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Social Housing Bundle 4, Development at Wellmount Road, Finglas

Resource Waste Management Plan (RWMP)

Dublin City Council

ENGINEERING A SUSTAINABLE FUTURE

Wellmount Road, Finglas, Dublin.
Resource Waste Management Plan (RWMP)

Document Control Sheet

Client:	**Malone O'Regan**
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1 Introduction

The construction of 77 apartment dwelling units at a site c.1.3 ha bound by Cardiffsbridge Road, Wellmount Road and Wellmount Drive, Finglas, Dublin 11, which will consist of the following:

- One apartment block with primary frontage onto Cardiffsbridge Road, ranging in height from 4 to 6-storeys, comprising 77 residential units (38 no. 1 bed units, 25 no. 2 bed units and 14 no. 3 bed units);
- 28 no. car parking spaces, 2 no. motorcycle spaces and 1 no. loading bay;
- 175 no. bicycle parking spaces;
- 135 sqm of internal community, arts and cultural floor space;
- 0.56 ha of public open space and 0.11 ha communal open space;
- Two vehicular accesses are proposed, one from Cardiffsbridge Road and one from Wellmount Road;
- Boundary treatments, public lighting, site drainage works, internal roads and footpaths, ESB substation, stores, bin and bicycle storage, plant rooms, landscaping; and
- All ancillary site services and development works above and below ground.

1.1 Background and Purpose

Waste created during Construction and Demolition (C&D) work is the largest waste stream in the EU, accounting for one third of all waste generated. It is therefore pertinent to outline proper management procedures for construction and demolition (C&D) waste and resources that are in line with policies that fit a circular economic model. Several steps can be taken regarding material and waste management to adhere to the circular economic model, such as:

- Reducing the use of virgin resources.
- Keeping materials in the economy as long as possible.
- Maintaining intrinsic value/quality as high as possible.
- Reducing hazardous substances in products and waste.

This Resource & Waste Management Plan (RWMP) for the proposed development will address the following points:

- Analysis of waste arisings / material surpluses, to be recorded in the Waste Register **(see Appendix A)**
- Methods proposed for prevention, reuse and recycling of waste materials
- Waste handling procedures
- Waste storage procedures
- Waste disposal procedures
- Waste auditing
- Record keeping

1.2 Supporting Documentation, Policies, and Legislation

The principles and objectives to deliver sustainable waste management for this project have been incorporated in the preparation of this report and are based on the following strategic objectives:

- Environmental Protection Agency Act 1992
- Waste Management Acts 1996 to 2005
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008), as amended.
- The Waste Framework Directive (Directive 2008/98/EC)
- Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006
- A Waste Action Plan for a Circular Economy 2020-2025
- Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects 2021
- Construction Environmental Management Plan (CEMP)
- Relevant Planning Conditions

In reference to the above legislation, the below hierarchy has been adapted for this site:

- Reduction of the amount of waste generated by the construction process.
- Segregation of waste will be implemented during the construction phase of the development to enable easy re-use and recycling, wherever possible.
- Recycle waste material where feasible, including the use of excess excavations as fill material, recycling of various waste fractions such as metals, packaging, etc.

1.3 Dublin City Development Management Standard

The development management standards for Dublin City are outlined in the Dublin City Development Plan 2022-2028. Of relevance to this report is **Chapter 9 – Sustainable Environmental Infrastructure and Flood Risk** which outlines policies in line with Dublin City Council waste management objectives. The policies relevant to the proposed development include:

- **SI 27:** Sustainable Waste Management: To support opportunities in the circular resource efficient economy in accordance with the National Policy Statement on Bioeconomy (2018).
- **SI 28:** Sustainable Waste Management: To prevent and minimise waste generation and disposal, and to prioritise prevention, recycling, preparation for reuse and recovery in order to develop Dublin as a circular city and safeguard against environmental pollution.
- **SI 30:** Waste Management in Apartment Schemes: To require that the storage and collection of mixed dry recyclables, organic and residual waste materials within proposed apartment schemes have regard to the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2020 (or and any future updated versions of these guidelines produced during the lifetime of this plan).

Additionally, **Section 15.18.2 – Waste Management** outlines the overall approach of Dublin City Council with regards to waste generated during development. It states:

"*All planning applications in excess of 30 or more residential units and / or 1,000 sq. m. of commercial development shall be accompanied by both and Construction and Operational Waste Management Plan…The operational waste management plan shall set out the strategy for waste collection, storage and recycling. All applications shall clearly identify the waste storage and collection points and detail the anticipated waste collection schedule having regard to the impact on road users both within the development and the surrounding area.*"

1.4 RWMP Review

This RWMP report serves as a live document and will be reviewed regularly to assess whether waste management practices are being adhered to. Likewise, it will be continuously updated as appropriate. Following completion of the project the RWMP will be updated with the final waste levels generated by the project. It is proposed that a review of waste management practices will form part of regular site inspection audits to be carried out by the construction contractor. This information should be forwarded to the Resource and Waste Manager (RWM) to assist in determining the best methods for waste minimisation, reduction, re-use, recycling, and disposal as the works progress.

2 Project Description

2.1 Site Location

The proposed site is located at the intersection between Wellmount Road and Cardiffsbridge Road in Finglas, Co. Dublin. The proposed development is located within land zoned as Z1: Sustainable Residential Neighbourhoods by the Dublin City Council. The site is within a developed residential area in Finglas, Dublin and is currently a green space.

An approximate outline of the subject site and its environs is provided in **Figure 2.1** below.

Figure 2.1: Site location and environs (Source: Google Maps)

2.2 Site Characteristics

2.2.1 Topography

The proposed residential development is to be constructed on a greenfield site which currently varies in topography due to a steep fall across the site from the northwest to the southeast. At present, the topography ranges from 55.40m OD to the northwest, 55.11m OD to the northeast and 52.29m OD to the south of the site.

2.2.2 Site Access

The site has a proposed access point on both the Cardiffsbridge Road and the Wellmount Road. Construction traffic will approach the site entrance from the North utilising Wellmount Road which connects to the Finglas Bypass *ca.* 960m NE of the site, and from the Bypass to the M50 from Junction 5 north and south bound. The entrance gates will be within the boundaries of the site and will prevent incoming vehicles from causing obstruction to local traffic on Cardiffsbridge Road and Wellmount Road.

