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Waste Management Plan

Proposed Residential Development

Belgard Square, Tallaght, Dublin 24

Client: South Dublin County Council

Job No. C186

July 2020

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WASTE MANAGEMENT PLAN

PROPOSED RESIDENTIAL DEVELOPMENT, BELGARD SQUARE, TALLAGHT, DUBLIN 24

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BS 1192 FIELD	TAL-CSC-ZZ-XX-RP-C-0106_WMP

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
C186	FB	NB	OS	29.07.2020	P1
C186	FB	NB	OS	06.05.2020	-

1.0 INTRODUCTION

Cronin & Sutton Consulting have been commissioned by South Dublin County Council to prepare a Waste Management Plan for a planning application for a residential development at Belgard Square, Tallaght, County Dublin.

The purpose of this Waste Management Plan (WMP) is to ensure that waste generated during the demolition, construction, and operational phases of the development will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 to 2013 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 are complied with. It will also ensure that optimum levels of waste reduction, re-use and recycling are achieved.

2.0 GOVERNMENTAL POLICY

2.1 National Level

The publication, "*Changing Our Ways*", which identifies objectives for the prevention, minimization, reuse, recycling, recovery and disposal of waste in Ireland, was issued by the Government in September 1998. The target for C&D waste in this Strategy was to recycle at least 50% of C&D waste by 2003, with an increase to at least 85% by 2013.

The Forum for the Construction Industry, which represents the waste sector of the industry, released a report titled "*Recycling of Construction and Demolition Waste*" concerning the development and implementation of a voluntary construction industry programme to meet the governments objectives for the recovery of construction and demolition waste. The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002 and subsequently produced "*Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*" in July 2006. There are thresholds set out in the Guidelines to determine whether a C&D WMP is required. The development requires a C&D WMP for new residential developments of 10 houses or more and new developments, including institutional, educational, health and other public facilities, with an aggregate floor area exceeding 1,250m^2.

The Guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. The guidelines include the following:

- predicted demolition & construction wastes and procedures to prevent, minimise, recycle and reuse wastes;
- waste disposal/recycling of C&D wastes at the site;
- list of sequence of demolition operations to be followed;

- provision of training for waste manager and site crew;
- details of proposed record keeping system;
- details of waste audit procedures and plan;
- details of consultation with relevant bodies, i.e. waste recycling companies, South Dublin County Council, etc.

In 2002, the Construction Industry Federation (CIF) issued "*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*".

Annually the Environmental Protection Agency (EPA) issue a "*National Waste (Database) Reports*" detailing C&D waste generation and the level of recycling, recovery and disposal of this material, domestic and municipal waste rates, etc.

2.2 Regional Level

A Waste Management Plan for the Dublin Region (comprising Dublin City Council, Fingal County Council, South Dublin County Council & Dun Laoghaire-Rathdown County Council) was in place from 2005-2015, with periodic revisions. This was superseded by the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, which was launched in May 2015.

The Eastern-Midlands Region comprises Dublin City Council, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Councils. The Plan provides a framework for the prevention and management of waste in a sustainable manner in these 12 local authority areas.

The three overall performance targets of the Eastern-Midlands Region Waste Management Plan are as follows:

- 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.
- Reduce to 0% the direct disposal of unprocessed municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan's implementation is led by the Eastern-Midlands Regional Waste Office based in Dublin City Council.

Ireland achieved 68% recovery material recovery of non-hazardous, non-soil & stones C&D wastes in 2014. One of the primary objectives of the Plan is to achieve more sustainable waste management practices in the C&D sector. This requires the following actions:

- The development company must employ best practice at the design, planning and construction stage to ensure waste prevention and recycling opportunities are identified and implemented.
- Waste Collectors are required to introduce source-separation of recyclables and introduce graduated charges to incentivize better site practices.

Local Authorities will ensure the voluntary industry code is applied to development control, to regulate the collection and treatment of waste to meet the Plan objectives and will also work to develop markets for recycled materials.

