

CUNNANE STRATTON REYNOLDS

Operational Waste Management Plan

Strategic Housing Development Application at Lahardane and Ballincolly,
Ballyvolane, Cork City

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1.0 Introduction

This Outline Operational Waste Management Plan (OWMP) has been prepared for Longview Estates Ltd for a site at Lahardane and Ballincolly, Ballyvolane, Cork City. The proposed development comprises the construction of 753 no. residential units including 153 no. apartments and 69 no. duplexes which are intended to be managed by a management company. This OWMP relates to the apartments, duplexes and the units within the local centre.

This OWMP has been prepared to ensure that the proposed development will achieve optimum levels of waste reduction, reuse and recycling. This plan estimates the type and quantity of waste that will be generated by the proposed development once operational and aims to recommend appropriate collection and transport of waste measures. It is intended that this Plan will be used by the Operator for the proposed apartments to ensure efficient and legally compliant waste management for the apartments. This Plan will ensure that the apartments are operated in a more economically and environmentally sustainable manner, thereby enhancing the environment of the development and the local community.

This waste plan has been prepared consistent with the requirements of national and regional waste policy, legislation and other guidelines. This operational waste management plan has been prepared to ensure that the management of waste during the operational phase of development is undertaken in accordance with the current legal and industry standards in particular including the Waste Management Act 1996 (as amended) and the associated Regulations¹, Protection of the Environment Act 2003² (as amended), *Litter Pollution Act 1997*³ (as amended), the *Southern Region Waste Management Plan 2015-2012*⁴, *Cork City Bye-Laws 2019*⁵, *The Cork County Development Plan 2014*⁶ and the *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018*⁷. This Waste Management Plan has had regard to British Standards BS 5906:2005 Waste Management in Buildings – Code of Practice.

2.0 Overview of Waste Management in Ireland

2.1 Waste Management at a National Level

Ireland waste policy is based on the EU waste hierarchy and includes a range of measures across all tiers namely, prevention and minimisation, reuse, recycling, recovery and disposal.

The Government policy document “*Changing Our Ways*”⁸ was issued in 1998. This policy document identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The document was focused on reducing reliance on landfill and finding alternative methods for managing waste. One target within the document sought 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*”⁹ was published in 2002⁹. This document proposed a number of programmes to increase recycling of waste and to divert waste from landfill and also made clear that waste minimisation at source should be a priority, that is waste production should be reduced at source where possible.

*“Making Irelands Development Sustainable – Review, Assessment and Future Action”*¹⁰ issued in 2002 focused primarily on the environment-economy link as a priority issue for sustainable development policy in Ireland. In doing so it:

- Reviewed and assessed Irelands progress to date in the pursuit of sustainable development;
- Provided an enhanced focus for the task of securing greater integration of environmental and economic policy through an increased emphasis on resource efficiency (eco-efficiency);
- Seeks to maximise the benefits in environmental terms from Ireland’s “new economy”;
- Reflected on recent developments in social policy, which has moved ahead significantly since 1997;
- Takes into account developing thinking and action in relation to policy integration and sustainable development at international levels, including within the EU and the OECD, which provide good support and encouragement going forward;
- Promoted greater participation in and ownership of sustainable development on the part of stakeholders including as part of Local Agenda 21;
- Set out future action in relation to environmental protection and sustainable development policy in Ireland.

In order to establish the progress of the Government policy document – *Changing Our Ways*, a review document was published in April 2004 titled *‘Taking Stock and Moving Forward’*¹¹. 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 that were put in place, and to identify measures that can be undertaken to further support progress towards the objectives outlined in the policy document.

Taking Stock and Moving Forward noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services and the implementation country-wide of an organic waste collection system for households.

In 2012 a revised Government policy document was published – *“A Resource Opportunity, Waste Management Policy in Ireland”*¹². This policy document built on the progress of the past decade and set out further targets and methodologies for the management of waste stream. The policy document sets out the measures through which Ireland will make the further progress necessary to become a recycling society, with a clear focus on resource efficiency and the virtual elimination of land filling of municipal waste. The delivery of the policy will be ensured through mandatory regional waste management plans.

