Appendix 3-9

Operational Waste Management Plan

Operational Waste Management Plan

Crown Square Mixed-Use Development, Mervue, Galway City

Planning & Environmental Consultants

DOCUMENT DETAILS

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1 INTRODUCTION

This Operational Waste Management Plan (OWMP) has been prepared by McCarthy Keville O' Sullivan Ltd. (MKO) on behalf of Crown Square Developments Ltd., who intend to apply to Galway City Council for planning permission to construct a mixed-use development located at the former Crown Equipment site in Mervue, Galway City. The proposed project strategy envisages that the subject site will be developed in two distinct stages, with two separate planning applications:

- Phase 1: Commercial Offices, Hotel and Site Infrastructure, including the basement structures for the entire site
- Phase 2: Strategic Housing Development - Residential, Leisure and Ancillary Uses

This OWMP deals primarily with Phase 2 which consists of:

1. A residential scheme comprising 288 no. apartments and amenity accommodation with a gross floor area of 32,379 sqm, which will include:
    - Block G (104 no. units); Block H (136 no. units) and Block J (48 no. units).
    - 75 no. one-beds (26%); 185 no. two-beds (64.2%); and 28 no. three-bed units (9.7%)
    - Ancillary residential amenity areas (1,275 sqm).
    - Block G extends to eight-storeys, Block H extends to seven-storeys and Block J extends to five-storeys.
    - External balconies are provided on all elevations.
2. A commercial scheme with a cumulative gross floor area of 4,096 sqm, which will include:
    - A neighbourhood facility comprising a restaurant (500 sqm), café (50 sqm), local convenience store (225 sqm), a pharmacy (200 sqm), 5 no. retail/commercial units (797 sqm in total), a crèche (310 sqm)
    - A fitness/leisure facility (1,140 sqm); and
    - A medical centre (655 sqm).
3. Public realm and landscaping works, including pedestrian and cyclist linkages.
4. Vehicular access to the double basement permitted under Pl Ref 18/363 and the allocation of 288 no. car parking spaces located on the lower basement level to service the residential units. Visitor car parking will be provided on the upper basement level and will be managed in accordance with an Operational Management Plan and a Mobility Management Plan.
5. The provision of a dedicated cyclist ramp and 733 no. secure bicycle parking spaces located in the upper basement permitted under Pl Ref 18/36 (comprising 529 no. residential; 144 visitor parking and 60 no. bicycle parking spaces to service the neighbourhood facility).
6. All other associated site development, plant and servicing works.
7. The application will be supported by an Environmental Impact Assessment Report and a Natura Impact Statement.

Consideration has been given to the waste management requirements for Phase 1 of the project within the overall design and scale of waste management areas within the site.

The OWMP has been prepared to ensure that waste storage and movement within the development site is managed in accordance with current legislative requirements including:

- Waste Management Acts 1996 – 2011 Regulations,
- Protection of the Environment Act 2003 as amended,
- Litter Pollution Act 1997 as amended and
- Connacht-Ulster Region Waste Management Plan 2015 – 2021.

The OWMP aims to ensure waste management prescriptions that adhere to a waste management hierarchy are implemented at the site thus ensuring re-use, recycling and recovery of waste opportunities are maximised and that the disposal of waste to landfill will be considered as the last resort. The OWMP sets out the proposal for waste collection at the site to ensure that that waste collections are completed in the required intervals so as to prevent any potential impact on the surrounding environment.

As there are no specific guidelines in Ireland for the preparation of OWMPs, this document has taken into account the requirements of national and regional waste policy, legislation and other guide documents.

2 WASTE MANAGEMENT POLICY AND LEGISLATIVE REQUIREMENTS

2.1 Government Policy Documents

Since the enactment of the Waste Management Act 1996, the government has released a number of policy documents in an attempt to sway towards a more recycling orientated society. The first of these policy documents was released in 1998 with the title *Changing Our Ways; A Policy Statement on Waste Management*. This policy statement set out to encourage sustainable waste management. It fully endorsed the waste management hierarchy set out in the EU Waste Framework Directive. Some of the targets set by this policy document were:

- A 50% diversion of household waste from landfill
- Recycling of 35% of municipal waste
- A 65%reduction of biodegradable wastes sent to landfill

In 2002, *Preventing and Recycling Waste; Delivering Change* was published with a clear focus on waste streams and their end of life management. The policy document focused on recycling and preventative measures as well as leaning towards a producer responsibility approach especially regarding Construction and Demolition (C&D) Waste and Waste Electrical and Electronic Equipment (WEEE).
Waste Management; Taking Stock and Moving Forward was published in 2004. This policy document was a review of how far the nation had come and how much further it needed to go. The document also outlined the importance of thermal treatment and energy recovery from waste. The requirement for the roll out of source segregated collection schemes for organic waste and provision of biological treatment facilities was identified by the policy document.
The policy document *A Resource Opportunity Waste Management Policy* published in 2012 established three new Waste Management Planning Regions for the provision of effective and efficient waste management services. Other actions proposed by the policy document which relate specifically to the proposed development include:

- 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.

2.2 National Reports

The Environmental Protection Agency (EPA) produces an annual report which provides national statistics for the production and management of waste within the Republic of Ireland. The reports have been produced annually by the EPA since 1998 and contain data on trends in waste production and how waste is managed and treated across a variety of commercial sectors and within households. The data collected in these reports are either collected by or reported to the EPA by waste producers as required.

The 2014 National Waste Statistics is the most recent study published and reported the following statistics for 2014:

- 2,575 kilotonnes of municipal waste was managed in 2014 (4% increase compared to 2012).
- 79% of managed municipal waste was recovered (59% in 2012). Recovery includes treatment processes such as recycling, use as a fuel (incineration and co-incineration) and backfilling.
- 41% of managed municipal waste was recycled (40% in 2012). Recycling includes reprocessing of waste materials into products, composting and anaerobic digestion.
- 21% of managed municipal waste was disposed (41% in 2012).

2.3 Regional Policy

The new Regional Waste Plans were formally approved in May 2015. The Connacht-Ulster Region Waste Management Plan 2015 – 2021 is the regional waste management plan applicable to the area of the proposed development. The targets set out within the plan are as follows:

- 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)

A number of policies are included in the Galway City Development Plan 2017 – 2023 to achieve these targets with the policies most applicable to the proposed development summarised as follows:

- Secure the provision of waste management facilities and infrastructure with appropriate provision for minimisation, recovery and recycling of waste and regulate waste operations in a manner which reflects the "polluter pays" and "proximity" principles with particular emphasis on large waste producers, in accordance with the objectives of the Connacht Ulster Regional Waste Plan, 2015-2021except in relation to incineration.
- Ensure that adequate recycling and bring facilities are provided within the city, including where those are required in association with the layouts of new residential, industrial and commercial developments and where they comply with the requirements of the Environment Section of the Council.
- Continue to promote waste prevention and minimisation

2.4 Waste Management Legislation

The Waste Management Acts of 1996 and 2003 remain the primary pieces of legislation governing waste management in Ireland. An appointed waste management contractor must comply with the provisions of these Waste Management Acts 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 Local Authority or the EPA where applicable.

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 contractor is licensed to receive, store, sort and recycle on their site.

2.5 Waste Management Facilities and Collections

The waste storage area with the proposed development is required to comply with

Due to the potential for future residential development at the site (Phase 2) the Waste Storage Area has been designed to consider the requirements of the 'Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities, 2015. In terms of Refuse Storage, the following criteria are followed:

- Sufficient communal storage area to satisfy a three-bin system for the collection of mixed dry recyclables, organic waste and residual waste;
- In larger developments, consideration should also be given to the provision of separate collection facilities for other recyclables such as glass and plastics
- Bin storage areas should be designed so that each bin within the storage area is accessible to occupants/employees of the development (including people with disabilities) and these bins must be able to be moved easily from the storage area to an appropriate collection point on the public street nearby (with no steps and a minimal incline ramp).
- Waste Storage areas in basement car parks must ensure adequate manoevuring space for collection vehicles.
- Waste storage areas should not present any safety risks to users and should be well lit.
- Waste storage areas should 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.
- The capacity for washing down the WSA with wastewater discharging to sewer.

The collection of waste from the proposed development will be undertaken by an appointed waste contractor
The nearest municipal solid waste (MSW)) landfill facility to the proposed development is the East Galway Landfill in Ballinasloe. It is anticipated that this facility will cease operations in 2019.
There are two domestic and commercial waste collection operators that service Galway City currently. Barna Waste and Recycling and The Citybin Co. Ltd. both of whom provide MSW, recycling and organic waste collection services.
There are no thermal treatment facilities in the region but there are two in the Eastern-Midlands Region; one in Duleek, Co. Meath and a second facility Poolbeg in Dublin.

There is a civic amenity facility for residential waste in the Liosbaun Industrial Estate which is located approximately 1.5 km from the proposed development.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Development Description

The site of the proposed development is located at the former Crown Equipment site in Mervue, Galway City. The proposed development builds upon the previous planning permissions and construction works carried out at the site in c2008. Almost the entire site has already been excavated to structural formation level and there are extensive foundations and partially complete building structures in-situ which will be used and adapted where possible.

The subject site extends to 5.12 ha and is located in the north-east of Galway City in Mervue, at the junction of the Monivea Road and Joyce's Road. The IDA Business Park and Mervue Industrial Estate are located to the west/south-west of the site and the Eircom Telecommunications site immediately borders the subject site to the north-east. Medium density residential development is located to the east of the site along the Monivea Road.

The development consists of:

1. A residential scheme comprising 288 no. apartments and amenity accommodation with a gross floor area of 32,379 sqm, which will include:
    - Block G (104 no. units); Block H (136 no. units) and Block J (48 no. units).
    - 75 no. one-beds (26%); 185 no. two-beds (64.2%); and 28 no. three-bed units (9.7%)
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6. All other associated site development, plant and servicing works.
7. The application will be supported by an Environmental Impact Assessment Report and a Natura Impact Statement.

3.2 Waste Arisings and Categories

The proposed development when occupied will produce various waste streams which will comprise hazardous and non-hazardous. The most common wastes streams which will be managed more regularly are as follows:

- General Waste/Mixed Non-Recyclable (MNR)
- Dry Mixed Recyclables (DMR): Paper, cardboard, plastic packaging, plastic bottles, aluminum cans
- Organic Waste
- Glass

The less regular waste streams which will arise on site will be managed separate to those listed above. Theses streams are the proposed management of each are summarised.

Waste Electrical and Electronic Equipment (WEEE) and Batteries
Provision for the management of WEEE will not be provided in the waste storage area. It will be the responsibility of the unit occupants to make arrangements for WEEE collections with a special WEEE waste management contractor as collections are required.

Chemicals, Paints, Adhesives
This waste stream will be generated as part of general maintenance of the proposed development in the operational phase. This waste material will be managed by the producer of such waste with measures in place that prevent maintenance contractors disposing of this material in the general waste stream.

Waste Cooking Oil and Waste Sludge
The storage of waste cooking oil will take place with a secured area within the WSA. The waste oil will be stored in lidded buckets and will be stored on an appropriately sized bund to ensure any leaks or spillages are contained.
Waste sludge will be removed from grey water grease separators by a specialist waste contractor using a vacuum tanker as part of service contract. Waste sludge will not be disposed of into the public foul sewer.

Green Waste, Landscaping and Gardening
The landscaped areas of the development will be maintained ads part of the Management Company's brief. An agreement will be required to ensure that that wastes generated as part of landscaping will be taken away by the landscaping contractor and the disposal of such wastes in organic or general waste receptacles in the WSA will be prohibited

Other Bulky Waste
Furniture, bedding, clothing and textile waste will be generated throughout the lifespan of the development. It will not be possible to dispose of such material at the WSA due to the nature and bulkiness of such material and the size of the waste receptacles proposed (Section 5). Again, it will be the producer's responsibility to arrange disposal of such waste

3.3 List of Waste Codes

The List of Waste (LoW) codes (which were previously referred to as EWC code) for the typical waste materials expected to be generated during the operation of the development are presented in Table 3.1.

Table 3.1 Typical Waste Categories at the Proposed Development

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

* May contain hazardous substances

4 ESTIMATED WASTE VOLUMES

The estimated volume for each of the four main waste types which are anticipated to be generated at the site have been calculated based data collated by MKO through various waste audits and compositional analyses for similar developments during their operational phase.

This data has been used to quantify the total waste output for both the Phase 1 and Phase 2 developments. The available published data on waste generation rates and compositional breakdown has also been applied estimate the waste volumes for the proposed development

The estimated waste that will be generated by the proposed Residential Development and all associated services and infrastructure is presented in Tables 4.1 - 4.3. The proposed Hotel and Commercial Development and all associated services and infrastructure (Phase 1) are outlined in Tables 4.4 and 4.5.

Table 4.1 Estimated Waste Volumes for the Residential Development proposed in Phase 2

Waste Type	Kg/day
Mixed Non-Recyclable (MNR)	190
Dry Mixed Recyclables (DMR):	309
Organic Waste	285
Glass	41

Table 4.2 Estimated Waste Volumes for the Childcare Facility proposed in Phase 2

Waste Type	Kg/day
Mixed Non-Recyclable (MNR)	24
Dry Mixed Recyclables (DMR):	38
Organic Waste	35
Glass	5

Table 4.3 Estimated Waste Volumes for the Neighbourhood/Leisure Facility proposed in Phase 2

Waste Type	Kg/day
Mixed Non-Recyclable (MNR)	83
Dry Mixed Recyclables (DMR):	10.3
Organic Waste	182
Glass	6.2

This Operational Waste Management Plan has taken into consideration the proposed development of Phase 1 for this development. The development of Phase 1 for which permission has already been obtained from Galway City Council does not form part of this application however, for the purposes of quantifying the potential waste volumes, storage and collection requirements the following is a summary of the permitted Phase 1 development:

- 5 no. blocks of commercial offices which range in height from 3-6 stories over ground floor level (40,405 sqm).
- A hotel development with 5 floors over ground floor level, comprising 175 no. bedrooms, conferencing facilities and restaurant/bar areas (8,675 sqm).

- A double basement which includes a 'high bay' area for service, delivery and waste management vehicles; in addition to the provision of plant, car and bicycle parking, changing/shower areas and locker/amenity facilities (62,175 sqm), incorporating alterations to the existing structures on site permitted under Pl Ref. 06/223/ ABP Ref. PL 61.220893.
- Public realm and landscaping works, including pedestrian and cyclist linkages.
- The provision of vehicular access/egress via Monivea Road and Joyces Road, public transport set-down areas and cycle lanes.
- The provision of substations and associated ancillary works.
- All other associated site development and servicing works.

Table 4.4 Estimated Waste Volumes for the Hotel (Phase 1)

Waste Type	Kg/day
Mixed Non-Recyclable (MNR)	191.2
Dry Mixed Recyclables (DMR):	109.0
Organic Waste	189.5
Glass	2.3

Table 4.5 Estimated Waste Volumes for the Commercial Office Space (Phase 1)

Waste Type	Kg/day
Mixed Non-Recyclable (MNR)	2158
Dry Mixed Recyclables (DMR):	123
Organic Waste	981
Glass	74

5 WASTE STORAGE AND COLLECTION REQUIREMENTS

5.1 Introduction

This section provides an overview of the waste management and storage arrangements proposed for the site.

5.2 Waste Storage

A waste Storage Area (WSA) will be located within the basement of the proposed development. The WSA will be situated within a Service Area in the north western corner of the at Lower Basement Level.

The Galway City Council DRAFT Segregation, Storage and Presentation and Collection of Household and Commercial Waste Bye-Laws 2018 set out provisions for waste management arrangements at Multi-user Buildings. These provisions are summarised as follows:

- separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable waste, food waste and biodegradable garden waste and residual waste,
- the receptacles referred to in paragraphs (a) are located in an area where waste is stored prior to its collection,
- any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector,
- written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection,
- an authorised waste collector is engaged to service the receptacles referred to in this section of the bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Galway City Council,
- receptacles for kerbside waste are presented for collection on the designated waste collection day,
- adequate access and egress onto and from the premises by waste collection vehicles is maintained

5.2.1 Waste Storage Requirements

The data provided in Tables 4.1 – 4.5 above outlines the estimated waste that will be generating during the operation of the development. Table 5.1 provides a summary of the waste storage requirement for the site based on the estimated quantities that will be generated. The waste will be stored pending collection in the WSA with waste stored in the following receptacles:

- Bins that comply with EN 840-4 2004 must be used, 1,100 litre bins for hotel, commercial area and apartments (1.23m long x 1.1m wide and 1.3m high).

- Bins that comply with Bins that comply with EN 840-1 2004 must be used, 120 or 240 litre bins for dwelling houses.

Table 5.1 below outlines the number of bins required for each element of the proposed development for both phases. The surface area required to accommodate all require bins is also provided as well as the collection frequency for each waste category based on the storage capacity and the type of waste.

Table 5.1 Estimated Waste Storage Requirements

Bin Size	Organic	DMR	MNR	Glass	WSA Area
Hotel (Phase 1)					
120lt	1	2	4	1	8m²
240lt	3	4	3	-	10m²
1100lt	-	4	2	-	9m²
Collection per week	*3*	*1*	*2*	*As reqd.*	-
Commercial Office (Phase 1)					
120lt	10	4	10	5	29m²
240lt	12	5	10	9	36m²
1100lt	-	1	20	-	63m²
Collection per week	*3*	*1*	*3*	*1*	-
Residential Development (Phase 2)					
120lt	-	-	-	-	-
240lt	5	5	5	6	21m²
1100lt	-	2	2	-	6m²
Collection per week	*3*	*3*	*3*	*1*	-
Childcare Facility (Phase 2)					
120lt					-
240lt	1	1	1	1	4m²
1100lt					-
Collection per week	*2*	*3*	*3*	*As reqd.*	-
Neighbourhood/Leisure Facility (Phase 2)					
120lt	-	-	-	-	-
240lt	4	1	2	1	8m²
1100lt	-	-	1	-	3m²
Collection per week	*3*	*1*	*2*	*1*	-
Total WSA Requirement					**197m²**

5.2.2 Waste Storage Area Design

The bins required for the operation of all phases of the proposed developments will occupy an area of 197m².The overall layout of the waste storage area will be finalised at a detailed design stage should the proposal achieve a successful planning outcome.

As suitable access and egress for waste collection vehicles is a requirement, the detailed design of the WSA will take account of the area that must be provided for vehicular turning movements during these collections. The design will take account of the autotrack assessment by Punch Consulting Engineers as part of the WSA overall design.

5.3 Waste Collection

The frequency of waste collection has been determined by the volume of waste that has been estimated for the site as well as the type of wastes that will be generated.

Organic waste collections have been proposed 3 times weekly for the development to avoid any nuisance associated with odour and vermin.

As the waste volumes estimated for Phase 2 are based on the project elements listed in Section 4, the waste storage and collection proposals have considered the requirements of the Department of Housing Planning and Local Government's Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authority 2018. The proposal set out in Table 5.1 provide for multiple weekly collections as a means of managing the number waste bins that will be required.

6 CONCLUSION

This plan aims to ensure minimise waste generation while promoting maximum recycling, reuse and recovery. The plan estimates the amount of waste generated and the storage, handling and collection of dry recyclables, mixed non-recyclables, organic wastes and glass. Fully implementing the above waste management plan will promote a high level of recycling, reuse and recovery by first promoting segregation at source. This Waste Management Plan is to be incorporated into a larger Operational Estate Management Programme by the building management company to ensure its full implementation particularly for Phase 2. The waste segregation facilities that will be provided for the development will ensure that waste generated at the site will be managed correctly and in compliance with all current waste management legislation.

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