2.3 Legislative Requirements

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 (as amended by the Waste Management (Amendment) Act 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 it is generated through to its legal disposal (including its method of disposal). Following on from this is the concept of 'Polluter Pays', whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for collection and transport of waste).

Waste contractors are typically engaged to transport waste off-site. Each contractor must comply with the provisions of the Waste Management Act 1996 and associated Regulations. This includes the requirement that a contactor 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 collection permit to transport waste must be held by the relevant contractor, which is issued by the National Waste Collection Permit Office (NWCPO).

Waste receiving facilities must also be appropriately permitted or licensed. Operators of su ch facilities cannot receive any waste unless in possession of a waste permit granted by the local authority under the Waste Management (Facility Permit & Registration) Regulations 2007 or a waste license granted by the EPA. The permit/license held will specify the type and quantity of waste able to be received, stored, sorted, recycled and/or disposed of at the specified site.

Should the initial assessment of the site indicate that material would have to be removed from site then the material will be classified in accordance with legislative requirements to demine if the material is classified as hazardous or non-hazardous. All material deemed to be non-hazardous will then be assessed under Waste Acceptance Criteria requirements for disposal to a licence landfill facility in accordance with 2002 European Landfill Directive [2003/33/EC]. Only material deemed through

independent laboratory analysis to be either inert or non-hazardous can be disposed of at landfill facilities in the Republic of Ireland at present, hazardous material having to be taken abroad for disposal.

The assessment and removal of such material will require the main contractor to employ a suitably qualified environmental specialist to develop a soil management and removal plan and ensure full compliance with statutory requirements.

3.0 SITE LOCATION

The proposed development site is located at Belgard Square North, Tallaght, Dublin 24. The site is located in the administrative jurisdiction of South Dublin County Council and has a total area of approximately 0.49ha.

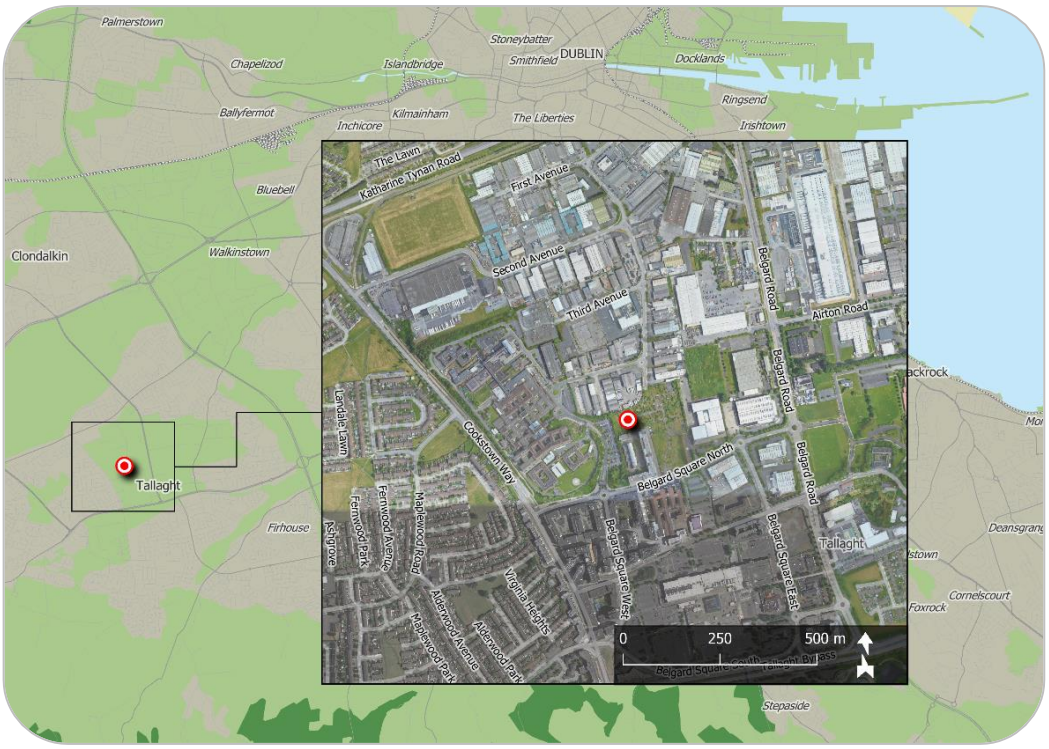

Figure 1 – Location of proposed development site
(*map data & imagery: EPA, OSM Contributors, Google*)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in **Error! Reference source not found.**.