The measures set out within the document require the commitment of a range of stakeholders in order to ensure their success and the National Waste Forum will provide an ongoing opportunity for contributions to the implementation of this policy. The measures set out relevant to household waste collection include the following:

The Regulation of Household Waste Collection

- Through collection permits issued under a strengthened permitting system, waste collectors will be required to:

- Manage the waste collected in accordance with the waste hierarchy and in a manner supportive of the development of a resource efficient and sustainable approach to the management of waste;
 - Deliver mandated service levels; and
 - Operate pricing structures designed to incentivise environmentally sustainable behaviours by households in terms of waste reduction and segregation.
- The collection permitting system will be strengthened further so that:
 - Robust controls are in place to ensure that only 'fit and proper' individuals and companies are allowed to hold such permits and appropriate corporate governance arrangements are implemented
 - Producer responsibility initiative waste is always provided to the obligated compliance scheme or waste collector and is recovered and recycled appropriately by the relevant sectors at all times; and
 - The permit fee structures reflect the value of the permission to collect waste conferred by a permit, the need to contribute to the costs of essential enforcement of the permitting system and the potential liabilities for the State which may arise from poor collection and management practices.
 - All household waste collection service providers will be required to put in place Customer Charters, clearly setting out information for customers in relation to issues such as charging structures, procedures for dealing with customers who may fall into arrears, and arrangements for switching from one waste collector to another. These will be audited annually as part of the permitting process.
 - Measures will be introduced through the strengthened collection permit system to manage better the nuisance, emissions and health and safety risks of overlapping household waste collection networks;
 - Inspection and enforcement resourcing for collection permits will be increased, funded in part by the revised permitting fee structure.

Households

- All households will be obliged to demonstrate that they are availing of an authorised waste collection service or are otherwise managing their waste in an environmentally acceptable manner, in accordance with legislation and the provisions of waste management plans, in order to combat illegal fly-tipping, littering and backyard burning of waste by a minority of households and to avoid the compliant majority having to bear the costs of dealing with the consequences of such activities;
- To support households, awareness and education measures will be strengthened, the waste collection industry will be encouraged to play a role in such measures.
- Taking account of the Government's decision in relation to the household waste collection market structure, the relevant programme for Government commitment and the requirements of the Waste Framework Directive, including the polluter pays principle, it is intended to introduce a household waste collection waiver scheme and other alternative support schemes for low income households. An inter-departmental working group will be established comprised of representative of the Departments of the Environment, Community and Local Government; Social Protection; Public Expenditure and Reform; Finance; and the Tánaiste's Office the working group will report to the Government by October with recommendations on measures to minimise the impact of waste charges on low income households.

- The Producer Responsibility Initiative model will be implemented in a manner that ensures that households are encouraged and facilitated to re-use and recycle waste from the specific waste streams involved.

Since 1998, the Environmental Protection Agency (EPA) has produce periodic National Waste Database Reports that detail estimates for household and commercial waste generation in Ireland and the level of recycling, recovery and disposal of these materials. In the most recent EPA waste data release on 31st October 2018 (latest reference year 2016)¹³ the following trends were recorded:

Generated – Ireland produced 2,763,166t (tonnes) 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 2,718,298t 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 44,868t were 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.

The Sustainable Urban Housing Design Standards for New Apartments 2018 set out guidelines for waste storage in apartment developments. The guidelines state that within apartments there should be adequate provision for the temporary storage of segregated materials prior to deposition in communal waste storage. In designing refuse storage facilities, the following design considerations should be taken into account:

- Sufficient communal storage area to satisfy the three-bin system for the collection of mixed dry recyclables, organic waste and residual waste;
- In larger apartment schemes, consideration should also be given to the provision of separate collection facilities for other recyclables such as glass and plastics;
- Waste storage areas must be adequately ventilated so as to minimise odours and potential nuisance from vermin/flies and taking account the avoidance of nuisance for habitable rooms nearby;
- Provision in the layout for sufficient access for waste collectors, proximity of, or ease of access to, waste storage areas from individual apartments, including access by disabled people;
- Waste storage areas should not present any safety risks to users and should be well-lit;

- Waste storage areas should not be on the public street, and should not be visible to or accessible by the general public. Appropriate visual screening should be provided, particularly in the vicinity of apartment buildings;
- Waste storage areas in basement car parks should be avoided where possible, but where provided, must ensure adequate manoeuvring space for collection vehicles;
- The capacity for washing down waste storage areas, with wastewater discharging to the sewer.

