

APPENDIX 16.1

OPERATIONAL WASTE MANAGEMENT PLAN FOR A PROPOSED MIXED-USE DEVELOPMENT

AT

**“RB CENTRAL” AT
ROCKBROOK,
CARMANHALL ROAD,
SANDYFORD BUSINESS
DISTRICT, SANDYFORD,
DUBLIN 18.**

The Tecpro Building,
Clonshaugh Business & Technology Park,
Dublin 17, Ireland.

T: + 353 1 847 4220
F: + 353 1 847 4257
E: info@awnconsulting.com
W: www.awnconsulting.com

Report Prepared For

Irish Residential Properties LTD

Report Prepared By

Elaine Neary, Associate

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Cork Office
Unit 5, ATS Building,
Carrigaline Industrial Estate,
Carrigaline, Co. Cork.
T: + 353 21 438 7400
F: + 353 21 483 4606

AWN Consulting Limited
Registered in Ireland No. 319812
Directors: F Callaghan, C Dilworth,
T Donnelly, T Hayes, D Kelly, E Porter

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Name	Elaine Neary	Fergal Callaghan
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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP), on behalf of Irish Residential Properties LTD (IRES), for a proposed mixed-use development on a site located at lands known as “RB Central” at Rockbrook, Carmanhall Road, Sandyford Business District, Sandyford, Dublin 18.

The development will consist of 2 no. residential blocks ranging in height from 5-14 storeys comprising a total of 428 no. apartments (including all balconies, terraces and roof gardens) arranged around two courtyards; communal and public open spaces including boulevards; 4 no. ground floor retail units; resident community uses and crèche with outdoor play area. The development will also include revisions to the existing basement levels including car and bicycle parking provision with new vehicular access from Carmanhall Road; apartment storage areas; waste storage areas; ESB substations and switch room and plant/service areas. The development will also include all piped infrastructure and ducting; green roofs; changes in level; internal roads and pathways; pedestrian access points; services provision; landscaping and boundary treatments and all associated site development and excavation works above and below ground.

The proposed development is adjacent to an existing IRES residential and commercial development. The waste storage and collection arrangements for the existing IRES development have been taken into consideration in preparation of this plan.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed development is undertaken in accordance with current legal and industry standards including the *Waste Management Act 1996 – 2011* as amended and associated Regulations ¹, *Protection of the Environment Act 2003* as amended ², *Litter Pollution Act 1997* as amended ³, the ‘*Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*’ ⁴, Dún Laoghaire Rathdown County Council (DLRCC) *Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste 2009* ⁵ and DLR Refuse and Recycling Storage Guidelines ⁶. In particular, this OWMP aims to provide a robust strategy for storing, handling, collection and transport of the wastes generated at site.

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

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

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Government issued a policy statement in September 1998 titled as ‘*Changing Our Ways*’ ⁷ 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 2002⁸. 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 Ireland's Development Sustainable – Review, Assessment and Future Action*'⁹. 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*'¹⁰. 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*'¹¹. 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. In early 2016, the Department of the Environment, Community and Local Government invited comments from interested parties on the discussion paper '*Exporting a Resource Opportunity*'. While the EPA have issued a response to the consultation, an updated policy document has not yet been published.

Since 1998, the Environmental Protection Agency (EPA) has produced periodic '*National Waste (Database) Reports*'¹² 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 2016 National Waste Statistics, which is the most recent study published, reported the following key statistics for 2016:

- **Generated** – Ireland produced 2,763,166 t of municipal waste in 2016, this is a six percent increase since 2014. This means that each person living in Ireland generated 580kg of municipal waste in 2016
- **Managed** – Waste collected and treated by the waste industry. In 2016, a total of 2,718,298 t of municipal waste was managed
- **Unmanaged** –Waste that is not collected or brought to a waste facility and is therefore likely to cause pollution in the environment because it is burned, buried or dumped. The EPA estimates that 44,868 t was unmanaged in 2016
- **Recovered** – the amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In 2016, almost three quarters (74%) of municipal waste was recovered, this is a decrease from 79% in 2014
- **Recycled** – the waste broken down and used to make new items. Recycling also includes the breakdown of food and garden waste to make compost. The recycling rate in 2016 was 41%, the same as 2014
- **Disposed** – the waste landfilled or burned in incinerators without energy recovery. Just over a quarter (26%) of municipal waste was landfilled in 2016.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dún Laoghaire-Rathdown County Council (DLRCC).

The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the DLRCC area which was published in May 2015. The regional plan sets out the following strategic targets for waste management in the region that are relevant to the proposed development:

- 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 2013*.

The *Dún Laoghaire-Rathdown County Development Plan 2016 – 2022*¹³ sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the waste management plan.

Waste policies with a particular relevance to the proposed development are as follows:

Policy EI12: Waste Management Strategy

It is Council policy to conform to the European Union and National waste management hierarchy as follows:

- *waste prevention*
- *minimisation*
- *re-use*
- *waste recycling*
- *energy recovery and*
- *disposal*

subject to economic and technical feasibility and Environmental Assessment.

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 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 Environmental Protection Agency 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-operate 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 'Dublin Regional Waste Management Plan 2005-2010'. (Note: the EMR Waste Management Plan 2015 - 2021 was published in 2015. It is assumed this objective is relevant to the EMR Waste Management Plan and not the Dublin Regional Waste Management Plan which is no longer valid).

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 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation includes:
 - 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 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.¹⁴

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

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2011* and subsequent Irish legislation, is the principle of “*Duty of Care*”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is therefore imperative that the occupants, tenants and building management company undertake on-site management of waste in accordance with all legal requirements and the building management company 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.

2.3.1 Dún Laoghaire-Rathdown County Council Waste Bye-Laws

Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste were brought into force by DLRCC in 2009. The *Waste Bye-Laws* set a number of enforceable requirements on waste holders and collectors with regard to storage, separation, presentation and collection of waste within the DLRCC functional area. Key requirements under these Bye-Laws are:

- A holder shall not cause or permit the storage of waste to endanger health, create a risk of injury to pedestrians or traffic, harm the environment or create a nuisance through noise, odours or litter;
- A service provider shall not collect overloaded waste containers;
- A holder shall ensure that the lid of an appropriate waste container is firmly closed when that container is presented for collection; and
- A holder shall not present waste for collection before 6 p.m. on the day before the approved time

The full text of the Waste Bye-Laws is available from the DLRCC website.

2.4 Local Authority Guidelines

DLRCC's Waste Management Division have issued *Refuse and Recycling Storage Guidelines* (dated November 2017) which provide good practice guidance for the storage and collection of waste for new build high density developments. The guidelines include a form which is designed to be completed by (or on behalf of) the applicant for new large developments. The objective of the guidelines and completion of the form is to allow developers to demonstrate to local planning and waste management authorities that they have considered how the design and the operation of waste management services will enable the occupiers and managing agents to effectively manage their wastes arisings.

The ultimate goal of the guidelines is that the implemented waste strategy will achieve a 70% reuse and recovery target in accordance with the European Commission's proposal to introduce 70% reuse and recycling targets for municipal waste by 2030 and while also providing sufficient flexibility to support future targets and legislative requirements.

This OWMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner. The form has also been completed (with cross references to this OWMP) and is provided as Attachment A of this Plan.

The guidelines and form are available on the DLRCC website.

2.5 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services for the residential and commercial sectors in the DLRCC area. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the regional waste management plan, there is a decreasing number of landfills available in the region. 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 Certificates of Registration (CORs) and Waste Facility Permits are available from the National Waste Collection Permit Office (NWCPO). Waste and Industrial Emissions (IE) licences issued are available from the EPA.

The closest bring bank to the development is located c. 5km to the to the south east at on Ballyogan Road and there is a bring/bottle bank located a short distance away at Arkle Road (c. 250m to the south) which can take glass, cans and textiles.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all waste/IED licenses issued are available from the EPA.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The proposed mixed-use development at lands known as "RB Central" at Rockbrook, Carmanhall Road, Sandyford Business District, Sandyford, Dublin 18.

It is bound to the north by an existing boulevard and a residential and commercial development (which comprises the Grande Central and South Central apartments and

commercial units), to the east by a proposed residential development, to the south by Carmanhall Road and to the west by an existing boulevard.

The existing residential and commercial development to the north is owned and managed by IRES. In order to ensure an efficient integrated waste management strategy, the existing waste storage and collection arrangements have been taken into consideration in preparation of this plan.

The development will consist of 2 no. residential blocks ranging in height from 5-14 storeys comprising a total of 428 no. apartments (including all balconies, terraces and roof gardens) arranged around two courtyards; communal and public open spaces including boulevards; 4 no. ground floor retail units; resident community uses and crèche with outdoor play area. The development will also include revisions to the existing basement levels including car and bicycle parking provision with new vehicular access from Carmanhall Road; apartment storage areas; waste storage areas; ESB substations and switch room and plant/service areas. The development will also include all piped infrastructure and ducting; green roofs; changes in level; internal roads and pathways; pedestrian access points; services provision; landscaping and boundary treatments and all associated site development and excavation works above and below ground.

The 428 no. residential units will comprise the following:

- 32 no. Studio
- 122 1-bed apartments;
- 251 no. 2-bed apartments; and
- 23 no. 3-bed apartments.

The retail units are at ground level and will be accessible from the existing boulevard to the north and west of the development. The crèche, also located at ground level, will be accessible from Carmanhall Road.

Community space has been allocated at ground level for use by residents of the development and the wider community.

3.2 Typical Waste Categories

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

- Dry Mixed Recyclables (DMR) - includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from internal plants/flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

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

- Green/garden waste may be generated from external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);

- Fluorescent tubes and other mercury containing waste;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or commercial tenants);
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles. A bicycle parking area is planned for the development (at basement level - 01). As happens in other developments, residents sometimes abandon faulty or unused bicycles and it can be difficult to determine their ownership. However, it is proposed that these bicycles would be donated to charity so they are unlikely to become a waste.

Wastes should be segregated into the above waste types, as appropriate, 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* ¹⁵ and *Hazardous Waste List* ¹⁶ were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* ¹⁷, which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' ¹⁸ 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 Table 3.1 below

Waste Material	LoW/EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats*	20 01 25/26*
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	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

* Individual waste type may contain hazardous materials

Table 3.1 Typical Waste Types Generated and LoW Codes

4.0 ESTIMATED WASTE ARISING

A waste generation model (WGM) developed by AWN, has been used to predict waste types, weights and volumes arising from operations within the proposed development. The WGM incorporates building area and use and combines these with other data including Irish and US EPA 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 retail units and crèche unit are based on waste generation rates per m² floor area for the proposed uses.

The total estimated waste generation for the development for the main waste types is presented in Table 4.1 below and is based on the uses and areas as advised by the project architects (TOT Architects) April 2018.

Waste type	Waste Volume (m ³ /week)		
	Residential	Retail Units	Crèche
Organic Waste	6.47	0.85	0.05
Dry Mixed Recyclables	47.41	2.12	1.91
Glass	1.25	0.03	0.01
Mixed Municipal Waste	22.56	2.41	0.85
Total	77.69	5.40	2.82

Table 4.1 Estimated Waste Generation for the main waste types (m³/week)

The DLR Pre-Planning Waste Management Form recommends calculating residential waste using Section 4.7 of *BS5906:2005 Waste Management in Buildings – Code of Practice*¹⁹. The predicted total waste generated from the residential units based on the Code of Practice is c. 64m³ per week. Whereas the AWN waste generation model estimates c. 78m³ per week from the residential units. AWN's modelling methodology is based on data from recent published data and data from numerous other similar developments in Ireland and based on AWN' experience it is a more representative estimate of the likely waste arisings from the development. The Code of Practice does not provide a specific methodology for estimating waste arisings from retail or crèche uses. The AWN WGM has been used to estimate the waste arisings from these uses as stated above.

One of the environmental objectives for the development is that all waste generated at the development will be suitable for offsite recycling or recovery (including energy recovery), with diversion of waste from landfill, where possible.

5.0 WASTE SEGREGATION, STORAGE AND COLLECTION

This section provides information on how waste generated within the development will be segregated and 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 DLRCC. In particular, consideration has been given to the following documents:

- EMR Waste Management Plan 2015 – 2021;
- DLRCC, Dún Laoghaire Rathdown County Council Development Plan 2016 – 2022;
- DLRCC, Presentation and Collection of Household and Commercial Waste Bye-Laws (2009);

- DLRCC, Refuse and Recycling Storage Guidelines (2017);
- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- DoEHLG, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2018) ²⁰.

The waste segregation, storage and collection arrangements for each use (i.e. residential, retail, crèche) are described in detail below.

5.1 Residential Apartments

Residents of the apartments will be required to segregate their waste into the following main waste categories within their own apartment units:

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

The residents will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. As required, the residents will need to bring these segregated wastes from their apartments to the dedicated communal Waste Storage Area (WSA) located on basement level -02.

The location of the residential WSA has been selected to minimise the required distances the residents must travel from the residential cores and can be viewed on the architectural drawings submitted with the planning application (Note: WSA is referred to as the Refuse Store on the drawings).

The WSA has been appropriately sized to accommodate the estimated waste arisings for the residential units as set out in Table 4.1 based on a suitable collection frequency and the provision of the appropriate waste management equipment, correctly laid out and efficiently managed.

It is proposed that the development will avail of one of two commercially available mini compactors for the dry mixed recyclable and mixed non-recyclable waste streams – one referred to as an Epac Lodestone compactor and the other an LSM WR350H Mini compactor. Both options will significantly reduce the volume of waste and as such the number of bins stored on site and the number of bins that will need to be transported to ground level for collection. The Epac Lodestone compactor option will take up slightly more space. It compresses/compacts the waste into 2 and 3m³ FIBC (i.e. Flexible Intermediate Bulk Container) bags. These will require storage pending collection, so this adds to the storage space required but this compactor option results in a lower collection frequency than the alternative compactor. Both options can be considered by the building management company. Solely for the purpose of ensuring the WSA is sufficiently sized, this Plan assumes that the Epac option will be used (as this requires more space).

The residential WSA that has been allocated will accommodate the following bins/equipment:

- Epac Lodestone compactor for dry mixed recyclable waste
- Epac Lodestone compactor for mixed non-recyclable waste
- Storage space for 2 no. full FIBC's and empty FIBCs
- 18 no. 240 litre organic waste wheelie bins
- 6 no. 240 litre glass bins
- Bin wash area
- Storage area for trolley/tug for conveying bins to ground level for collection

Access to the residential WSA will be restricted to the residents and personnel nominated by the building management company and the waste contractor. The residential WSA will not be accessible by the development's retail or crèche tenants.

All waste receptacles used will comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers and should be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Graphical signage should be posted above or on the bins/compactors to show exactly which wastes can be put in each.

The residential WSA should meet the following requirements:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours with a recommended 6-10 air changes per hour for a mechanical system;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for baling equipment and power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate graphical signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required; and
- Be fitted with CCTV for monitoring.

The building management company will be required to maintain the bins and WSA in good condition.

All residents should be made aware of the waste segregation requirements and waste storage arrangements.

A separate FIBC bag storage area has been assigned in basement level -02 which will accommodate up to 5 no. full FIBC bags. Access will be restricted to personnel nominated by the building management company and the waste contractor collecting the FIBC bags. This area will not be accessible by residents, retail or crèche tenants.

Based on the waste generation rates presented in Table 4.1 and the bin/equipment provision outlined above, it is proposed that organic waste will be collected twice per week, with dry mixed recyclables, mixed non-recyclables and glass waste collected on a weekly basis.

In addition, the following waste types should also be segregated by residents within their own apartment units (where generated):

- Batteries (both hazardous and non-hazardous);
- WEEE (both hazardous and non-hazardous);
- Light bulbs;
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Textiles (rags);
- Waste cooking oil (if it arises); and
- Furniture/bulky wastes.

These waste types should not be brought to the residential WSA. The recommended strategy for managing these waste types is discussed in Section 5.5.

5.2 Retail

As noted in Section 3.1, the retail units are at ground level and will be accessible from the existing boulevard to the north and west of the development and also from Carmanhall Road.

The retail units will be required to segregate waste into the following main waste categories within their own units:

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

Suppliers for these units should be requested by the tenants to make deliveries in reusable containers, minimize packaging or to remove any packaging after delivery where possible, to reduce waste generated by the development.

The retail units will store their waste within their own units. Suitably sized bins should be strategically located within the units as required by the tenants to facilitate segregation at source of these waste types.

All waste receptacles used should comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers and should be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Graphical signage should be posted above or on the bins to show exactly which wastes can be put in each.

If there is a café/restaurant tenant in any of the retail units, organic waste from kitchen areas should be collected in bins as close to food preparation areas as possible.

Based on the recommended bin requirements, it is anticipated that organic waste, DMR and MNR will be collected on a weekly basis and glass will be collected on a fortnightly basis or as required.

Other waste materials such as batteries, WEEE, light bulbs and cooking oil will be generated less frequently and in smaller quantities. The tenants will be required to store any of these wastes in appropriate receptacles within their own units pending collection by a waste contractor.

The retail tenants will be required to maintain their bins and WSA in good condition.

5.3 Crèche Facility

The crèche, also located at ground level, will be accessible from Carmanhall Road.

The crèche tenant will be required to segregate their waste into the following waste categories within their unit:

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

The crèche unit will store their waste within their own unit. Suitably sized bins should be strategically located within the unit as required by the tenant to facilitate segregation at source of these waste types.

All waste receptacles used should comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers and should be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Graphic signage should be posted above or on the bins to show exactly which wastes can be put in each.

If there is food preparation carried out by the crèche tenant, organic waste from kitchen should be collected in bins as close to food preparation area as possible.

Based on the recommended bin requirements, it is anticipated that DMR will be collected twice weekly, with organic waste and MNR collected on a weekly basis and glass collected on a fortnightly basis or as required.

Other waste materials such as batteries, WEEE, light bulbs and cooking oil (if generated) will be generated less frequently and in smaller quantities. The crèche tenant will be required to store any of these wastes in appropriate receptacles within their own units pending collection by a waste contractor.

The crèche tenant will be required to maintain their bins and WSA in good condition.

5.4 Waste Collection

There are numerous private contractors that provide household and commercial waste collection in the DLRCC area.

All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered, permitted and/or licensed facilities only.

5.4.1 Residential Waste

The majority of the waste generated by the residents will comprise DMR and MNR. This waste will be stored onsite in FIBC bags referred to in Section 5.1. FIBC bags can be collected directly from the communal WSA and FIBC storage area on basement level -02 by a Moffit pallet truck which the waste contractor has on their waste collection truck. The FIBC bags will be brought to ground level via the basement ramps by the waste contractor at the time of collection (and not before) and will be loaded directly onto a curtained sided waste vehicle. Based on the estimated DMR and MNR wastes arising detailed in Table 4.1 and the average compaction rate of the Epac compactor, the FIBC bags will only require one collection per week.

(Note: If the alternative compactors referred to in Section 5.1 are used, these would be brought to ground level by the waste contractor at the time of collection (and not before) using a suitable towing device. Once the compactors are emptied, the empty compactors would be promptly returned to the WSA. This would require one collection per week per waste type, i.e. two collections per week.)

A loading bay has been provided on Carmanhall Road close to the basement access ramp at ground level which can be used for set down of the waste collection vehicles while the bins are emptied and FIBC bags are collected (or compactor emptied).

Organic and glass bins will be conveyed from the communal WSA on basement level -2 to ground level via the basement ramps using a suitable towing device (e.g. trolley/tug). An area has been allocated in the WSA for storage of the towing device and charging when not in use. These bins will be temporarily stored on the footpath adjacent to the loading bay pending emptying by the nominated waste contractors. They will be positioned such that they don't obstruct pedestrian traffic on the footpath. Once the bins are collected/emptied, the empty bins will be promptly returned to the

WSA. The building management company or the waste contractor will be responsible for conveying the organic/glass bins to the ground level for collection/emptying and for returning the bins to the WSA once emptied.

Other waste types (e.g. batteries, WEEE, waste cooking oil etc.) are discussed in Section 5.5.

It is recommended that waste collection times/days are staggered for the different waste types to reduce the number of waste collection vehicles requiring access to the loading bay at any one time.

All waste receptacles presented for collection will be clearly identified as required by waste legislation and the requirements of the DLRCC Waste Bye-Laws. 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.

5.4.2 Retail and Crèche Waste

A second loading bay has been provided on Carmanhall Road close to the retail units and crèche which can be used for set down of the waste collection vehicles while the bins are emptied.

Retail and crèche tenants will be responsible for conveying their own bins to the footpath adjacent to the designated loading bay. These bins will only be placed on the footpath temporarily pending emptying by the nominated waste contractors. They will be positioned such that they don't obstruct pedestrian traffic on the footpath. Once emptied, bins should be promptly returned to the units.

Batteries, WEEE, light bulbs and cooking oil (if generated) should be collected directly from the units by the waste contractor(s).

All tenants should be made aware of the waste collection arrangements and all waste receptacles must be clearly identified and maintained in good condition as required by waste legislation and the requirements of the Dublin City Council Waste Bye-Laws.

5.5 **Additional Waste Materials**

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

Green waste

Green waste may be generated from internal plants and/or external plants/landscaping. Green waste from internal plants can be placed in the organic waste bins. It is expected that the landscape contractor will remove all green waste generated from the maintenance of any external plants/landscaping.

Waste Cooking Oil

Residents may generate waste cooking oil which will need to be segregated and brought to the nearest recycling centre.

If cooking oil is used in the retail or crèche units, the waste oil and any fresh deliveries of cooking oil will need to be stored in bunded areas or on spill pallets and regular collections by a dedicated waste contractor will need to be organised. It is anticipated that new and waste cooking oil will be stored in the kitchen areas.

Batteries

A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the Waste Management Batteries and Accumulators Regulations 2014 as amended. In accordance with these regulations consumers are able to bring their waste batteries to their local recycling centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The retail and crèche units are commercial establishments and therefore cannot use the local recycling centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling/recovery of their waste batteries by a suitably permitted/licenced contractor.

Waste Electrical and Electronic Equipment (WEEE)

The *WEEE Directive 2002/96/EC* and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the retail and crèche units are commercial establishments and therefore cannot use the local recycling centre. They must segregate their WEEE and either avail of the take-back/collection service provided by retailers or arrange for recycling/recovery of their WEEE by a suitably permitted/licenced contractor.

Light Bulbs

Waste light bulbs will typically be generated by external electrical/maintenance contractors servicing the public areas of the development. Where waste light bulbs are generated, it is anticipated that maintenance contractors will be responsible for the off-site removal and appropriate recovery/disposal of these wastes.

Light bulbs generated by residents should be taken to the nearest recycling centre for appropriate storage and recovery/disposal.

It is assumed light bulbs from the retail and crèche units will be removed by external electrical/maintenance contractors. Otherwise they should be stored appropriately within the units pending collection by a suitably permitted/licenced waste contractor.

Chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc)

Chemicals (such as solvents, pesticides, paints, etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate disposal of any waste materials generated. Any chemical waste materials generated by residents can also be taken to the recycling centre.

Textiles

Where possible, waste textiles should be recycled or donated to a charity organisation for reuse. The Ballyogan Recycling Centre provides for collection of waste clothes and other textiles.

Furniture (and other bulky wastes)

Furniture and other bulky waste items (such as carpet etc.) may occasionally be generated by the residents or the retail/crèche tenants. If residents wish to dispose of furniture, this can be brought to the recycling centre.

Any bulky waste generated by the retail or crèche units will need to be stored within the units pending collection by a suitably permitted/licenced waste contractor.

Abandoned Bicycles

A bicycle parking area is planned for the development. As happens in other developments, tenants sometimes abandon faulty or unused bicycles and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise.

6.0 CONCLUSIONS

This OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture.

Residential waste will be conveyed by occupants to a dedicated communal waste storage area on the basement level -02. The bins/FIBCs/compactors of segregated waste/recyclables will be conveyed by the building management company or waste contractor via the ramp to street level for collection/emptying by the nominated waste contractor(s). They will be positioned such that they don't obstruct pedestrian traffic on the footpath. Once emptied, bins should be promptly returned to the units.

Retail and crèche tenants will be responsible for conveying their own bins to the footpath adjacent to a second designated loading bay, located close to the retail/crèche units. These bins will only be placed on the footpath temporarily pending emptying by the nominated waste contractors. They will be positioned such that they don't obstruct pedestrian traffic on the footpath. Once emptied, bins should be promptly returned to the units.

The designated loading bays Carmanhall Road will be readily accessible by the waste contractor during the designated collection days/times.

In summary, this OWMP 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.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the *EMR Waste Management Plan 2015 – 2021* and the *DLR Refuse and Recycling Storage Guidelines*.

7.0 REFERENCES

1. Waste Management Act 1996 (Act No. 10 of 1996) as amended by the Waste Management (Amendment) Act 2001. Sub-ordinate and associate legislation includes:
 - 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) Regulations 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 Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - European Union (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 (S.I. No. 121 of 1994)
 - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
2. Protection of the Environment Act 2003, (No. 27 of 2003) as amended
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
4. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
5. Dún Laoghaire Rathdown County Council (DLRCC), *Presentation and Collection of Household and Commercial Waste Bye-Laws* (2009).
6. DLRCC, *Refuse and Recycling Storage Guidelines* (2017).
7. Department of Environment and Local Government *Waste Management – Changing Our Ways, A Policy Statement* (1998).
8. Department of Environment, Heritage and Local Government *Preventing and Recycling Waste - Delivering Change* (2002).
9. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002).
10. DoEHLG, *Taking Stock and Moving Forward* (2004)
11. DoECLG, *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
12. Environmental Protection Agency, *National Waste Database Reports 1998 – 2012*.
13. DLRCC, *Dún Laoghaire Rathdown County Council Development Plan 2016 – 2022*.
14. Planning and Development Act 2000 as amended.
15. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
16. Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
17. EPA, *European Waste Catalogue and Hazardous Waste List* (2002).

18. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015).
19. BS 5906:2005 *Waste Management in Buildings – Code of Practice*.
20. DoHGL, *Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities* (2018).

ATTACHMENT A
DLR WASTE MANAGEMENT FORM