2.2.3 Historical Maps

The GeoHive Historic map viewer was consulted to assess the previous land uses or developments within or in the vicinity of the proposed site boundaries. According the First Edition 6" maps developed between 1829-1841, the location of the proposed site previously consisted of open farmland. From black and white aerial survey maps generated in 1995, the structures of the dense residential areas surrounding the site can be seen, as well as the site of the existing Dunnes Stores. St Finian's National School and St Brigid's Infant National School can also be seen in the 1995 aerial survey maps. The surrounds of the proposed site have remained relatively unchanged since these 1995 aerial survey maps, with minor density increases in housing estates and residential areas.

2.3 Environmental Sensitivities

2.3.1 Geology, Hydrology & Hydrogeology

Maps generated by the Environmental Protection Agency (EPA) and featuring data from the EU Water Framework Directive (WFD) were consulted to assess the extent and quality of waterbodies present in the vicinity of the proposed development. The closest waterbody to the site consists of the Tolka River which is *ca.* 520m south of the proposed site. The next closest waterbody is Scribblestown Stream which is *ca*. 645m west of the proposed site. The Finglaswood Stream and Bachelors Stream are located *ca*. 830m and 1.5km to the southeast of the site, respectively.

Taking the scale and nature of the proposed development into consideration, only waterbodies within a 1.5km radius of the site were considered as potential receptors, and as such, only these waterbodies were included in this analysis. A summary of the nearest waterbodies can be found in **Table 2.1** below.

Table 2.1: Waterbodies in Proximity to Proposed Site

Waterbody	WFD Sub-basin Name	Code	Distance from Site	Direction from Site
Tolka River	TOLKA_050	IE_EA_09T011100	520 m	South
Scribblestown Steam	TOLKA_050	IE_EA_09T011100	645 m	West
Finglaswood Stream	TOLKA_050	IE_EA_09T011100	830 m	Southeast
Bachelor's Stream	TOLKA_050	IE_EA_09T011100	1500 m	Southeast

The WFD runs in 6-year cycles with the most recent data being generated between 2016-2021. The Directive takes rivers, lakes, estuaries, groundwater and coastal waters into consideration and each waterbody can be awarded one of five statuses: High, Good, Moderate, Poor, and

Bad. Additionally, waterbodies can be assigned a risk level ("At Risk", "Not At Risk", "Review") which represents the risk of the waterbody of failing its WFD objectives by 2027.

The WFD Status of each of the waterbodies in close proximity to the site is designated as "Poor" and have been assigned a risk level of "At Risk."

The Tolka River is the most significant waterbody in the Finglas area. The Tolka River rises east of Dunshaughlin, County Meath, and flows through Dunboyne, Mulhuddart, South Finglas and finally passes through North Dublin suburbs, Glasnevin and Drumcondra, following course directly into Dublin's North Bay. The river flows into Dublin Bay directly passed the North Bull Island Special Protection Area. The Tolka has many tributaries, including Castle Stream at Dunboyne and the Clonee Stream East of Clonee, which both fall within the borders of County Meath. Inside the Dublin border, it's estimated that there are at least fourteen tributaries flowing into the Tolka River before it discharges into the Irish Sea. 3 major tributaries are referenced in this CEMP – Scribblestown Stream, Bachelor's Stream and Finglaswood Stream.

The proposed site is located within WFD catchment 09, Liffey and Dublin Bay, and is located within sub-catchment "Tolka_SC_020". The 3rd Cycle Draft Liffey and Dublin Bay Catchment Report (HA 09) published in 2021 provides a summary of the quality assessment outcomes of waterbodies within the catchment. According to this report, The Liffey is deemed "At Risk" due to urban run-off and urban wastewater treatment agglomerations (combined sewer overflows). The closest waterbody consists of minor waterbodies within the perimeter of the Phoenix Park which are not considered to be lake waterbodies. The closest lake waterbody to the site development is the Leixlip Reservoir which is situated *ca.* 12.3km to the west. This is a heavily modified water body which serves dual purposes for power generation and drinking water supply. It possesses a WFD status of "Poor", and its risk level is currently "Under Review".

The site was cross-referenced with the Teagasc Soil Information System (SIS) soil profile map which states that the surface soil at the site location is classed as 'Urban'. Urban soils are formed from human construction and industrial activities along with fuel combustion, transport emissions and waste dumping and therefore contain manufactured materials and waste. The subsoil of the site is classed as "made". Subsoil classification within the confines of Dublin city is predominantly "made".

2.3.2 Groundwater Vulnerability

According to the Geological Survey of Ireland map viewer, the site is underlain by a Locally Important Aquifer consisting of made ground bedrock which is moderate to poorly productive in local zones only. The groundwater vulnerability is classed as ''High'. The subsoil permeability is classified as 'Low'.

2.3.3 Flood Risk

The OPW Floodinfo.ie website was consulted for high level information on any potential flood risk on or near the site. The closest flood events occurred along the River Liffey *ca*. 1.5km southeast of the proposed site on three separate occasions. **Table 2.2** summarises the sources of the nearest floods and their proximity to site.

Table 2.2: Flood Events in Proximity to Proposed Site				
Flood Event Code	**Location**	**Date**	**Flood Source**	**Distance from Site**
ID-11602	Glendhu Park, Cabra	October 2011	Runoff from Surface Drainage Water	1500 m S
ID-11674	Ballygall Crescent and Fairways Green, Finglas	October 2011	Runoff from Surface Drainage Water	1700 m E
ID-5	Tolka Ballyboggan Road	November 2000	River	1800 m SE
ID-236	Tolka and Finglas Rivers	August 1984	River	2000 m SE

The proposed site itself is of sufficient distance from the projected flood risk area hence the fluvial flood risk is considered to be low. The site is not located within benefitting land associated with the Arterial Drainage or District Drainage Schemes. National Indicative Fluvial Mapping (NIFM) models the extent of land that might be flooded by rivers during a theoretical flood with an estimated probability of occurrence. The proposed site is not within the range of a Medium Probability flood event (1 in 100 years) according to NIFM mapping. Based on current data available it is not foreseen that the development will present any significant increase in flooding risk either within the site or downstream of the site.