The site is bounded to the west by Tallaght University Hospital, to the north by lands in industrial use, to the east by future development lands and to south by the Exchange Hall residential development and commercial buildings.

Figure 2 – Site extents and environs
(*map data & imagery: NTA, GoCar, OSM Contributors, Google*)

The development site is formerly a temporary halting site known as "Maelruan". The site is currently being used as a compound by the Contractor currently carrying out construction works of the Belgard Square to Cookstown link road.

4.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The development will consist of the construction of 133no. affordable rental apartments with a community facility (c 11,430m2) in two blocks ranging from six to eight storeys linked by a single storey podium containing a three storey block with associated balconies/ terrace for each apartment and roof mounted solar panels.

Block A (west- c 5,170m2) accommodates 2 no. studios, 31 no. 1 bed apartments and 28 no. 2 bed apartments.

Block B (east – c 5,900m2) accommodates 1 no. studio, 33 no. 1 bed apartments, 35 no. 2 bed apartments and 1 no. 3 bed apartment.

Block C (podium – 360m2) accommodates 2 no. 3 bed apartments laid out over 3 floors.

The podium accommodates 39 no. car parking spaces which includes 3 no. universal access spaces, 246 no. bicycle spaces, ESB substation and switch room, plant spaces, bins and other stores.

Ancillary site development works include the provision of pedestrian zip link/ greenway, access roadway, footpaths, 26 no. bicycle spaces, hard and soft landscaping, new boundary treatments and a landscaped courtyard at podium level.

5.0 WASTE MANAGEMENT ORGANISATION

5.1 Responsibility for Construction Phase Waste Management

A suitably competent and experienced representative of either the client or the lead contractor will be nominated as Construction Waste Manager for the project. The function of the Construction Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of demolition and construction works on site.

The Construction Waste Manager will be assisted in this role by the external Safety Consultant. Site Inspections will be carried out on a weekly basis and will incorporate inspection and monitoring of the requirements of the Waste Management Plan.

5.2 Responsibility for Operational Phase Waste Management

Upon completion of the development, a Management Company shall be constituted, with the remit to provide and maintain common areas and communal facilities within the development, including communal waste collection and segregation facilities. The Management Company shall prepare an Operational Waste Control Strategy for the development, which shall detail specific operational arrangements for these.

Waste generated during the development's operational phase shall consist primarily of municipal waste. Communal facilities for the separation of recyclable waste streams shall be maintained by the Management Company.

6.0 CONSTRUCTION WASTE GENERATED BY THE PROPOSED DEVELOPMENT

6.1 Construction Waste Classification

Waste generated during construction at a typical site includes the following:

- Concrete, bricks, tiles, and cement
- Wood
- Glass
- Plastics
- Bituminous mixtures, coal tar, and tarred products
- Metals (including their alloys)
- Soil and stones
- Insulation materials (possibly including asbestos-containing materials)
- Gypsum-based construction material
- Materials containing mercury
- PCB-containing materials (e.g. sealants, resin-based floorings, capacitors, etc.)
- Waste electrical and electronic equipment
- Oil wastes and waste of liquid fuels
- Batteries and accumulators
- Packaging (paper/cardboard, plastic, wood, metal, glass, textile, etc.)

As referred to in Table 1 (see below), the EPA issued the European Waste Catalogue (EWC) in January 2002 and this system is used to classify all wastes and hazardous wastes according to a consistent EU-wide system. The EWC classification for typical waste materials to be expected to be generated during construction of the subject development is given in Table 1 below.

