPA), the Irish Waste Management Association (IWMA) and other stakeholders.

The three key objectives of the EMR Waste Management Plan are:

- Prevent waste: a reduction of 1% per annum in the amount of household waste generated over the period of the plan;
- More recycling: increase the recycling rate of domestic and commercial waste from 40 to 50% by 2020; and
- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.

For further detail please refer to the EMR Waste Management Plan 2015-2021 website (<https://www.emwr.ie/>).

2.3 Local Authority Level

The DLR Development Plan (2016-2022) identifies that waste management is an integral requirement essential in the promotion of sustainable development, enhancing good public health and the protection of environment. The plan notes that the continued economic progress in DLR relies on a high-quality environment which, in turn, is dependent on the availability of necessary waste management facilities. DLR is strongly committed to the promotion of the waste hierarchy as defined by EU legislation.

In the 2016-2022 DLR development plan has identified six policies applicable to the proposed development. These are:

- **Policy EI12 - Waste Management Strategy:** It is Council policy to conform to the EU and National waste hierarchy as follows: waste prevention, minimisation, re-use, recycling, recovery and disposal
- **Policy EI13 - Waste Plans:** It is Council policy to publish plans for the collection, treatment, handling and disposal of waste in accordance with the provisions of the Waste Management Act 1996 (as amended) and the Protection of the Environment Act 2003 (as amended).
- **Policy EI14 - Private Waste Companies:** It is Council policy to ensure that all waste that is disposed of by private waste companies is done so in compliance with the requirements of the EPA and the Waste Management Legislation and in accordance with the Planning Code.
- **Policy EI15 - Waste Prevention and Reduction:** It is Council policy to promote the prevention and reduction of waste and to co-operate with industry and other agencies in viable schemes to achieve this.
- **Policy EI16 - Waste Re-use and Re-cycling:** It is Council policy to promote the increased re-use and re-cycling of materials from all waste streams. The Council will co-ordinate with other agencies in viable schemes for the extraction of useful materials from refuse for re-use or re-cycling and will adopt the National Targets as stated in The Eastern-Midlands Region Waste Management Plan 2015-2021.
- **Policy EI17 - Refuse Disposal:** It is Council policy to dispose of refuse by means of sanitary landfill or other suitable methods as deemed appropriate.

2.4 Legislative Requirements

The main legislation that governs waste management in Ireland and relates to this development are:

- Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation include:
 - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
 - Waste Management (Facility Permit and Registration) Regulation 2007 (S.I. No. 821 of 2007) as amended

- Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended
- European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended
- 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)
- Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
- Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended
- 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
- Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
- European Union (Properties of Waste Which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended and
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended

These Acts and subordinate regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

2.4.1 Dún Laoghaire–Rathdown County Council Bye-Laws

The Dún Laoghaire-Rathdown County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws 2019, set out a number of requirements on waste holders within the DLR local authority area. Section 9, 'Provisions affecting Multi-user Buildings, Apartment Blocks, etc.' contains the key requirements relevant to this development:

- a) Separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable kerbside waste, residual kerbside waste and food waste;
- b) The receptacles referred to in paragraph (a) are located both within any individual apartment and at the place where waste is stored prior to its collection;
- c) Any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector;
- d) Written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection;
- e) An authorised waste collector is engaged to service the receptacles referred to in this section of these bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence

shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Dún Laoghaire-Rathdown County Council;

- f) Receptacles for kerbside waste are presented for collection on the designated waste collection day; and
- g) Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

For further detail please refer to the DLR website (<https://www.dlrcoco.ie/>).

2.5 Regional Waste Management Service Providers and Facilities

A number of contractors offer residential and commercial waste collection services in the DLR local area. Details of waste permits in the local area are available on the National Waste Collection Permit Office (NWCPO) website (<https://www.nwcpo.ie>).