2.3.4 Archaeology

According to the Historic Environment map viewer there are no sites of archaeological importance within the proposed site boundaries nor in the nearby vicinity of the site. The nearest site of importance is located *ca*. 520m south of the site and is the Cardiffsbridge bridge which spans the Tolka River. This site is considered to be of both archaeological and historical importance. This site consists of a four-arch bridge with three round arches close together and one on the southern bank. The walls are of coursed limestone masonry with granite coping and has characteristics indicative of medieval era buildings. Northeast of the proposed site is a cluster of sites of archaeological or historical importance located *ca.* 0.6-1km away from the Wellmount Road site.

Overall, the archaeological sensitivity of the area in immediate proximity to the proposed site is considered to be low due to the neighbouring residential estates and absence of any archaeologically significant sites within a 500m radius of the site.

2.3.5 Ecological Receptors

According to the National Parks & Wildlife Service map viewer, the proposed site is located a sufficient distance (1.5km) from any designated sites such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Natural Heritage Areas (NHAs). The nearest designated sites consist of the Royal Canal proposed Natural Heritage Area (pNHA) located *ca*. 900m south of the proposed site. The next nearest designated sites are both over 4km from the proposed site. The Santry Demesne and Liffey Valley proposed NHA's are located *ca*. 4.4km NE and 4.2km SW of the site, respectively.

An Appropriate Assessment (AA) Screening Report was carried out by NM Ecology Ltd. on behalf of Dublin City Council and has determined that a Natura Impact Statement (Appropriate Assessment) is not required in respect of this proposed development.

A Preliminary Ecological Appraisal was also carried out by NM Ecology to assess whether any sensitive ecological receptors were present on site. The details of this report are summarised in the CEMP also provided for this development.

Given the scale and nature of the proposed development, it is unlikely that any designated sites will be impacted as a result of the works.

2.4 Phasing of the Development

This Construction Environmental Management Plan (CEMP) will outline the intended sequence of works. A construction program of 12 - 18 months serves as the agreed estimated timeline for the project. A layout plan of the development is detailed in **Figure 2.2** below.
The proposed development includes the following sequence of works:

- One apartment block with primary frontage onto Cardiffsbridge Road, ranging in height from 4 to 6-storeys, comprising 77 residential units (38 no. 1 bed units, 25 no. 2 bed units and 14 no. 3 bed units);
- 28 no. car parking spaces, 2 no. motorcycle spaces and 1 no. loading bay;
- 175 no. bicycle parking spaces;
- 135 sqm of internal community, arts and cultural floor space;
- 0.56 ha of public open space and 0.11 ha communal open space;
- Two vehicular accesses are proposed, one from Cardiffsbridge Road and one from Wellmount Road;
- Boundary treatments, public lighting, site drainage works, internal roads and footpaths, ESB substation, stores, bin and bicycle storage, plant rooms, landscaping; and
- All ancillary site services and development works above and below ground.

There are two proposed access points to the development. One is in the northeastern most corner on Cardiffsbridge Road, another is on the south of the site, on Wellmount Road. The site is situated at an intersection between Wellmount Road and Cardiffsbridge Road. **Figure 3.1** shows the proposed site plan.

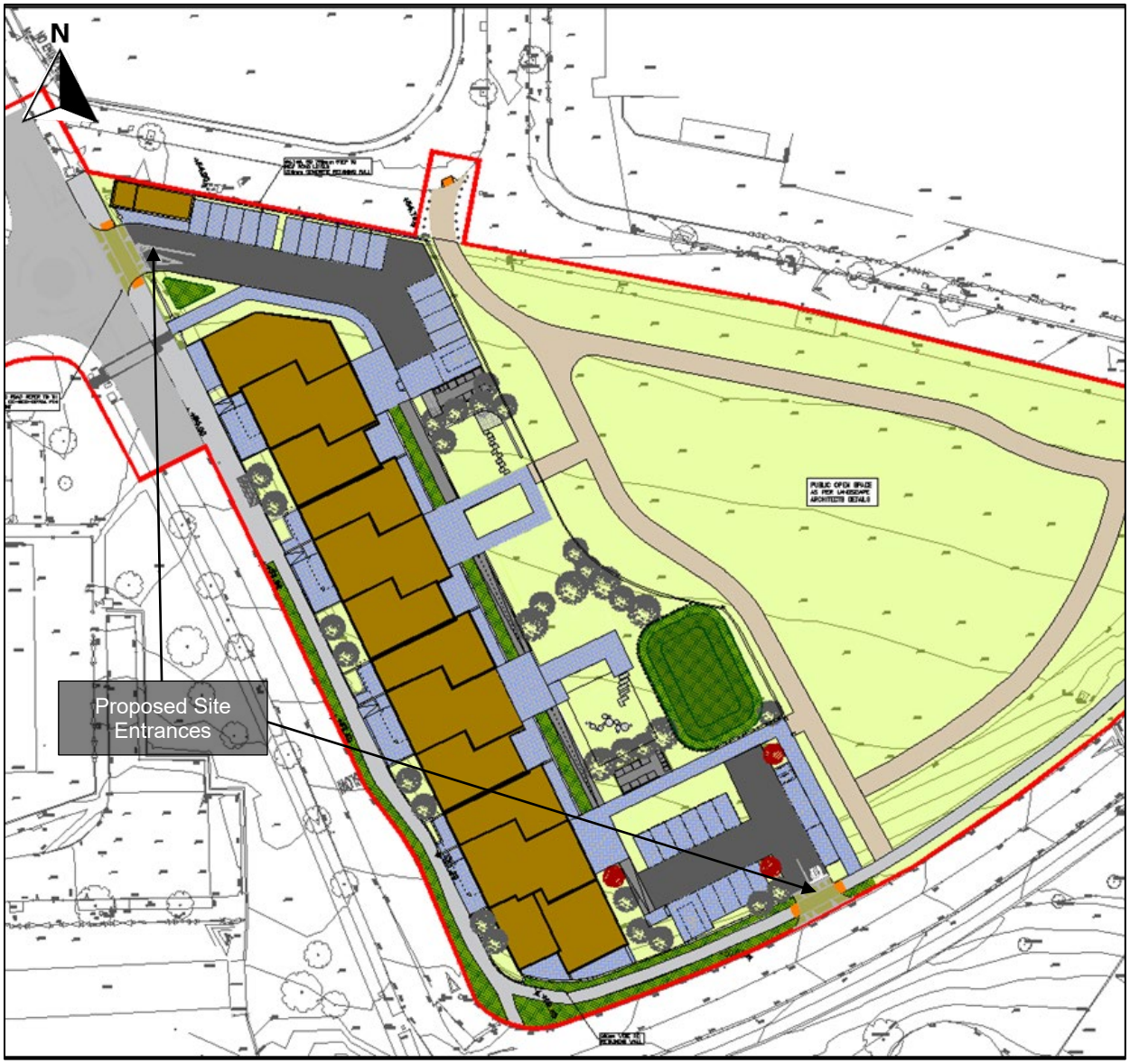

Figure 2.2: Site Plan (Cropped) (A refinement of this site layout may be circulated by the architect)

The project is to be divided into several distinct phases as follows:

Pre-Construction Phase – Site clearance and preliminary works

- Site set-up, temporary services, site hoarding/fencing, staff welfare facilities
- Ground works and landscaping.