2.2 Waste Management at Regional Level

Previously, Waste Management practices were regulated and controlled by a number of documents that have been published on a local level. This practice has now been superseded by the establishment of the following regional waste management authorities: the Southern Region, Eastern-Midlands Region and Connacht-Ulster Region. The application site is located in the Southern Region. In May 2015 *the Southern Region Waste Management Plan 2015-2021* was published. The Southern Region Waste Management Plan replaced the *Cork County Waste Management Plan 2004-2009*.

Southern Region Waste Management Plan 2015-2021

The Waste Management Plan for the Southern Region is the framework for the prevention and management of waste in a safe and sustainable manner. The Southern Region Waste Management Plan (SRWMP) was prepared by the Local Authorities of the Southern Region. The SRWMP provides policy direction and targets to be achieved, as well as a roadmap of actions to be taken.

The SRWMP sets out three strategic targets for waste management for 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.

These strategic targets can be achieved through the implementation of a comprehensive list of policies, as set out in the SRWMP. The key policies of relevance to the proposed development include the following:

- Increase the level of source-segregated kerbside collections in the region, with a strong focus on ensuring that a three bin system becomes commonplace at household and commercial levels;
- Work with and through business support agencies and the National Waste Prevention Programme to encourage business and industry to implement resource efficiency principles including the use of clean technologies and preventing waste at source;
- Enforce the regulations related to household and commercial waste to tackle the problem of unmanaged waste and other issues.

The SRWMP sets out roles and responsibilities of the general public which include:

- Aim to reduce the amount of waste being generated in the home through waste prevention for example buying products with less packaging, reducing food waste;

- Participate in kerbside waste collection schemes where available;
- Segregate recyclable waste for collection or take it to recycling centres or being banks;
- Segregate organic waste for composting or for collection where the service is provided;
- Do not bury or burn waste;
- Ensure that waste is presented for collection in the manner required by the collector and in accordance with the relevant bye-laws; and
- Ensure that all waste collectors used have a valid waste collection permit.

2.3 Waste Management at Local Level

Cork County Development Plan 2014

Cork City Council and Cork County Council carried out a joint Waste Management Strategy for Cork in 1995. Following on from this, they then developed their own Waste Management Plans which cover the period from 2004- 2009. Since then Cork is now considered part of the Southern region as above and the regional waste management plan applies.

The Development Plan states that in order to provide sustainable waste management practices, the County Council will normally require all development proposals to include on site provisions for the management of waste materials that are likely to be generated from the proposed use. For small scale developments basic information of the proposed location of bins, composting etc will only be required while a greater level of detail may be required for larger developments. In order to achieve this target and to promote a more sustainable approach to waste management the Council will require project C & D Waste Management Plans to be prepared for projects in excess of any of the following thresholds:

- New residential developments of 10 houses or more;
- New developments (other than the bullet point above), including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250m²;
- Demolition/renovation/refurbishment projects generating in excess of 100m³ in volume of construction and demolition waste;
- Civil engineering projects producing in excess of 500m³ of waste, excluding waste materials used for development works on the site. Where appropriate, developers will be encouraged to reuse excavated material from their development sites for landscaping, land restoration or to be reused in the building process.

County Development Plan objective WS 7-1 applies to waste management. It seeks to:

- a)** Support the policy measures and actions outlined in 'A Resource Opportunity' 2012 – National Waste Policy
- b)** Encourage the delivery of an effective and efficient waste management service in line with the Waste Management Acts and relevant Waste Management Plan for the County/Region.

c) Normally require details and formal development proposals of onsite provisions for the management of waste materials that are likely to be generated from the proposed use. The Council will require Waste Management Assessment for projects which exceed thresholds outlined.

d) Support the incorporation of the recommendation and policies of the National Hazardous Waste Management Plan 2008-2012.

e) Support the sustainable development of the Bottlehill facility for specialised and appropriate uses primarily associated with integrated waste management.

2.4 Waste Management Legislation & Obligations

The primary legislative instruments that govern waste management in Ireland are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations (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 2004 (S.I No. 395 of 2004) as amended
 - Waste Management (Packaging) Regulations 2014 (S.I 282 of 2014) as amended
 - Waste Management (Planning) Regulations 1997 (S.I No. 137 of 1997)
 - 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 508 of 2009) as amended
 - European Union (Household Food Waste and Bio-waste) Regulation 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
 - Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I No. 147 of 1998)
 - European Communities (Trans frontier Shipment of Waste) Regulations 1994 (S.I No. 121 of 1994)
 - European Union (Properties of Waste which render it hazardous) Regulations 2015 (S.O 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.