Table 1 - European Waste Catalogue

Waste Material	EWC Code
Non-Hazardous	
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures, coal tar and tarred products	17 03
Metals (including their alloys)	17 04
Soil, stones and dredged spoil	17 05
Gypsum-based construction material	17 08
Hazardous	
Electrical and Electronic Components	16 02
Batteries	16 06
Wood Preservatives	03 02
Liquid Fuels	13 07
Soil and stones containing dangerous substances	17 05
Insulation materials containing asbestos	17 06
Other insulation materials consisting of or containing dangerous substances	17 06 03
Construction materials containing asbestos	17 06
Construction and demolition waste containing	17 09
Construction and demolition waste containing PCBs	17 09
Other construction and demolition wastes containing dangerous substances	17 09 03

Table 2 shows the breakdown of construction waste types produced on a typical site based on data from EPA National Waste Reports [14].

Waste Types	%
Soil & Stones	83
Concrete, Bricks, Tiles, Ceramics,	11
Asphalt, Tar and Tar Products	1
Metals	1
Other	4
Total	**100**

Table 2 - Waste materials generated on a typical Irish construction site
(Source: EPA National Waste Reports)

Table 3 shows the estimated construction waste generation for the proposed development based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated waste amounts for the main waste types (with the exception of made ground and soils and stones) are based on an average large scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 2.

Waste Type	Tonnes	Reuse/Recover		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Concrete, bricks, tiles, ceramics and plasterboard	24	40	10	55	13	5	1
Asphalt, tar and tar Products	2	0	0	80	2	20	0
Metals	2	5	0	90	2	5	0
Other	8	10	1	70	6	20	1
Total	**36**		**11**		**23**		**2**

Table 3 - Estimated waste generations and off-site reuse/recovery, recycling and disposal targets for construction waste.

Notwithstanding the information in Table 3, there will be made ground, fill material and subsoils to be excavated to facilitate the construction of new building footprints, underground services and civils infrastructure. It is anticipated that the majority of made ground material will not be suitable for reuse on site and will have to be removed off-site for recovery or disposal.

Excavated soil and stones may be reused on site for landscaping works or as engineering fill. Material derived from excavations and stockpiles that could be reused as engineering fill would have to be shown to be suitable for such use and will be subject to appropriate control and testing. Material that is not required and/or suitable for reuse onsite will require removal off-site for reuse, recovery and/or disposal, as appropriate.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high degree of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

All waste arisings during the C&D phase will be transported off-site by an approved waste contractor holding a current waste collection permit. All waste arisings requiring reuse, recycling, recovery or disposal off-site will be brought to facilities holding the appropriate COR, license or permit, as required.

6.2 Waste Management and Mitigation Measures

The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

- On-site segregation of all waste materials into appropriate categories, including:
  - top-soil, sub-soil, bedrock;
  - concrete, bricks, tiles, ceramics, plasterboard;
  - asphalt, tar, and tar products;
  - metals;
  - dry recyclables (e.g. cardboard, plastic, timber).
- All waste material will be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- Uncontaminated excavated material (top-soil, sub-soil) will be reused on site in preference to the importation of clean fill, as soil to be reused or removed from site must be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving the site will be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.
- All waste leaving the site will be recorded and copies of relevant documentation retained.

These measures are intended to ensure that the waste arising from construction of the proposed development is dealt with in compliance with the provisions of the Waste Management Acts 1996 to 2013, the Litter Act

of 1997, and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

6.3 Predicted Impacts of the Proposed Development

Waste materials will be generated during the construction of the proposed development, including the initial site clearance and excavation. Careful management of these, including segregation at source, will help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local and national waste targets. It is expected, however, that a certain amount of waste will still need to be disposed of at landfill.

Given the provision of appropriate facilities, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of any construction waste containing contaminated or hazardous materials. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste. In summary, with a high level of due diligence carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development will be of small scale and short duration, with respect to waste management.

7.0 OPERATIONAL WASTE GENERATED BY THE PROPOSED DEVELOPMENT

The proposed residential development will generate quantities of waste during its operational phase. The principal types of waste generated by the development will include waste from periodic maintenance and cleaning, used packaging/containers and general domestic waste generated by occupants of the building. These waste types will be mainly non-hazardous and may be generally classed as municipal waste.

Municipal waste comprises household waste as well as commercial and other waste that, because of its nature or composition, is similar to household waste. It excludes municipal sludges and effluents. In the context of this report, municipal waste consists of three main elements: household, commercial (including non-process industrial waste), and street-cleansing waste (street sweepings, street bins and municipal parks and cemeteries maintenance waste, electoral campaign material).

Total municipal waste generation has continued to decrease from a peak in 2007, with municipal waste generated 21% lower in 2012 compared with 2007. Municipal waste generated per capita has decreased from 0.78 tonnes per person in 2007 to 0.59 tonnes per person in 2012. These decreases are linked to declining personal consumption as the economy contracted over the period 2007 to 2012 and occurred despite an increase in population over the same period. In addition, they also indicate a trend towards improved waste prevention in the country. Significantly, 2012 was the first year that the percentage of municipal waste recovered (59%) exceeded the percentage disposed of (41%).

Typical municipal waste streams are expected to be produced during the operation of the proposed development. These include:

- cardboard and paper;
- plastics (including bottles and other containers);

- food waste;
- glass (including green, brown, and clear);
- metals (including aluminium cans and tin cans).

Periodic maintenance and repair activities will generate small quantities of wastes such as green waste, inert building materials (e.g. textiles) and certain chemicals (cleaning products, paints, pesticides, etc.).

7.1 Development Waste Disposal

An Operational Waste Control Strategy will be developed by the development Management Company to clearly outline the approach to waste disposal, and dedicated waste collection areas shall be established within common areas of the development. The waste will be segregated at the waste collection areas into the following categories:

- cardboard/paper;
- mixed non-recyclable waste;
- plastic;
- glass;
- metals;
- organic (food) waste;
- electrical waste.

Bins/containers will be clearly labelled and colour-coded, to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which wastes can be put in each.

The Management Company shall make arrangements for the disposal of all waste collected within the development.

7.2 Waste Management and Mitigation Measures

In order to minimise the disposal of waste material to landfill, the principles of "reduce, reuse, recycle" will be promoted throughout the development. In addition, the following mitigation measures will be employed:

- Suitable waste materials will be stored in bins or other receptacles in designated, easily accessible locations.
- Waste leaving the site will be transported by suitable permitted contractors and taken to suitably permitted/licensed facilities.
- Where necessary, waste leaving the site will be recorded and copies of relevant documentation maintained.
- Where necessary, waste from the development will be segregated and stored in designated centralised waste storage areas on site.

These mitigation measures will ensure the operational waste generated by the development is dealt with in compliance with the provisions of the Waste Management Acts 1996 to 2013, the Litter Act of 1997, and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, and that optimum levels of waste reduction, re-use and recycling are achieved.

7.3 Predicted Impacts of the Proposed Development

During the operational phase, a structured approach to waste management will promote resource efficiency and waste minimisation. As with the construction phase, waste materials will be generated during the operational phase of the proposed development. Again, careful management of these, including segregation at source, will help ensure that applicable local and national waste targets are met. It is expected that some waste (e.g. mixed non-recyclables) will still be required to be disposed of at landfill. Assuming appropriate on-site storage is provided, environmental impacts (e.g. litter and to a lesser extent contamination of

soil or water, etc.) arising from waste storage are expected to be minimal. The use of suitably licensed waste contractors will ensure compliance with the relevant legal requirements and appropriate off-site management of waste.

In summary, it is envisaged that the environmental impact of the development's operational phase will be long-term, neutral and imperceptible with respect to waste management.

8.0 CONCLUSION

This section outlines the principles and measures by which the waste generated during the construction and operational phases of the proposed development will be managed and disposed of in compliance with the provisions of the Waste Management Acts 1996 to 2013 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. It describes the measures by which optimum levels of waste reduction, re-use and recycling shall be achieved.