3.0 DESCRIPTION OF THE PROJECT

3.1 Size, Location and Scale of the Development

The Proposed Development comprises the construction of a Build-To-Rent residential development within a new six to seventeen storey over basement level apartment building comprising 428 no. apartments 41 no. studio, 285 no. one-bedroom, 94 no. two-bedroom and 8 no. three-bedroom units. Of these apartments 413 no. will have access to private amenity space, in the form of a balcony or lawn/terrace, and 15 no. apartments will have access to a shared private roof terrace (142 m²) at ninth floor level.

All of the apartments will have access to ca. 2,600 m² of communal amenity space, spread over a courtyard at first floor level and roof terraces at the sixth, eighth and ninth floor levels. A residents' childcare facility will be located on the ground floor level. Further residents' amenities will include concierge/meeting rooms, office/co-working space, cinema, gym, yoga studio, laundry and residents' café/lounge at ground floor level. The café/lounge will primarily serve the residents of the development and will be open for community use on a weekly/sessional basis.

The Proposed Development is served by a ground floor level carpark, accessible via new vehicular entrance from Carmanhall Road, providing a total of 145 no. vehicular parking spaces (including 8 no. mobility parking spaces, 2 no. club-car spaces and 44 no. electric charging spaces) and 5 no. motorcycle parking spaces. Bicycle parking, plant and storage is accommodated at basement level, with 752 no. bicycle parking spaces. A further 22 no. residential short stay bicycle parking are provided at Ground Floor Level bringing the total bicycle parking provision for the development to 774 no. spaces.

The Proposed Development includes improvements to street frontages and the public realm of Carmanhall Road and Blackthorn Road comprising provision of an upgraded pedestrian footpath, an increased quantum of landscaping and street-planting, new cycling infrastructure, the provision of new street furniture comprising bins, benches and cycle parking spaces and the upgrading of the existing Carmanhall Road and Blackthorn Road junction through provision of a new uncontrolled pedestrian crossing.

3.2 Typical Waste Categories

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

- Dry Mixed Recyclables (DMR) – paper, cardboard, plastic, Tetra Pak, aluminium cans, etc.
- Mixed Non-Recyclables (MNR) – General non-recyclable waste
- Organic Waste (OW) – food waste or green waste from plants/grass
- Glass

In addition to the typical waste material mentioned above there will be smaller quantities of other types of waste that will need to be managed separately, including:

- Batteries;
- Waste Electrical and Electronic Equipment (WEEE);
- Light bulbs;
- Green/Garden waste from landscaping;
- Waste Cooking Oils;
- Furniture;
- Textiles;
- Chemicals (i.e. solvents, pesticides, paints, adhesives, detergents, etc)
- Printer ink/toner cartridges;

3.3 European Waste Codes

In 1994, the first European Waste Catalogue (Commission Decision 94/3/EC) and Hazardous Waste List (Council Decision 94/904/EC) were published as two separate documents by the European Commission. The lists were used by the Environmental Protection Agency for the compilation of waste data from 1995 and were adopted into Irish legislation by the Waste Management Act, 1996. In 1996, the Environmental Protection Agency published a single list which incorporated both the European Waste Catalogue and the hazardous waste list, (EPA, 1996, Waste Catalogue and Hazardous Waste List).

In 2002, the EPA published a document titled the European Waste Catalogue and Hazardous Waste List, which was a condensed version of the original lists and subsequent amendments. This document was revised by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' in 2018, (replacing the previous 2015 version of the same document).

This EWC waste classification system applies across the EU and is the basis for all national and international waste reporting obligations. The document consolidates the Decision and Regulations and provides guidance on how to follow them. The different types of waste in the EWC list are fully defined by the six-digit entry for the waste including the respective two-digit and four-digit chapter headings.

4.0 ESTIMATED WASTE ARISING

4.1 Waste Types Generated by the Proposed Development

As identified in Section 3.3 (above), the EWC waste classification system applies across the EU and is the basis for all national and international waste reporting. Table 1 below presents a list of typical waste materials, and EWC coding, expected to be generated during the operational phase of the proposed development.