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 (as amended in 2001) and subsequent Irish legislation, is the principle of “Duty of Care”.

This implies that the waste producer is responsible for waste from the time the waste is generated until it is disposed of legally and this includes its method of disposal.

As it is not practical in most cases for a waste producer to physically transfer all waste from the area where it is produced to the final disposal area, waste contractors are employed to physically transport waste to the final waste disposal site.

The Act also incorporates the “polluter pays” principal, whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect transport of waste produced by the waste producer.

It is therefore imperative that the waste producer ensures that each waste contractor is legally compliant with respect to waste transport and disposal.

In general, each waste contractor must comply with the provisions of the Waste Management Acts of 1996 – 2001, amendments and associated Regulations, which require that a contractor handle, transport and dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A permit to transport waste must be held by the relevant contractor and this permit shall be verified with the Permitting Authority (usually the Local Authority although the EPA may also have a role in issuing the permit).

A contractor shall not be permitted to receive any waste at their site, unless in possession of a waste permit granted by a local authority under the Waste Management (Permit) Regulations, 1998 or a waste licence granted by the EPA. The permit will specify the types of waste a contractor is licensed to receive, store, sort, and recycle on their site. The contractor should also be aware of the relevant Waste Bye-Laws in force in the functional area.

2.5 Cork City Council Bye-Laws 2019

The Cork City Council Bye Laws for the *Segregation, Storage and Presentation of Household and Commercial Waste 2019* as effective from 1st May 2019 apply to the functional area of Cork City Council and as noted in the Bye Laws includes such other areas, in the future, by means of legislation, become part of the administrative area of the Council. The Bye Laws set out the requirements with regard to the maintenance, use and storage of waste containers as well as information on collection including collection times.

With regard to multi-user buildings and apartment blocks etc the Bye Laws state the following:

In multi-unit developments, mixed use developments, flats or apartment blocks, combined living/ working spaces or other similar complexes the management company, if one exists, or the owner, if solely owned or the individual owners of the apartments shall ensure that:

- a) Separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable household kerbside waste and residual household kerbside waste;
- b) Additional receptacles are provided for the segregation, storage and collection of food waste where this practice is a requirement of the national legislation on food waste;
- c) The receptacles referred to in paragraphs (a) and (b) are located both within any individual apartment and at the place where waste is stored prior to its collection;
- d) 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 other person other than an authorised waste collector;
- e) Written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection;
- f) An authorised waste collector is engaged to regularly 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;
- g) Appropriate waste containers for kerbside waste are presented for collection on the designated waste collection day;
- h) Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

Schedule 1 of the Bye-Laws sets out the recyclable kerbside waste. Please refer to figure 1.

Figure 1 Recyclable Kerbside Waste

SCHEDULE1. Recyclable Kerbside Waste		
Paper	Aluminium Cans	Plastic Bottles (PET 1)
Newspapers	Drink cans	Mineral bottles
Magazines	Soda & beer cans	Water bottles
Junk mail		Mouthwash bottles
Envelopes	Steel cans	Salad dressing bottles
Paper	Pet food cans	
Phone books	Food cans	Plastic Bottles (HDPE2)
Catalogues	Biscuit tins	Milk bottles
Tissue boxes	Soup tins	Juice bottles
Sugar bags		Cosmetic bottles
Calendars	Cardboard	Shampoo bottles
Diaries	Food boxes	Household cleaning bottles
Letters	Cereal boxes	Laundry detergent bottles
Computer paper	Kitchen towel tubes	Window cleaning bottles
Used beverage & juice cartons	Parcel boxes	Bathroom bottles
Milk cartons		
Egg boxes	Plastic Pots, Trays & Tubs	
Holiday brochures	Yogurt pots	
Paper potato bags	Margarine tubs	
	Rigid food trays	
	Liquid soap containers	
	Fruit trays/cartons	

2.6 Regional Waste Management Service Providers and Facilities

There are a significant number of waste contractors operating in the Cork area who are permitted to collect waste. Examples of contractors include DMC Waste and Recycling, Country Clean Recycling Ltd, Kollect, Wiser Bins, Healys Blue Bin and Greenstar. Details of waste collection permits (granted, pending and withdrawn) for the Region are available from the National Waste Collection Permit Office.