Phase 1 – Construction

- 77 no. residential units comprised of apartment units.

Ancillary works – which will consist of:

- Sustainable Drainage System (SuDS)
- Surface water and foul sewer network and associated attenuation

- Car and bicycle parking spaces
- Electrical and telecom services
- Mains water supply connections
- Wastewater drainage connections
- Pedestrian access routes
- Asphalt installation and road markings
- Landscaping of public open areas

2.5 Pre-Construction Activities

The main contractor will conduct enabling works for establishing site setup, appropriate signing, hoarding, security fencing and welfare facilities.

2.5.1 Site Set-Up and Hoarding

Perimeter hoarding will be provided around the site to provide a barrier against unauthorized access from the public areas. Controlled access points to the site, in the form of gates or doors, will be kept locked at any time that these areas are not monitored (e.g., outside working hours).

The hoarding will be well-maintained and may be painted. Any hoardings may contain graphics portraying project information. The site hoarding may be branded using the appointed Contractors logos, etc. Some marketing images or information boards may also be placed on the hoarding. Access to site will be controlled and monitored outside of site working hours. All personnel working on site must have a valid Safe Pass card and the relevant CSCS cards.

A suitably secure site compound will be set up, wherever the restricted confines of the site will allow and will facilitate the efficient delivery of materials and personnel to the site. This compound is to include material storage, site office and meeting room, and staff welfare facilities.

Generators or connection to electricity and water services will be set up to facilitate site works.

2.6 Construction Sequence of New Structures

The exact construction specifications of the proposed residential units and associated infrastructure are yet to be finalised. This section of the RWMP will be updated once a main contractor is appointed and a definitive construction program is established, in advance of the commencement of the project.

A summary of operations for the construction phase is listed in **Table 2.3** below.

Table 2.3: Summary of Operations Expected	
External envelope will or may require the following operations:	Internal work will or may require the following operations:
• Blockwork/Brickwork • Sand & cement rendering • Windows & doors • Roof Coverings – Blue/Green roof • Flashing, Aprons and Tray – Leadwork/Powder coated metal	• Electrical installation • Mechanical installation • Fireproofing • Partitions and ceilings – use of gypsum based products • Painting • Plastering • Stairs • Joinery • Tiling • Air Tightness sealing and testing • Metal Work • Sanitary-ware installation • Vanity units • Reinforcement works • Insulation • Plumbing • Concreting/ floor slab • Carpet installation • Concrete Roofing
Above ground external operations:	
• Landscaping • Installation of manholes • Lamp posts • Tarmac/ surfacing • Signs • Car parking and mobility compliant car parking	
Below ground operations:	
• Foul sewer, surface water, rainwater, and potable water networks • Detention Basin • Electrical ducting	

2.7 Asbestos-Containing Materials

The proposed development is located on a greenfield site and no demolition works are required prior to the commencement of construction. Risk of exposure to ACMs is considered low for these reasons.

2.8 Design Changes

This section shall be updated during the construction phase to reflect any changes in design or practice that have an impact on resource and waste management.

3 Roles and Responsibilities

The EPA Best Practice Guidelines for RWMP outline typical responsibilities involved in projects such as the one proposed at Wellmount Road. This section outlines the responsibilities for stakeholders to ensure an effective RWMP is implement over the course of development.

3.1 Contractor (TBC)

The Main Contractor, once employed, will undertake construction operations and is responsible for the following:

- Implementing and reviewing the RWMP throughout the construction phase.
- Designating a suitably qualified Resource and Waste Manager (RWM) who will be responsible for implementing the RWMP.
- Identifying and coordinating with waste removal contractors responsible for removing
- resources and waste off site. Hauliers should be in possession of valid Waste Collection Permits.
- Identifying suitably licensed waste facilities capable of receiving waste from the proposed site.
- Compile full records of resources and wastes accrued over the course of development.

3.2 Communication

Information regarding resource and waste management will be communicated by the Main Contractor and RWM who will ensure that staff and subcontractors are operating with best practice waste management procedures in place.

4 Design Approach

4.1 Reuse and Recycling

The national waste policy of Ireland, titled 'A Waste Action Plan for A Circular Economy – Ireland's National Waste Policy 2020 – 2025,' aims to transition the country towards a circular economy model. This model emphasizes reducing waste disposal by promoting circularity and sustainability. The policy focuses on enhancing material value through improved design, durability, repair, and recycling practices. By prolonging the circulation of resources within the local economy, the policy anticipates both environmental and economic benefits. The implementation of the policy involves several strategies, including reusing excavated soils and stones on-site, purchasing construction materials as needed to prevent oversupply and potential damage, segregating construction waste streams for maximum reusability, minimizing waste volume through design and adopting take-back schemes for items like pallets and packaging.

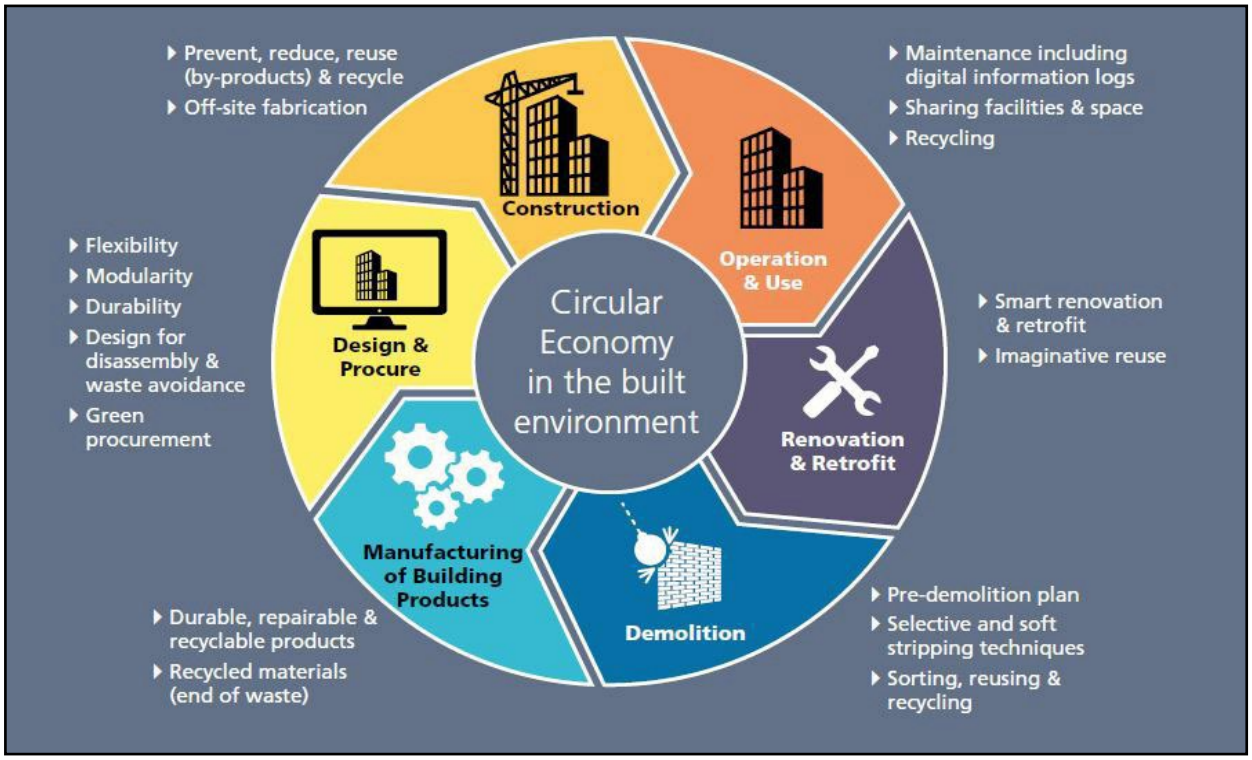

Figure 4.1: Circular Economic Model (Source: EPA Best Practice Guidelines)

4.2 Green Procurement

- The sourcing of goods and services should be conducted on an "as-needed" basis where possible which can reduce the need for packaging.
- Methods of waste prevention and minimisation shall be discussed with staff and subcontractors at an early stage of development, prior to procurement. Design solutions are to be agreed with an emphasis on sustainable practices.
- Project material specifications should consider allowing the use of reclaimed materials.
- Ordering procedures should be conducted with waste minimisation in mind, i.e., avoid over-ordering, identify take-back schemes for material surpluses and offcuts.

4.3 Off-Site Construction

The use of precast materials (walls, concrete slabs, stairs, etc.) should be implemented where possible. The use of precast materials can have the following benefits:

- Material quality and accuracy can be superior as factory fabrication is standardised and negative impacts from weather and site conditions are negated.
- Over-ordering can be avoided as materials can be ordered from the factory and do not need to be produced on site.
- The use of precast materials can lead to quicker construction times as floor levels can be established in short periods of time and facades can be closed in quickly, meaning internal works can be conducted earlier.
- Precast materials reduce the production of waste.
- Quality of precast materials is often better as fabrication occurs in a sheltered environment mitigating any potential environmental effects that may occur onsite.
- Environmental contamination is reduced, particularly when precast concrete is used, as the chance of spillages is eliminated.

4.4 Materials Optimisation

- The optimisation of material use during construction will be established during the design phase. A rigorous project design will ensure that reworking and waste generation is reduced during construction.
- Effective communication between the Contractor, staff, and subcontractors will ensure that works are carried out efficiently and the use of material is optimised.
- The design of the proposed residential units is somewhat standardised, meaning the need for virgin resources is minimise.

4.5 Flexibility and Deconstruction

As the proposed development incorporates residential units, plans for deconstruction are not envisaged for the foreseeable future. As such, the flexibility of the proposed development is seen as sustainable as it will service long-to-medium term residents for years to come.

5 Key Materials and Quantities

Typical waste materials anticipated to be generated throughout the course of the project are classified under Section 17 – Construction and Demolition Wastes – of the List of Waste (LoW) as detailed in **Table 5.1** below.

Table 5.1: Description of Waste

Description of Waste	EWC Code
Concrete, Bricks, Tiles and Ceramics	17 01
Concrete	17 01 01
Bricks	17 01 02
Tiles and Ceramics	17 01 03
Mixture of concrete, bricks tiles & ceramics	17 01 07
Wood, Glass and Plastic	17 02
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and products	17 03
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02
Metals (including their alloys)	17 04
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and Steel	17 04 05
Tin	17 04 06
Mixed Metals	17 04 07
Cables containing oil, coal tar and other hazardous substances	17 04 10
Cables other than those mentioned in 17 04 10	17 04 11
Gypsum based construction Materials	17 08
Other Construction and Demolition Materials	17 09
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04
Sewage Screenings	19 08 01
Paper and Cardboard	20 01 01
Wood containing hazardous substances	20 01 37
Wood other than that mentioned in 20 01 37	20.01 38
Soil and Stones	17 05 04
Mixed Municipal Waste	20 03 01
Paint, inks, adhesives and resins containing hazardous substances	20 01 27
WEEE	16 02
Batteries	16 06
Liquid Fuels	13 07

5.1 Waste Register

A Template has been developed for summarising the names and permit numbers of the waste collectors and waste facilities which will be utilised for off-site disposal of the various waste-streams arising from the development. This document will also outline the projected weight of any waste that has to be transported off-site as well as any wight destined for reuse or recycling. This template is included in **Appendix A**.

5.2 Waste Removal Contractors

Appendix B includes a list of licenced waste facilities in the Dublin region which are capable of hauling the primary C&D waste streams associated with the development. Coordinating with the licenced waste facilities will be the responsibility of the Main Contractor. Waste facilities shall confirm the acceptance of waste prior to the removal from site, ensuring that the facility is suitable and that it has sufficient capacity. This is not an exhaustive list, and liaison with other suitable waste facilities will be conducted by the Contractor as the need arises.

5.3 Estimated Construction Waste Generated

Table 5.2 below includes a breakdown of the estimated percentages of construction and demolition waste expected to be generated from a typical site such as this. Additionally, **Appendix C** outlines a list of estimated quantities of materials expected during development of apartment units such as the site at Wellmount Road.

It should be noted final quantities of materials and construction methodologies have yet to be confirmed so it is therefore difficult to estimate the exact materials and quantities generated with a high degree of accuracy. These materials and quantities will most likely be subject to change during the construction process.

Table 5.2: Estimated Waste Generated (Based on Typical Irish Construction Site)

Waste Type	%
Soil & Stones	83
Concrete, Bricks, Tiles, Plastics, etc	13
Asphalt, Tar/Tar products	1
Metals	1
Other	2
Total Waste	**100**

Taking the above estimation into account, **Table 5.3** below outlines target values for waste management at the site. The tonnage values for each waste type should be inputted by the contractor prior to starting on site once quantities are accurately measured.

Table 5.3: Estimated construction waste targets for the development							
Waste Types	**Waste**	**Reuse/Recover**		**Recycle**		**Disposal**	
	m^3	**%**	**m^3**	**%**	**m^3**	**%**	**m^3**
Soil & Stones	804	20	160.8	0	0	80	643.2
Concrete, Bricks, Tiles, Plastics, etc	126	0	0	80	100.8	20	25.2
Asphalt, Tar/Tar Products	10	0	0	20	2.0	80	8.0
Metals	10	5	0.5	90	9.0	5	0.5
Other	20	10	2.0	40	8.0	50	10.0
Total	970	-	163.3	-	119.8	-	686.9

5.4 Onsite Waste Reuse and Recycling Management

The national target for preparing for reuse, recovery, and recycling of C&D waste (excluding soil and stone) is 70%, and the waste industry in Ireland as of 2019 was achieving 84%. The proposed development should aim to exceed the national target of 70% regarding the reuse, recovery, and recycling of C&D waste (excluding soil and stone). The main contractor will be made aware of this target and will liaise with suitably permitted / licensed waste contractors that are able to commit to achieving, or exceeding, this target.

6 Site Management

6.1 Resource and Waste Manager

The Construction Project Manager will take on the role of RWM and shall take primary responsibility for the minimisation and prevention of waste generation. The following initiatives should be considered to assist in this task:

- Materials to be ordered on an “as needed” basis to prevent oversupply and material build up on site.
- Appropriate storage facilities should be provided to ensure materials are correctly handled and stored thus reducing damage to materials.
- Material ordering shall coincide with the program of works to reduce the need to store materials on site. However, given current industry issues with regards to labour and material shortages there may be incidents of materials needing to be stored on site to ensure continuate of materials and to streamline labour productivity.
- Sub-contractors will be responsible for the management of their wastes.
- Assess existing materials that will be recycled for use on site and estimate quantities, e.g., the use of roof tile and/or brick offcuts as a crushed rock sub-base under driveways.
- Specify materials with a lower environmental impact and specify new materials that contain a recommended percentage of recycled content, provided they meet functional, performance and regulatory requirements.
- Utilise the existing topography to minimise excavation and reuse any excavated materials on site where possible, e.g., rock for drainage layers, landscape fill, planting features or levelling spoil.
- Standardise design details and specified materials and reduce the number of materials specified where appropriate to facilitate process repeatability and minimise the number of variables and bespoke elements to enable manufacturing and installation efficiencies.
- Deliver training in relation to resource management, i.e., inductions and toolbox talks.
- Update the RWMP as required to reflect new resource streams, work practices, suppliers or resource management options.

Waste Auditing should be carried out at regular intervals by the Project Manager or Resident Engineer. This process will involve monitoring waste management practices and highlighting and correcting any instances of non-compliance.

6.2 Site Induction and Toolbox Talks

The Contractor will communicate with relevant stakeholders throughout the construction phase, as required. This may include:

- Communicating waste statistics to the Client, management team, and subcontractors to monitor targets and objectives.
- Engaging with the local authority on any site inspection or audits required on site. Reports of any corrective actions, if necessary, will be provided to the local authority.
- Engagement with other stakeholders (public, EPA, etc.) where appropriate on matters relating to resource and waste management.
- A post-project RWMP will be compiled at project completion summarising the resource management procedures adopted, reuse and recovery figures and final destination of resources taken off site.

6.3 Identifying Waste Collectors and Licensed Facilities

- As mentioned previously, the Main contractor is responsible for coordinating waste removal with suitable waste collectors and licensed waste facilities.
- Waste facilities must issue a letter of acceptance to the contractor indicating acceptance and sufficient capacity for waste arising.
- A list of authorised waste collectors can be found on the following website: https://www.nwcpo.ie/permitsearch.aspx
- Waste facility permits and Certificate of Registrations can be found on the following website: https://facilityregister.nwcpo.ie

6.4 Resource-Efficient Supply Chains

The Contractor will ensure that supply chain is organised in line with resource and waste best management practices. This will involve:

- Ensuring that contractors have sufficient resources to ensure supply chain competence (i.e., environmental policies and procedures, supervision, access to advice).
- Early collaboration with supply chain to avoid waste generation i.e., no over-ordering, implementing take-back schemes for pallets, packaging, etc.
- Implementing a 'continuous improvement' strategy on site by maintaining good communication with contractors in relation resource and waste management.

6.5 Record Keeping

It is the responsibility of the Construction Project Manager or his/ her delegate that a written record of all quantities and natures of wastes, including reused/ recycled, during the project are maintained in a waste file at the Project office. Details to be included are as follows:

- Contractors and subcontractors on Site every day.
- All visitors (including Health and Safety procedures) and any associated reports.
- Invoices showing standard of material installed adheres to specifications.
- Date of waste removal.
- List of Wastes and associated codes.
- Waste haulage details (name, address, permit no., vehicle registration).
- Waste Treatment contractor certificate of registration.
- Confirmation of waste removal.
- Final destination of waste.
- Safety statement and safety file.
- Site programme.

Much of the information outlined above will be included in the Waste Register **(Appendix A)** throughout development.

6.6 Communication with Local Authority/Stakeholders

The Contractor will communicate with relevant stakeholders throughout the construction phase, as required. This may include:

- Communicating waste statistics to the Client, management team, and subcontractors to monitor targets and objectives.
- Engaging with the local authority on any site inspection or audits required on site. Reports of any corrective actions, if necessary, will be provided to the local authority.
- Engagement with other stakeholders (public, EPA, etc.) where appropriate on matters relating to resource and waste management.
- A post-project RWMP will be compiled at project completion summarising the resource management procedures adopted, reuse and recovery figures and final destination of resources taken off site.

6.7 Inspections and Audits

- Daily checks shall be carried out by Contractor's management team to ensure compliance with the RWMP. This will involve checking waste storage areas, waste segregation measures, signage, subcontractor compliance, and review of waste documentation.
- Movement of waste transport vehicles will be monitored to ensure transfer note is signed and waste carrier is authorised.
- Formal EHS audits will be carried out by the Contractor on a regular basis.
- Findings from inspections and audits will be summarised in a monthly environmental report.

7 Site Infrastructure

7.1 Signage

It is the responsibility of the Contractor to ensure staff are aware of segregation by installing clear signage identifying waste collection areas and bins. Verbal instruction via training and toolbox talks will inform staff of proper housekeeping and waste management practices.

7.2 Resource Storage

A waste storage area will be established in the designated site compound (as detailed in the CEMP). The storage will provide adequate space for storage and handling of waste, with sign-posted bins/skips indicating where waste should be disposed of.

Non-Hazardous Waste

Dedicated bins/skips will be established, and potentially colour-coded, to provide storage of typical waste arising from construction including but not limited to:

- Mixed/General waste
- Bulky waste
- Metal
- Dry mixed waste
- Wood

Excavated soil material will be reused where possible. In the event of soil removal off site, the material shall be classified as inert, non-hazardous, or hazardous in accordance with the EPA's Waste Classification Guidance. It will then be transferred by an appropriately permitted waste collector and brought to a licensed waste facility for treatment or disposal. Burning or burial of waste will not be permitted on site.

Hazardous Waste

Hazardous materials may include:

- Fuel
- Oil
- WEEE
- Construction chemicals (cement, sealant, paints, etc.)
- Sewage
- Contaminated soil (resulting from fuel or oil spills)

Chemicals will be stored in bunded areas well away from surface water sources or gullies/surface water drainage leading off site. Hazardous waste will be removed from site by a permitted waste collector.

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Appendix A: Waste Register

Resource & Waste Management Register

Waste Details		Resource & Waste Management								Waste Transfer Details			
										Waste Collector		Waste Facility	
Description of Waste	LoW Code	Volume Generated (Tonnes)	Prevention (non-waste) (Tonnes)	Reused (non waste) (Tonnes)	Recycled (waste) (Tonnes)	Recovered (Waste) (Tonnes)	Disposed (Waste) (Tonnes)	Unit Cost Rate (€ /Tonne)	Total Cost (€)	Name	NWCP	Name	WFP/ WL No.
Concrete, Bricks, Tiles and Ceramics	**17 01**												
Concrete	17 01 01												
Bricks	17 01 02												
Tiles and Ceramics	17 01 03												
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	17 01 06*												
Mixture of concrete, bricks tiles & ceramics	17 01 07												
Wood, Glass, and Plastic	**17 02**												
Wood	17 02 01												
Glass	17 02 02												
Plastic	17 02 03												
Glass, plastic and wood containing or contaminated with hazardous substances	17 02 04*												
Bituminous Mixtures, Coal Tar and Products	**17 03**												
Bituminous mixtures containing coal tar	17 03 01												
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02												
Metals (including their Alloys)	**17 04**												
Copper, Bronze, Brass	17 04 01												
Aluminium	17 04 02												
Lead	17 04 03												
Zinc	17 04 04												
Iron and Steel	17 04 05												
Tin	17 04 06												
Mixed Metals	17 04 07												
Metal waste contaminated with hazardous substances	17 04 09*												
Cables	17 04 11												
Soil (including excavated soil from contaminated sites, stones and dredging spoil)	**17 05**												
Soil and Stones	17 05 04												
Soil and Stones containing hazardous substances	17 05 03*												
Insulation and Asbestos-Containing Construction Materials	**17 06**												
Insulation Material	17 06 04												
Construction Materials Containing Asbestos	17 06 05*												
Gypsum based Construction Materials	**17 08**												
Gypsum	17 08 02												
Other Construction and Demolition Materials	**17 09**												
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04												
Wastes of Liquid Fuels	**13 07**												
Fuel Oil & Diesel	13 07 01*												
Petrol	13 07 02*												
Other Fuels	13 07 03*												
Wastes from the Manufacture, Formulation. Supply and Use of Coatings	**08 01**												
Waste Paint & Varinish containing Organic Solvents or other Hazardous Materials	08 01 11*												
Waste Paint & Varinish other than those mentioned in 18 01 11	08 01 12												
Waste from waste water treatment plants	**19 08**												
Sewage Screenings	19 08 01												
Municipal Wastes	**20 01**												
Paper and Cardboard	20 01 01												
Wood other than that mentioned in 20 01 37	20.01 38												
Paint, inks, adhesives, and resins containing hazardous substances	20 01 27												
Electrical and electronic components	20 01 35-36												
Batteries and accumulators	20 01 33-34												
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13/19/27-30												
Other Municipal Wastes	**20 03**												
Mixed Municipal Waste	20 03 01												

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Appendix B: Licensed Waste Facilities

Licensed Waste Facilities				
Waste Type	**Waste Code**	**Licensed Waste Facility/Collector**	**Facility Code**	**Facility Address**
Soil & Stones	17 05 04	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Hegarty Demolition Ltd - Mobile Plant	WFP-DC-17-0038-02	Harcourt Square, Harcourt Street/ Charlotte way, Dublin2
Concrete	17 01 01	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Hegarty Demolition Ltd - Mobile Plant	WFP-DC-17-0038-02	Harcourt Square, Harcourt Street/ Charlotte way, Dublin2
Bricks	17 01 02	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Hegarty Demolition Ltd - Mobile Plant	WFP-DC-17-0038-02	Harcourt Square, Harcourt Street/ Charlotte way, Dublin2
Tiles and Ceramics	17 01 03	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Hegarty Demolition Ltd - Mobile Plant	WFP-DC-17-0038-02	Harcourt Square, Harcourt Street/ Charlotte way, Dublin2
Wood	17 02 01	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Everyday Waste & Skiphire	WFP-DC-10-0020-03	84E Pigeon House Road, Ringsend, Dublin 4, D04 R7N0
Glass	17 02 02	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Everyday Waste & Skiphire	WFP-DC-10-0020-03	84E Pigeon House Road, Ringsend, Dublin 4, D04 R7N0
Plastic	17 02 03	Everyday Hire Limited	WFP-DC-20-0051-01	Finglas Business Park, Tolka Valley Road, Finglas, Dublin 11
		Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Everyday Waste & Skiphire	WFP-DC-10-0020-03	84E Pigeon House Road, Ringsend, Dublin 4, D04 R7N0
Bituminous mixtures	17 03 02	GMC Utilities Group Ltd	COR-FG-21-0001-01	GMC House Millennium Business Park, Ballycoolin, Dublin 11
		Breffni Building & Civil Engineering Ltd	COR-FG-21-0003-01	Ballyhack Farm, Ballyhack, Kilsallaghan, Co.Dublin
		~	~	~
Mixed Metals	17 04 07	Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Everyday Waste & Skiphire	WFP-DC-10-0020-03	84E Pigeon House Road, Ringsend, Dublin 4, D04 R7N0
		G & T McGoverns Ltd	WFP-DC-08-0002-03	9 - 12 Prices Lane Rear 31, Ranelagh Road, Ranelagh, Dublin 6
Mixed Construction and Demolition Wastes	17 09 04	Integrated Materials DC Ltd	WFP-DC-22-0056-01	Kylemore Business Park 2, Kylemore Way, Inchicore, Dublin 8
		Everyday Waste & Skiphire	WFP-DC-10-0020-03	84E Pigeon House Road, Ringsend, Dublin 4, D04 R7N0
		McManus Crushing Ltd - Mobile Plant	WFP-DC-19-0049-01	Castleforbes Business Park, Sheriff Street Upper, Dublin 1

Appendix C: Estimated Quantities

Apartment Block			
Wellmount Road Finglas		Unit	
Substructure	Foundation Excavations and Disposal	m^3	804
	Concrete in Foundations	m^3	241
	Blockwork in Foundations (215mm)	m^2	254
	Blockwork in Foundations (440mm)	m^2	209
	200mm Concrete Floor Slab	m^3	335
External Walls	100mm block outer leaf, 150mm cavity, 100mmblock inner leaf	m^2	5620
Internal Walls	215mm block	m^2	4777
	Lift and Stair Shaft Walls	m^2	749
Floor Slab	200mm Precast Hollowcore Unit with Screed over	m^2	7417
	Transfer Slab 600mm Concrete	m^2	0
Roof	200mm Precast Hollowcore Unit with Screed over to falls	m^2	1655
	150mm RC concrete	m^2	0

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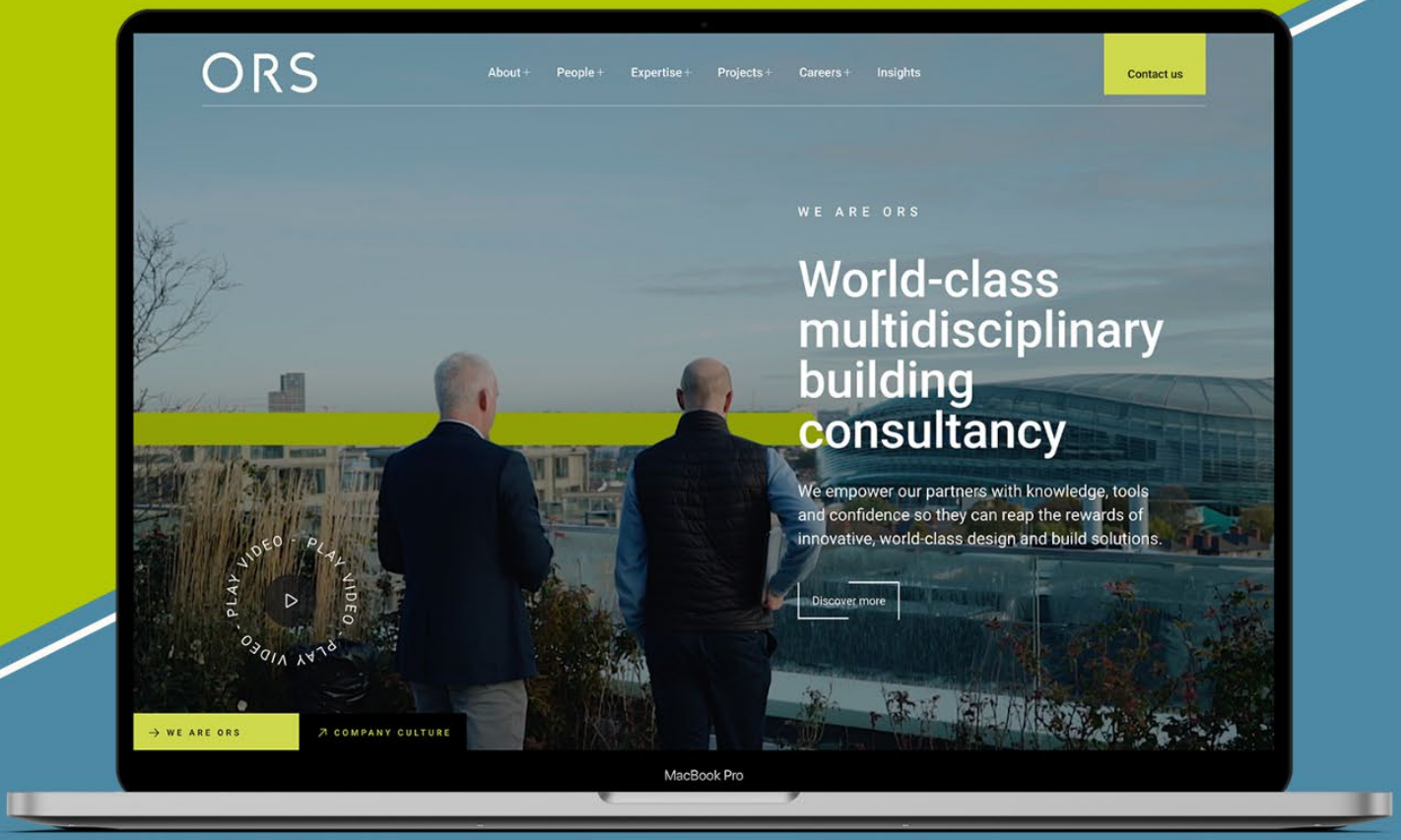

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