Table 1: Typical EWC Coded wastes generated by the Proposed Development.

Waste Description	EWC Code
Paper and Cardboard	20 01 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Textiles	20 01 11

Waste Description	EWC Code
Chemicals (solvents, pesticides, paints and adhesives, detergents, etc.)	20 01 13*, 20 01 19*, 20 01 27*, 20 01 28, 20 01 30
Fluorescent tubes and other mercury containing wastes	20 01 21*
Oils and Fats	20 01 25
Printer and Toner Cartridges	20 01 27*, 20 01 28
Batteries and Accumulators	20 01 33*, 20 01 34
Waste Electronic and Electrical Equipment	20 01 35*, 20 01 36
Plastics	20 01 39
Metals	20 01 40
Green Wastes	20 02 01
Mixed Non-Recyclable Waste	20 03 01
Bulky Wastes	20 03 07

4.2 Waste Quantities Generated by the Proposed Development

Estimations of waste volumes from the Proposed Development have been assessed using BS5906:2005 'Waste Management in Buildings – Code of Practice'. This standard provides guidance on the quantification of weekly waste arisings from various types of developments and also specifies the methods of storage, collection, segregation for recycling and recovery for developments.

Quantities of the various waste streams have been assigned with reference to the RPS report 'Household Waste Characterisation Campaign' (2018) and Clean Technology Centre (CTS) report 'Non-household Waste Characterisation Campaign' (2018), both written for the Environmental Protection Agency (EPA). The division between DMR, MNR, OW and glass is based on information presented in these reports.

4.2.1 Residential Areas

As per Table 1 of BS5906 each residential unit is given a fixed volume of waste (30 L), plus an additional volume (70 L) per bedroom, (Table 2).

Table 2: Calculation of Waste Volumes from Residential Areas, (BS5906).

Unit Type	Studio	1 Bed	2 Bed	3 Bed	Total
No. of units	41	285	94	8	428
Bedrooms/Unit	1.0	1.0	2.0	3.0	-
Weekly waste/Unit (L)	100.0	100.0	170.0	240.0	-
Weekly waste/Unit type (L)	4,100	28,500	15,980	1,920	50,500

With regards to the division of these quantities into waste streams, BS5906 recommends that the storage area to be allocated for recyclable wastes should ideally be 50% by volume of the waste output.

The RPS (2018) report presented the composition of the national kerbside collected household waste in Ireland 2016. These volumes have been used to adjust the 50:50 waste split between DMR and MNR as recommended in BS5906, (Table 3).

Table 3: Weekly Waste Stream Volumes (L) from Residential Areas, (BS5906 & RPS 2018).

Unit Type	Studio	1 Bed	2 Bed	3 Bed	Total (L)
MNR	1,430.9	9,946.5	5,577.0	670.1	17,624.5
DMR	2,050.0	14,250.0	7,990.0	960.0	25,250.0
OW	512.5	3,562.5	1,997.5	240.0	6,312.5
Glass	106.6	741.0	415.5	49.9	1,313.0
Total	4,100.0	28,500.0	15,980.0	1,920.0	50,500.0

4.2.2 Communal Residential Amenity Areas (inc. Residents' Childcare Facility)

Residential amenity areas have been assigned a conservative waste generation as per the industrial categorisation of Table 1 of BS5906. This equates to a fixed volume of waste of 5 L per m². The Residents' Childcare Facility has been assigned a fixed volume of waste of 10 L per m².

The areas of development included in these calculations includes the office/co-working space, concierge/meeting room, meeting/games room, gym, yoga studio, café/lounge, cinema, and the laundry.

Total weekly waste volumes from these areas have been calculated in Table 4.

Table 4: Calculation of Weekly Waste Volumes from Residential Amenity Areas, (BS5906).