As reported in the *Southern Region Waste Management Plan 2015 – 2021*, there is only one remaining active landfill in the region located in Co. Carlow. However, there are a number of licensed and permitted recycling and recovery facilities in operation in the region. These include waste transfer stations, biological treatment facilities and integrated waste management facilities.

A copy of all waste licences issued are available from the EPA.

3.0 Proposed Development

The proposed development is located at Lahardane and Ballincolly, Ballyvolane, Cork. In summary the proposed development involves the construction of 753 no. residential units and a local centre. The development includes a total of 153 no apartments and 69 no.

duplexes which are included in Neighbourhoods 1, 2, 5 and 6. The local centre includes a crèche, doctor's surgery, 2 no. retail units and a community building.

4.0 Typical Waste Categories

The typical waste that will be generated at the proposed development once operational will include the following:

- Biodegradable food waste (organic waste)
- Dry mixed recyclables (DMR) – including cardboard, non-confidential paper, newspapers, leaflets, aluminium cans, tins, Tetra Pak cartons, plastic bottles
- Glass
- Plastic packaging
- Mixed non-recyclables (MNR)/General waste

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

- Green/garden waste
- Textiles
- Household hazardous waste (paints, thinners, strippers, cleaning agents, detergents, bleaches, insecticides, glues and medicines)
- Edible oil and fat
- Batteries
- Waste electrical and electronic equipment (WEEE)
- Light bulbs
- Furniture and occasionally similar bulky waste
- Kitchen appliances (washing machines, cookers, microwave, fridges, freezers)
- Aerosols
- Clinical/ Healthcare waste from the doctors surgery

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 diversion from landfill wherever possible.

5.0 European Waste Codes

In 1994, the *European Waste Catalogue* and *Hazardous Waste List*¹⁴ were published by the European Commission. Their purpose was to provide for the classification of all non-hazardous and hazardous wastes. They were designed to form a consistent waste classification system across the EU. In Ireland, they form the basis for all national and international waste reporting obligations, such as those associated with waste licences and permits, the EPA National Waste Database and the transport of waste.

In 2002, the EPA has published a document titled the *European Waste Catalogue and Hazardous Waste List*, which is 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”¹⁵ in June 2015. Under the classification system, different types of wastes are fully defined by a code. The list of waste code for typical waste materials expected to be generated during the operation of the proposed development are provided in the table below.

Table 1 Typical waste types generated by proposed development

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

5.0 Estimated Wastes Arising

Apartments and Duplexes

The residents of the houses will manage their own waste collection once the development is operational. It is expected that the apartments will be managed by a management company and therefore the estimated waste arising from the apartments and the waste storage requirements for same must be considered. The waste arising from the proposed development and the associated bin requirements for the apartments have been estimated having regard to British Standards BS 5906:2005 – Waste Management in Buildings – Code of Practice. This code of practice sets out methods of storage, collection, segregation for recycling and recovery for residential and non-residential buildings. For residential units the code sets out the typical weekly waste arising from domestic units and the subsequent storage requirements of same as follows:

- Number of dwellings X (volume arising per bedroom (70L) x average number of bedrooms) + 30L).

Applying these recommended numerical factors to the proposed development, it is estimated that the proposed apartments and duplexes will generate 38720L of waste per week (i.e. 19360L if the waste is collected bi-weekly). Throughout the development a no. of bin stores are provided to accommodate the apartments and duplexes. Each bin store has been designed to accommodate bins for the collection of dry recyclables, organic kitchen waste/ garden waste and glass collection. It is proposed that each bin store will accommodate 1100L bins for dry mixed recyclables and mixed non-recyclables and additional capacity for a 360L glass bin. Bins that comply with EN 840-4 2004 must be used. Please refer to

Horgan Carroll Architects breakdown of the bin storage provision included with this planning application. The number of bins provided throughout the development will be capable of storing 43520L of waste. As can be seen from the waste generation table this is in well in excess of the estimated weekly waste being generated by the apartments and duplexes. With bi-weekly waste collections being proposed, the proposed development includes more than adequate bin storage for the apartments and duplexes.

Table 2 Overall Apartment and Duplex Waste Generation Estimation

6 x studios	600L
42 x 1 bedroom units	4200L
112 x 2 bedroom units	19040L
62 x 3 bedroom units	14880L
Total	38720L
Bi-weekly	19360L

Local Centre and Crèche

The waste generated by units in the local centre will be from the two retail units, doctors surgery, crèche and community use. There will be separate collection for healthcare waste generated by the doctor's surgery via an appropriate licenced clinical waste operator.

The estimated waste arising from the retails units, doctors surgery, crèche and community use are set out in the following tables.

Table 3 Retail Unit 1 Waste Generation Estimation

Waste type	kg/day	m ³ /day	m ³ /week
Organic Waste	3.39	0.01	0.03
Cardboard/Paper	5.70	0.03	0.13
Plastic	0.77	0.00	0.02
Glass	1.39	0.03	0.17
Metals	0.15	0.00	0.00
Mixed non-recyclables	4.00	0.04	0.22
Total	15.40	0.12	0.58

Table 4 Retail 2 Unit 2 Waste Generation Estimation

Waste type	kg/day	m ³ /day	m ³ /week
Organic Waste	2.36	0.00	0.02
Cardboard/Paper	3.96	0.02	0.09
Plastic	0.54	0.00	0.01
Glass	0.96	0.02	0.12
Metals	0.11	0.00	0.00
Mixed non-recyclables	2.79	0.03	0.16
Total	10.71	0.08	0.40

Table 5 Community Use Waste Generation Estimation

Waste type	kg/day	m ³ /day	m ³ /week
Organic Waste	1.26	0.00	0.01
Cardboard/Paper	6.52	0.03	0.15
Plastic	1.36	0.01	0.03
Glass	0.12	0.00	0.02
Metals	0.06	0.00	0.00
Mixed non-recyclables	0.57	0.01	0.03
Total	9.90	0.05	0.24

Table 6 Doctors Surgery Waste Generation Estimation

Waste type	kg/day	m ³ /day	m ³ /week
Organic Waste	2.18	0.00	0.02
Cardboard/Paper	11.24	0.05	0.26
Plastic	2.57	0.01	0.06
Glass	0.21	0.01	0.03
Metals	0.10	0.00	0.00
Mixed non-recyclables	0.99	0.01	0.06
Total	17.28	0.08	0.42

Table 7 Crèche Waste Generation Estimation

Waste type	kg/day	m ³ /day	m ³ /week
Organic Waste	3.48	0.01	0.03
Cardboard/Paper	18.02	0.08	0.42
Plastic	4.12	0.02	0.10
Glass	0.33	0.01	0.04
Metals	0.16	0.00	0.00
Mixed non-recyclables	1.58	0.02	0.09
Total	27.69	0.13	0.67

6.0 Waste Storage & Collection

This section provides information on how waste is proposed to be stored and moved within the development and then collected. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Southern Region Waste Management Plan 2015 – 2021; and
- Cork City Council Bye-Laws (2019)

- DoEHLG Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities 2018

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

- Organic (food/plant) waste
- Dry mixed recyclables
- Glass and
- Mixed non recyclables

Secure refuse and recycling store are proposed at ground floor level of the apartments in Neighbourhoods 2 and 6. Secure bin stores are located adjacent to duplexes in Neighbourhoods 1, 2 and 5. All residential waste generated within individual apartments will be brought by residents to the shared bin store area. This area will be easily accessible to residents. Residents will be required to segregate their waste beforehand and then use the appropriate bins provided.

Bins will be provided within all units in the local centre. The retail units have dedicated storage areas where waste can be stored. Alternatively, waste can be stored here temporarily and moved to the shared bin store by the community centre by tenants. The doctor's surgery will have bins internally for general waste. This waste will be taken to the shared bin store as required. Doctor's surgeries generate healthcare waste. Healthcare waste is managed by segregating healthcare risk waste which is potentially infectious and hazardous from the bulk of waste which is domestic in nature. All healthcare waste must be handled, stored, transported and disposed of with care and particular precautions are required with healthcare risk waste due to its hazardous properties and the doctor's surgery will organise specialised collection of this waste from a company such as Stericycle.