Type	Area m ²	Weekly Waste per m ²	Total Weekly Waste L per m ²
Residential Amenity Areas	1,091	5 L	5,455
Residents' Childcare Facility	142	10 L	1,420
Total	-	-	6,875

Similar to the Residential Areas in Section 4.2.1, quantities of waste streams have been calculated using combined figures from BS5906 and the 2018 RPS report. The inclusion of glass and OW waste provides the opportunity for further segregation of wastes in these communal areas as well.

Total weekly waste stream volumes from these communal areas have been calculated in Table 5.

Table 5: Weekly Waste Stream Volumes (L) from Communal Residential Amenity Areas, (BS5906 & RPS 2018).

Unit Type	Total
MNR	2,399.375
DMR	3,437.50
OW	859.375
Glass	178.75
Total	6,875.00

4.2.3 Waste Storage Required

Waste calculations are based on standard 1,100 L bins for the MNR and DMR waste streams. However, the waste storage areas (WSA) of the Proposed Development utilise waste compactors to collect the MNR and MMR waste streams. The design and calculations for these areas has been based on the AES Bord na Móna Epac mini compactor, some specifications have been provided in Figure 1). The system will collect waste in a 2 m³ bag which store the equivalent of ten 1,100 litre bins and thus provide a saving in space within these areas,

and reduce the number of bin units that will be required to be collected from the development. Waste bags are stored and collected by forklift to a curtain-side truck. Alternative units can be considered by the property management company once appointed.

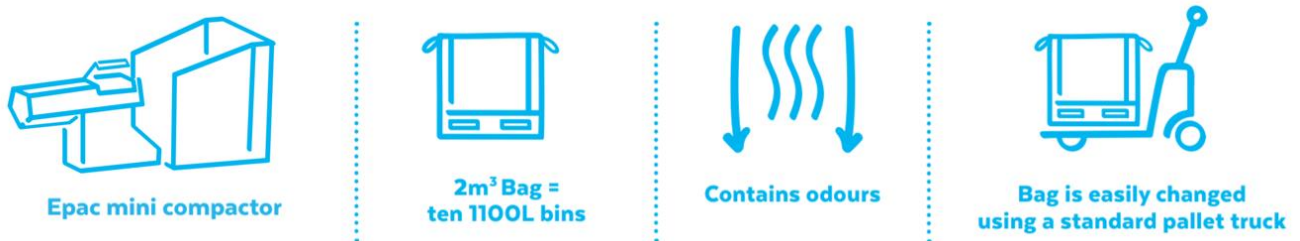


Figure 1: AES Epac System specifications.

The OW and glass waste streams the use of 240 L wheeled bins. Waste collectors identify this as the preferred collection method for manual handling given the weights of the waste materials.

Table 6 provides a breakdown of waste quantities per area and the total No. of bins required based on a bi-weekly collection of the waste streams. The use of a bi-weekly collection is favourable due to the reduced time in which wastes are stored at the Proposed Development and also the reduces floor area which is required for the waste storage areas. The frequency can be managed by the appointed management company. These collection frequencies can be increase and reduced as required, (for all or some waste streams).

Table 6: Bins and Waste Storage required at the Proposed Development.

Area	MNR	DMR	OW	Glass
Residential Units	17,624.5 L	25,250.0 L	6,312.5 L	1,313.0 L
Communal and Residential Amenity Areas	2,399.375 L	3,437.5 L	859.375 L	178.75 L
Total Waste	20,024 L	28,688	7,172	1,491
Number of bins and 2 m ³ bags required weekly	19 No. 1,100 L <u>or</u> 2 No. 2 m ³ bag	27 No. 1,100 L <u>or</u> 3 No. 2 m ³ bag	30 No. 240 L	7 No. 240 L
Number of bins and 2 m ³ bags based on <u>bi-weekly</u> collection	10 No. 1,100 L <u>or</u> 1 No. 2 m³ bag	14 No. 1,100 L <u>or</u> 2 No. 2 m³ bag	15 No. 240 L	4 No. 240 L

5.0 WASTE STORAGE AND COLLECTION

Waste generated within the proposed development will be segregated, stored, and collected in line with best practice standards, applicable Bye-Laws and national legislation.

- BS5906:2005 Waste Management in Buildings – Code of Practice;
- Department of Housing, Planning and Local Government (DoHPLG), Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2018);
- DLR (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws (2019);
- DLR Waste Management Division – Refuse and Recycling storage Guidelines (2017); and
- EMR Waste Management Plan 2015-2021.

5.1 Waste Storage Areas

The proposed development contains four waste storage areas (WSA), these have been identified in Figure 2. All WSAs are located on the ground floor of the development and positioned in close proximity to building cores to minimise the distance residents and tenants must travel and to facilitate access and collection by waste contractors.

These WSAs are located in the south east of the building near Core 2, and in the north of the building near Core 4. A separate WSA, where bins from the other two WSAs will be left for collection by the waste contractor, is located in the south west corner of the ground floor of the building, a short distance from Core 3. The refuse storage area for the residents' café/lounge area is located close to Core 1.

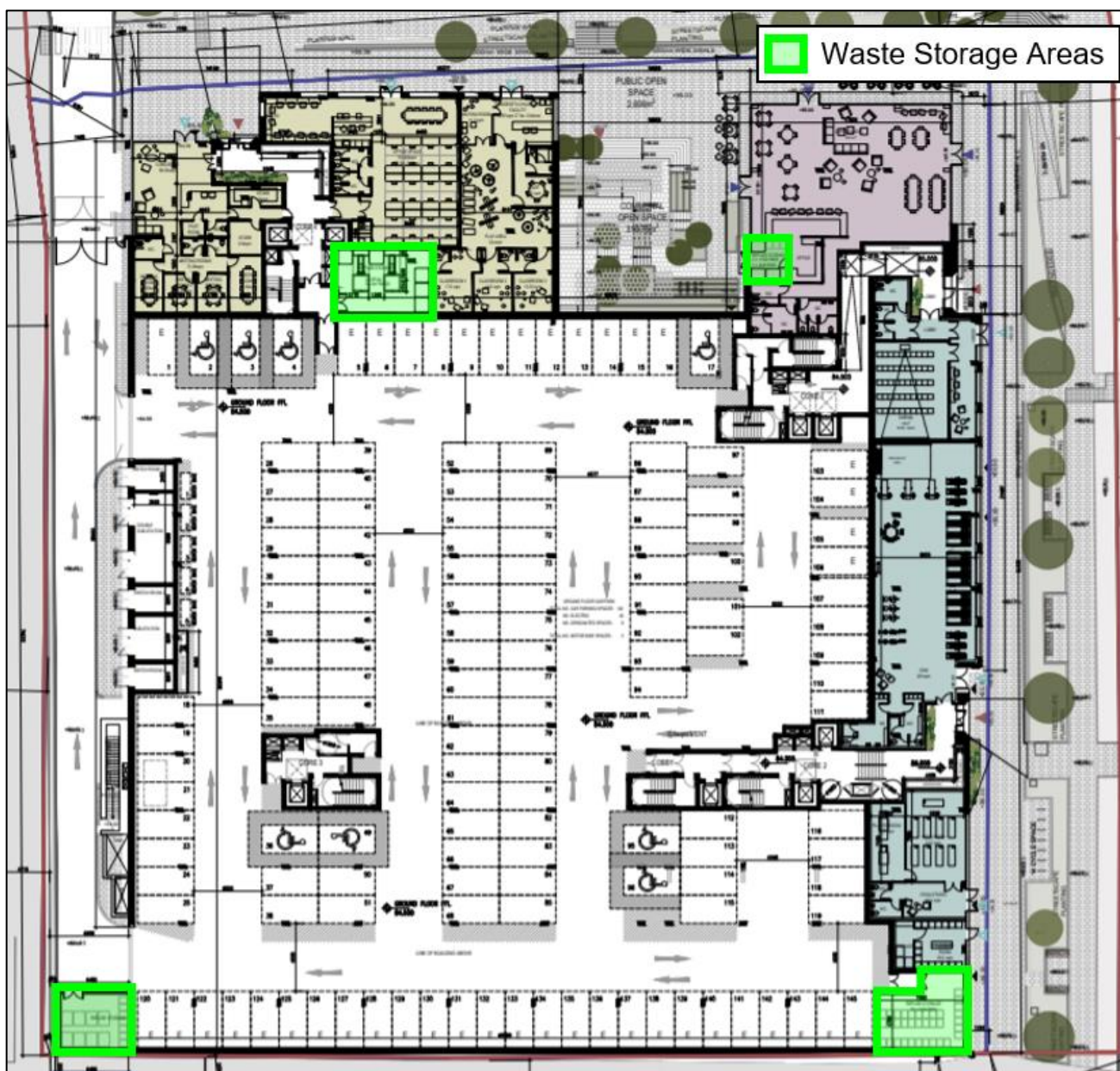


Figure 2: Locations of WSAs within the Proposed Development.

5.2 Waste Collections

There are a number of private waste contractors that provide waste collection services for residential and commercial developments in the DLR local area. A list of contractors serving this area is available on the

NWCPO website. All waste receptacles must be clearly marked for their appropriate waste type and kept in good condition, as per DLR Bye Laws (2019), and all residents and tenants must be informed of the waste collection arrangements

All waste contractors employed to service the proposed development must have valid waste collection permits for the type of waste collected and all waste must be disposed of at a registered/permitted/licenced facility in compliance with the Waste Management Act, 1996 as amended and associated waste management regulations.

The waste collection contractor will enter the carpark in their truck, following a designated route, and will collect the waste containers from outside the WSAs. Bins and 2 m³ bags will be removed and returned to the WSAs by the waste contractor.

5.3 Additional Waste Materials

In addition to the typical waste materials there will be smaller quantities of other types of waste that will need to be managed separately, including:

- Batteries – In accordance with the EU (Batteries and Accumulators) Regulations 2014, residents can take waste batteries to their local civic amenity centre, or return them to retailers who supply equivalent battery types, whether or not they were purchased there, for disposal;
- Waste Electrical and Electronic Equipment (WEEE) – Residents can avail of the provisions of the WEEE Directive 2002/96/EC and take WEEE to a local recycling centre. Alternatively, retailers are obliged to take old WEEE up to 15 days after the purchase of new electrical equipment, or arrange collection of old WEEE up to 15 days after delivery of new equipment, provided it is disconnected from the mains, not a health and safety risk and readily available for collection. A take-back/collection service can be availed from retailers or alternative arrangements can be made using a licenced contractor;
- Light bulbs – Residents should dispose of waste light bulbs at a WEEE drop recycling point or their local civic amenity centre. If required, the management company and office space should make appropriate arrangements for disposal using a licenced contractor. Facilities Management may make similar arrangements, depending on the agreement;
- Green/Garden waste from landscaping – Green waste generated by residents in apartments should be disposed of in the organic waste bins, while green waste generated from external areas should be disposed of by external landscaping contractors;
- Waste Cooking Oils – Residents can dispose of waste cooking oil at their local civic amenity centre. If other tenants generate waste cooking oil it should be stored in the unit in a bunded area or on a spill pallet and a suitable collection schedule should be agreed with an external licenced contractor;
- Furniture (and bulky waste) – Residents can dispose of unwanted furniture at a local civic amenity centre. Facilities Management can dispose of unwanted furniture by making arrangements with an external licenced waste contractor;
- Textiles – Where appropriate, unwanted textiles should be recycled by donating to charities for reuse;
- Chemicals (i.e. solvents, pesticides, paints, adhesives, detergents, etc) – Residents should dispose of any chemical waste products classified as hazardous at the local civic amenity centre. Similar waste generated by the management company or others (e.g. cleaners) should be appropriately stored within the unit and collection may be arranged by Facilities Management, depending on the agreement. Facilities Management should make arrangements for disposal of chemicals with an external licenced waste

contractor. If chemicals are used on-site by external contractors, then they should make external arrangements for removal and disposal of waste chemicals and containers off-site; and

- Printer ink/toner cartridges – If necessary, a printer ink/toner cartridge bin should be provided to business tenants, (i.e. management company). This bin should be stored within the unit and collection by a licenced waste contractor can be arranged. Residents can usually return waste cartridges to the supplier for recycling or dispose of them at their local civic amenity centre.

Residents can browse the website 'www.mywaste.ie' which was developed as Ireland's official guide to managing household waste. Everything one needs to know about how to manage waste responsibly and efficiently is located on this website. Browse this site for local waste services, recycling facilities, information on preventing, reusing and disposing of waste.

5.4 Waste Storage Area Design

The WSAs should be designed to comply with the relevant standards and legislation, including the following from DLR Waste Management Division - Refuse and Recycling storage Guidelines (2017), and the DLR Guidance Notes for Waste Management in Residential & Commercial Developments, (2020), listed below. The WSAs should not present any safety risks to users:

- Defined pedestrian routes from apartments to WSAs;
- Non-slip surface;
- Ventilation to provide adequate air changes;
- Suitable lighting (sensor controlled);
- Mobility impaired access;
- Foul drainage system. 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;
- Restricted access and supporting security measures;
- Monitoring equipment;
- Appropriate visual signage marking out waste storage bin types. 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;
- Worst case sizing of waste storage containers with reference to BS 5906:2005 (See Section 4.2);
- Provision for washing and disinfection of bins on site; and
- Provision for bin collection and replacement.

The facilities management company, residents and tenants should maintain the WSAs in a condition in-keeping with the DLR Waste Bye Laws.

5.5 Building Management Company Responsibilities

The Building's management company shall be responsible for the management of all domestic wastes generated by the residents of the development and the Residents' Childcare Facility. The management company will be responsible for the appointment of an appropriately permitted waste management company. The management company will also be responsible for the management and maintenance of the proposed developments WSAs and for the up-keep of the provisions identified in Section 5.4. The management company will be responsible to oversee the appropriate up-keep of the residents' café/lounge WSA.

The building management company will be responsible for the provision of the below items in accordance with the DLR the 'Guidance Notes for Waste Management in Residential & Commercial Developments':

- A Waste Management Plan. This should be made available to all residential units, and should clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the development;
- The maintenance of appropriate graphical signage to inform residents of their obligation to reduce waste, segregate waste and in the correct bin;
- The preparation of an annual waste management report for all residential units;
- An appropriately qualified and experienced staff member, who will be responsible for all aspects of waste management at the development;
- The undertaking of daily inspection of WSAs and the completion of a daily inspection check-list, (to be displayed within the WSAs); and
- The maintenance of a weekly waste register, which will detail the appropriate quantities and breakdown of wastes collected from the development and provision of supporting documentation by the waste collector to allow tracking of waste recycling rates.

6.0 CONCLUSIONS

The Proposed Development shall be designed and managed to provide residents with the required waste management infrastructure to minimise the generation of un-segregated domestic waste and to maximise the potential for segregating and recycling domestic waste fractions.

The OWMP presents the main national, regional and local legislation, and best practice guidelines and national targets for waste segregation, storage and collection.

The waste management plan presented in this report will ensure sufficient storage capacity for the estimated quantities of waste for each segregated waste stream.

If implemented correctly, this OWMP will ensure compliance with the DLR Waste Bye Laws and ensure a significant quantity of the waste generated in the proposed development will be recycled and/or reused, as per the targets in the EMR Waste Management Plan 2015-2021.

The Proposed Development's operational waste management practices should undergo periodic review to ensure that practices and systems reflect changes in national, regional and local waste targets and policies.

7.0 REFERENCES

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