The crèche and community centre will use the dedicated waste store adjoining the community centre and crèche. There is additional ancillary waste storage area within the bin store adjoining the apartments in Neighbourhood 2. There is more than sufficient bin storage space between the two bin stores in the local centre (Figure 2) to accommodate the apartments and commercial and community units.

Full bins from the communal waste storage area will be removed by the appointed waste contractors. Set down areas for refuse collection are conveniently proposed close to the waste storage areas. All bins will comply with BS EN 840 2012 in order to ensure that the collection vehicles can service the bins, and all bins will have a fitted lid to prevent waste escaping from bins and generating litter.

Bins within the storage area will be colour coded and labelled so that they are easily identifiable and to avoid cross contamination between the different waste streams. Informational signage will indicate what waste can be disposed of in what bin. Access to the bin storage area will be restricted to residents and waste contractors.

Figure 2 Proposed shared bin stores at the local centre



The waste storage areas throughout the proposed development will be designed to meet the following minimum requirements:

- Sufficient communal storage area to satisfy the three bin system for the collection of mixed dry recyclables, organic waste and residual waste;
- Provision of separate facilities for glass and plastics will be available;
- The waste storage area will be adequately ventilated so as to minimise odours and potential nuisance from vermin and flies;
- The waste storage area will be well lit and not present any safety risks to users;
- The waste storage area will not be accessible by the general public;
- It is anticipated that the waste storage area will have capacity for a washing down area;
- The waste storage area will have a non-slip floor surface.

If water supply cannot be provided to the waste storage area, a contract will be put in place with the appointed waste contractor to provide a mobile bin cleaning service.

6.1 Waste Receptacles

Waste storage receptacles will vary in size and colour dependent on the waste contractor to be used. All waste receptacles used will comply with the BS EN 840 2012 standard for performance requirements of mobile waste containers.

Figure 2 Typical Waste Receptacles



6.2 Waste Collection

As noted there are a number of waste collection contractors serving the area. All waste contractors serving the proposed development must hold a valid waste collection permit for the types of waste being collected and all waste must be transferred to licenced facilities only. It is anticipated that the waste will be collected bi-weekly.

As noted the communal waste storage area can be easily served by using the set down areas that have been allocated for refuse vehicles. Waste will be collected at agreed times on agreed days by the waste contractors. 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.

Written information will be provided to tenants about the arrangements for waste separation, segregation, storage and presentation prior to collection in accordance with the relevant Bye-Laws.

7.0 Conclusions

The proposed apartments and local centre units have been designed and will be managed to provide residents and occupiers of the retail and community units with the required waste management infrastructure to optimise the potential for segregating and recycling domestic waste. The objective of this waste management plan is to maximize the quantity of waste recycled by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information services to the residents of the proposed development.

References

1. Waste Management Act 1996 (S.I. No. 10 of 1996) as amended by the Waste Management (Amendment) Act 2001. Sub-ordinate and associated legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations (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 2004 (S.I No. 395 of 2004) as amended
 - Waste Management (Packaging) Regulations 2014 (S.I 282 of 2014) as amended
 - Waste Management (Planning) Regulations 1997 (S.I No. 137 of 1997)
 - 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 508 of 2009) as amended
 - European Union (Household Food Waste and Bio-waste) Regulation 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
 - Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I No. 147 of 1998)
 - European Communities (Trans frontier Shipment of Waste) Regulations 1994 (S.I No. 121 of 1994)
 - European Union (Properties of Waste which render it hazardous) Regulations 2015 (S.O No. 233 of 2015) as amended.
2. Protection of the Environment Act 2003 (as amended)
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
4. The Southern Region Waste Management Plan 2015-2021
5. Cork City Council Bye-Laws 2019
6. Cork County Development Plan 2014
7. Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018
8. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement (1998)*.

9. Department of Environment and Local Government (DoELG) Preventing and Recycling Waste – Delivering Change (2002)
10. Making Irelands Development Sustainable – Review, Assessment and Future Actions (2002)
11. Taking Stock and Moving Forward, Department of the Environment and Local Government, April 2004.
12. Department of Environment, Heritage and Local Government, A Resource Opportunity, Waste Management Policy in Ireland (2012)
13. Environmental Protection Agency (EPA) National Waste Database Reports
14. European Waste Catalogue and Hazardous Waste List.
15. EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous