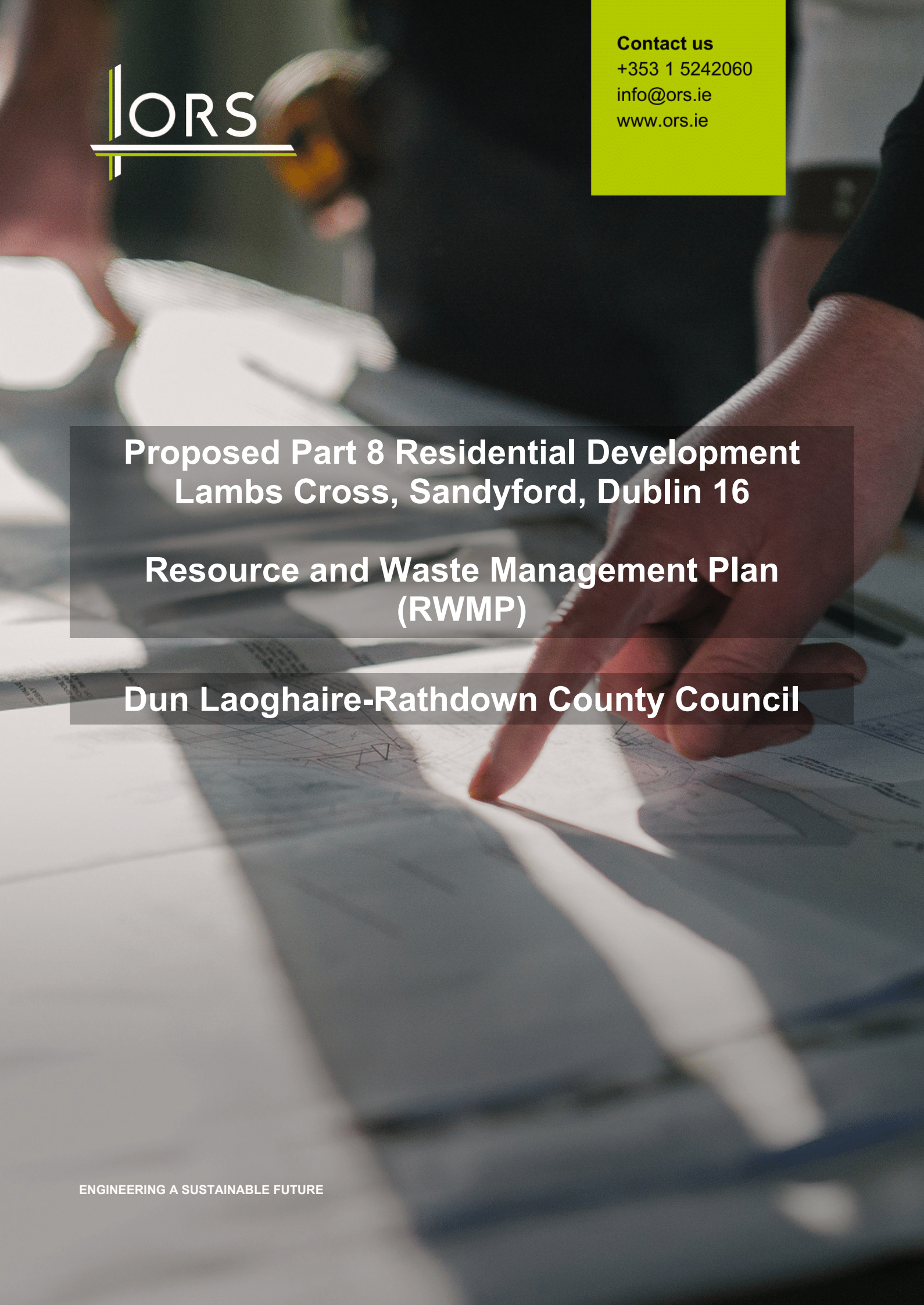

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Proposed Part 8 Residential Development Lambs Cross, Sandyford, Dublin 16

Resource and Waste Management Plan (RWMP)

Dun Laoghaire-Rathdown County Council

ENGINEERING A SUSTAINABLE FUTURE

Lambs Cross, Sandyford, Dublin 16
Resource and Waste Management Plan (RWMP)

Document Control Sheet

Client:	**Malone O'Regan**
Document No:	SHB5-LDR-RP-ORS-CS-P3-0002- Resource Waste Management Plan

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	**Final**	**SB**	**LM**	**JB**	**15/07/2024**
P02	**Final**	**SB**	**LM**	**JB**	**22/10/2024**

ORS

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1 Introduction

This report is prepared in support of the planning application for National Development Finance Agency and Dun Laoghaire-Rathdown County Council for a residential development on a site located in the townland of Balally, at Lamb's Cross, Dublin 18 situated at the junction of Sandyford Road and Hillcrest Road.

The proposed development includes:

i. 37 no. apartment units in a 3 - 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
ii. 1 no. community facility of 171sqm;
iii. Energy Centre at first floor level and external plant area set back at third floor level;
iv. Undercroft area at lower ground level comprising (a) 2 no. ESB substations (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; and (e) supporting mechanical, electrical and water infrastructure.
v. Landscaping works including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road
vi. All associated site development works including (a) vehicular access off Hillcrest Road; (b) public lighting; (c) varied site boundary treatment comprising walls and fencing; and (e) temporary construction signage.

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 and guidance documentation:

- 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 Dun Laoghaire Rathdown County Development Management Standard

The development management standards for Dun Laoghaire-Rathdown are outlined in the Dun Laoghaire Rathdown County Development Plan (CDP) 2022-2028. Of relevance to this report is **Chapter 6 – Environmental Infrastructure and Flood Risk** which outlines policies in line with Dun Laoghaire Rathdown County Council waste management objectives. The policies relevant to the proposed development include:

- **EI12: (i)** To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities. **(ii)** To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.
- **EI13:** It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

Additionally, **Section 12.1 – Development Management** outlines the overall approach of Dun

Laoghaire Rathdown County Council with regards to new developments. It states:

"In all development proposals, particularly high-density residential development, it is the aim of the Planning Authority to promote a high level of amenity and quality design, and to protect and complement existing amenities and character, in the interests of sustainable and orderly development."

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 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 development will be located just off Hillcrest Road and Sandyford Road at Lambs Cross, Dublin 16. The site currently serves as a contractor's compound for road works in the vicinity of the site. The proposed development is located within land zoned as 'Residential' by Dun Laoghaire-Rathdown County Council.

The site is bounded to the north by Lamb's Brook housing estate, to the east and south by Hillcrest Road and a number of detached housing units that lie either side, and to the west by Sandyford Road beyond which lies open greenfield land.

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 site is currently used as a temporary construction compound. The majority of the Site consists of compacted sediment, other than a treeline and patch of willow scrub along the northern boundary. The site demonstrates a relatively uniform topography. A high is noted along the southwestern boundary at 127m AOD with a slight gradient eastward to a low of 125m AOD along the eastern site boundary.

2.2.2 Site Access

Access to the site is proposed via Hillcrest Road to the east of the site. Using the M50 as the nearest major road, construction traffic will approach the site entrance from the east utilising Hillcrest Road which comprises part of the R113 road that connects to the M50 via a roundabout *ca*. 1.3km northwest of the site.

2.2.3 Historical Maps

The GeoHive Historic map viewer was consulted to assess previous land uses or developments within or in the vicinity of the proposed site boundaries. According to the First Edition 6" maps developed between 1829-1841, the location of the proposed site previously consisted of open land most likely used for agriculture. The existing crossroads can be observed in these maps along with the existing course of the Carrickmines Stream which flows within the eastern boundary of the site. St. Mary's National Scholl can also be seen to the southwest within these maps.

Lamb's Brook Estate to the north can be observed in black and white aerial survey maps generated in 1995, as well as the neighbouring detached housing units to the east and south of the site. Aerial survey maps generated from 2001 feature a landscape that is somewhat similar to the environs existing today. Activity within the site boundary can be observed in 2011-2013 aerial survey maps where ground clearance seems to have occurred. It is noted that the existing premises is used as a contractor's compound for road works in the vicinity, as such the current ground composition can be considered made ground.

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 proposed site is located in the Avoca-Vartry WFD catchment (Hydrometric Area 10) and Dargle_SC_010 sub catchment. The closest waterbody to the site consists of the Carrickmines stream which runs from south to north within the northeast corner of the site.

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 to the are summarised 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
Carrickmines Stream	Carrickmines_Stream_010	IE_EA_10C040350	Within Site Boundary	East
Ballyogan Stream	Carrickmines_Stream_010	IE_EA_10C040350	520m	South
Slang River	Dodder_050	IE_EA_09D010900	1km	West

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 the Carrickmines Stream is considered to be 'Good' and the risk level of the stream is currently 'Not at risk'. The source of the Carrickmines stream is at Ticknock Woods located upland south of the site. The stream runs from southwest to northeast through Sandyford and follows course in an easterly direction to reach Shanganagh stream which then outflows into Shanganagh Bay. The stream runs a total length 21.7 km.

There are no significant lake waterbodies within a 2.5km radius of the site.

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'. The use of the proposed site as a contractor's compound means that the site soil composition could also be considered made ground.

The underlying bedrock of the proposed site is classed as Type 3 muscovite porphyritic granite with muscovite phenocrysts.

2.3.2 Groundwater Vulnerability

According to the Geological Survey of Ireland map viewer, the site is underlain by a Poor Aquifer consisting of the aforementioned bedrock which is generally unproductive except for local zones. The groundwater vulnerability in the area of the proposed site is classed as 'Extreme'. The subsoil permeability of the site has not been mapped, according to the GSI Map Viewer, as such it is difficult to assess the ease at which potential contaminants could reach the groundwater bodies. Considering the 'Extreme' vulnerability of the site area, due caution should be applied to mitigate uncontrolled emissions during the development stage.

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 at Lamb's Cross immediately adjacent to the site to the southwest corner. A report dated in 2001 does not specifically name Lamb's Cross as an area of flooding, but mainly refers to flooding in the Carrickmines and Shanganagh Catchments in Dun Laoghaire Rathdown. **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-2200	Ballyogan Stream Lambs Cross	2001 (Recurring)	River	10m SW
ID-2211	School House Lane Sandyford	November 1982	Runoff	170m SW
ID-2151	Sandyford Church	January 1980	River	200m N

The proposed site itself is located adjacent to the Carrickmines Stream which flows within the northeast boundary of the site. While there are no CFRAM medium probability flood extents modelled within the site boundary, modelled flood extents can be observed adjacent to the site opposite Hillcrest Road along the stream.

The site is not located within benefitting land associated with the Arterial Drainage and District Drainage Schemes. The site is located within CFRAM Drawing No. E09CAR_EXFCD_F2_02 where 10% and 1% Fluvial AEP Event modelled flood extents can be observed to the eastern corner of the site.

2.3.4 Archaeology

An Archaeological Impact Assessment report was produced by *John Purcell Archaeological Consultancy* in relation to the proposed development which assessed the proximity of the site to nearby sensitive archaeological receptors. In summary, the proposed development site does not include any recorded archaeological monuments and no sites are located within the immediate environs of the site. The closest recorded monument to the site is over 600m to the north (DU022-064). The site or its immediate environs do not include any protected structures.

The site has been fully excavated in the recent past and the potential for unrecorded sub surface remains at the site is low. As a result no further input is required for cultural heritage.

According to the Historic Environment map viewer the nearest archaeological/historical sites are summarised in **Table 2.3** below.

Table 2.3: Sites of Architectural Importance Within the Vicinity of the Development

Site Code	Site Name	Distance from Site
60220039	Sandyford Carnegie Free Library	50m SW
60220038	Saint Mary's	95m SW

Overall, the archaeological sensitivity of the area in immediate proximity to the proposed site is considered to be low as there are few archaeologically significant sites within a 1km radius of the site.

2.3.5 Ecological Receptors

According to the National Parks & Wildlife Service ap viewer, the proposed site is located *ca.* 5.3km south-west of the South Dublin Bay SAC and South Dubln Bay and River Tolka Estuary SPA. The site is located *ca.* 220m south-east of Fitzsimon's Wood pNHA.

A Screening for Appropriate Assessment (AA) has been carried out by *NM Ecology Ltd.* on behalf of Dun Laoghaire-Rathdown County Council and has determined that a Natura Impact Statement (NIS) is not required in respect of this proposed development.

An Environmental Impact Assessment (EIA) screening has been carried out by *NM Ecology Ltd*. on behalf of Dun Laoghaire-Rathdown County Council and has determined that there is no

likelihood of significant impacts on the environment arising from the proposed development once best practice environmental management systems and the proposed mitigation measures are implemented.

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. Best practice measures will nevertheless be outlined in **Section 4** of the accompanying CEMP which will ensure as little impact as possible to the surrounding environment.

Subject to the successful implementation of these measures, it can be concluded that the proposed development will not cause any significant negative impacts on designated sites, habitats, legally protected species, or any other features of ecological importance.

2.4 Phasing of the Development

A construction program of 12 - 18 months serves as an estimated timeline for the project. A layout plan of the development is detailed in **Figure 3.1** below.

The proposed development includes the following sequence of works:

- **i.** 37 no. apartment units in a 3 - 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- **ii.** 1 no. community facility of 171sqm;
- **iii.** Energy Centre at first floor level and external plant area set back at third floor level;
- **iv.** Undercroft area at lower ground level comprising (a) 2 no. ESB substations (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; and (e) supporting mechanical, electrical and water infrastructure.
- **v.** Landscaping works including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road
- **vi.** All associated site development works including (a) vehicular access off Hillcrest Road; (b) public lighting; (c) varied site boundary treatment comprising walls and fencing; and (e) temporary construction signage.

Vehicular access to the development is proposed along Hillcrest Road to the southeast corner of the proposed site. **Figure 2.3** shows the proposed site plan.

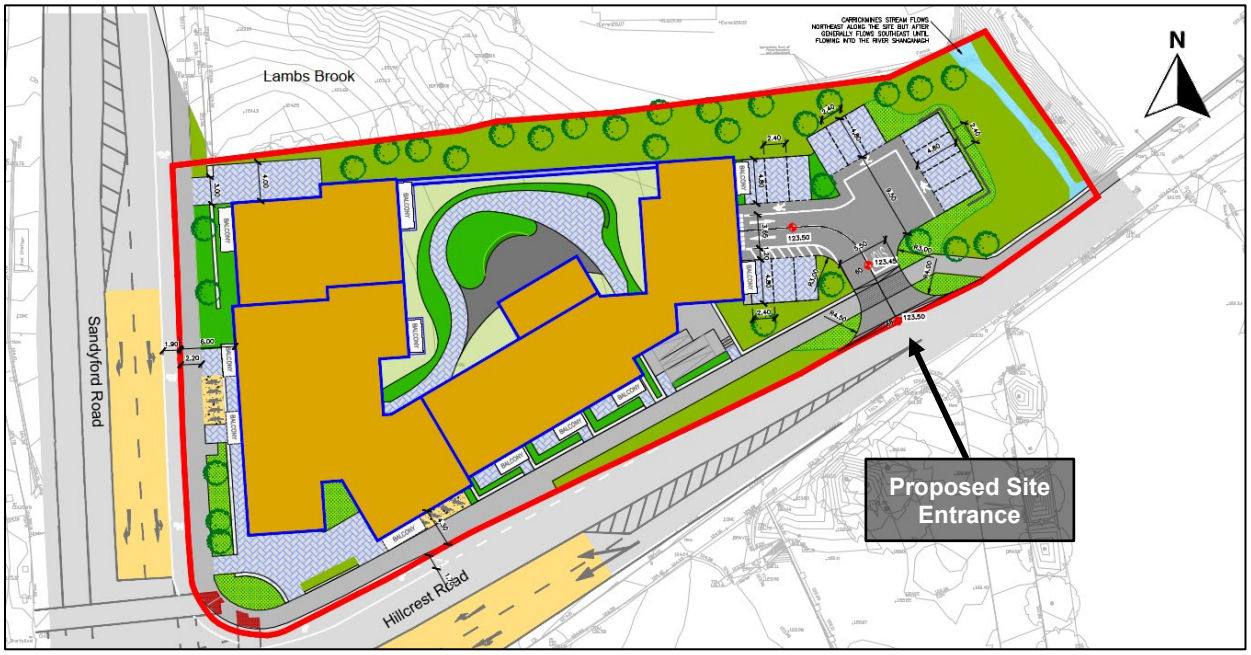

Figure 2.3: Site Plan (Cropped) (A refinement of this site layout may be circulated by the architect)

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 including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road.

Phase 1 – Construction

- 37 no. apartment units in a 3 - 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- 1 no. community facility of 171sqm;
- Energy Centre at first floor level and external plant area at third floor level;
- Undercroft area at lower ground level

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
- Bin storage
- Asphalt installation and road markings

- Vehicular access off Hillcrest Road
- Public lighting
- Varied site boundary treatment comprising walls and fencing
- Temporary construction signage

2.5 Pre-Construction Activities

The main contractor will conduct enabling works for soil removal, establish 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 may 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 2.4** overleaf.

Table 2.4: 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 – Green/Blue 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 • Timber floors • Green/Blue 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 • Attenuation pond • Electrical ducting	

2.7 Asbestos-Containing Materials

The existing site consists of a contractor's compound for roadworks in the vicinity, although it is not expected that this site will give rise to ACMs during development.

2.8 Other Hazardous Materials

Existing materials resulting from the contractor's compound should be assessed prior to removal to ensure hazardous materials are not present. If encountered, hazardous wastes will be classified as such and removed to a suitably licensed waste facility.

2.9 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 Lamb's Cross. 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.

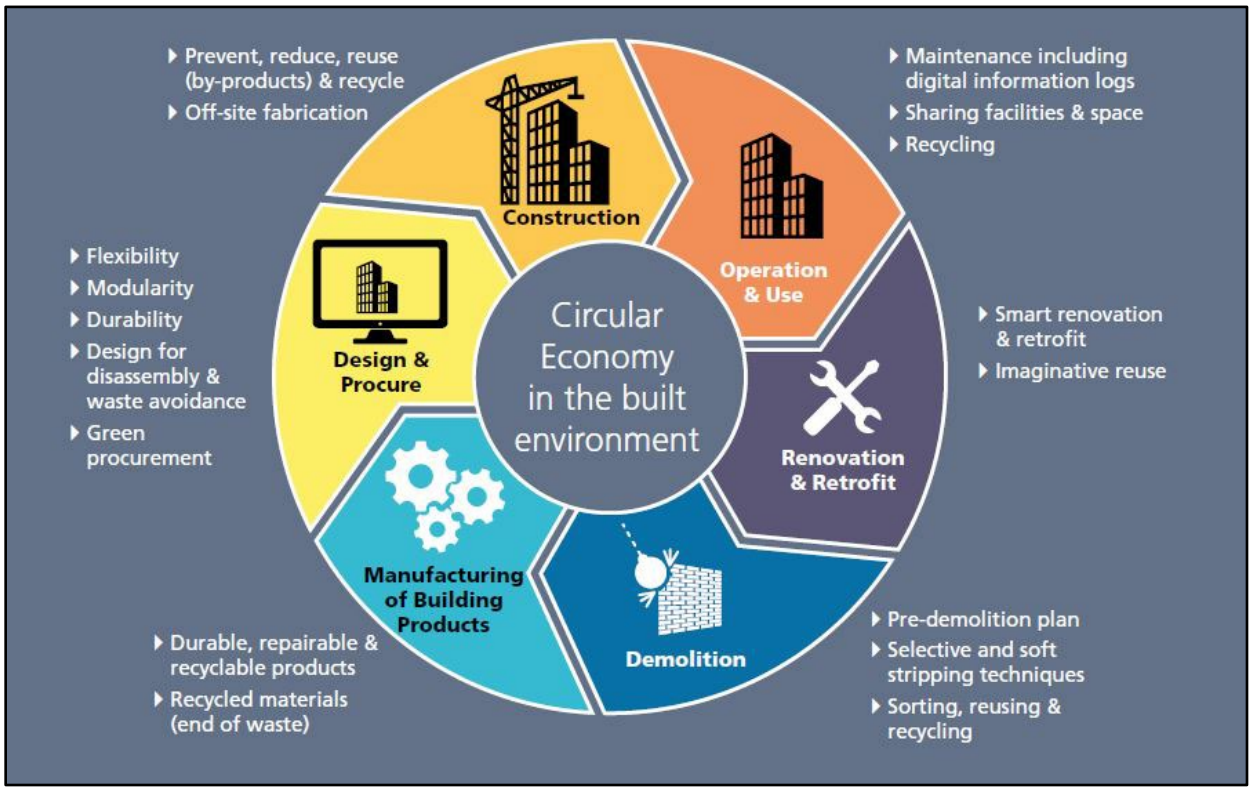

Figure 4.1: Circular Economic Model (Source: EPA Best Practice Guidelines)

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 minimised.

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 medium-to-long 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 weight destined for reuse or recycling. This template is included in **Appendix A** and a digital copy has been sent in addition to this report. This table will be updated as the project advances and waste streams change.

5.2 Waste Removal Contractors

Appendix B includes a list of licensed waste facilities in the Dublin region which are capable of hauling the primary C&D waste streams associated with development. Coordinating with the licensed waste facilities will be the responsibility of the Main Contractor. Waste facilities shall confirm acceptance of waste prior to 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 construction of the proposed development.

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 estimated target values for waste management at the site based on the batch of quantities attached in **Appendix C** and taking into account the typical waste generated on construction sites outlined in **Table 5.2**. The quantities of each waste type should be inputted by the contractor prior to starting on site once they have been accurately measured.

Table 5.3: Estimated construction waste targets for the development							
Waste Types	Waste (m^3)	Reuse/Recover		Recycle		Disposal	
		%	m^3	%	m^3	%	m^3
Soil & Stones	580	20	116	0	0	80	464
Concrete, Bricks, Tiles, Plastics, etc	91	0	0	80	72.8	20	18.2
Asphalt, Tar/Tar Products	7	0	0	20	1.4	80	5.6
Metals	7	5	0.35	90	6.3	5	0.35
Other	14	10	1.4	40	5.6	50	7
Total	699	-	117.75	-	86.1	-	495.15

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 (RWM)

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

- Environmental requirements for the project will be outlined during the site induction for all operatives involved in the development. This briefing will include key details from the RWMP as well as the CEMP for the project.
- Environmental/waste topics shall be included once a month into site toolbox talks. These weekly talks provided to all site operatives shall cover such matters as disposal of waste within correct waste bins and skips to avoid cross contamination and to ensure recycling is completed correctly.

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 wastes 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 waste 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 (excluding the pre-existing soil mounds on site) 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	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Concrete	17 01 01	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Bricks	17 01 02	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Tiles and Ceramics	17 01 03	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		L Behan Aggregates and Recycling Ltd	COR-DS-23-0004-03	Windmill Hill Quarry Rathcoole Co. Dublin
		McIntyre Plant Hire (Dublin) Limited	WFP-DS-22-0004-01	Kilmactalway Newcastle Co. Dublin
Wood	17 02 01	South Dublin Composting Company Limited	WFP-DS-19-0004-02	Tay Lane, Rathcoole Co Dublin D24 H954
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Glass	17 02 02	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Plastic	17 02 03	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
Bituminous mixtures	17 03 02	SIAC Bituminous Products Ltd	WFP-DS-19-0002-01	Monastery Road Clondalkin Dublin 22
		KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		Roadstone Limited	WFP-DS-11-0005-04	Belgard Quarry Fortunestown Tallaght Dublin 24 D24 PKK2
Mixed Metals	17 04 07	KN Network Services (IRE) Limited	WFP-DS-15-0003-06	3-4 Crag Avenue Clondalkin Industrial Estate Clondalkin Dublin 22
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
		Evolution Metal Recycling	WFP-DS-10-0002-06	Colas Bitumen Emulsions (Dublin) Ltd. Bluebell Industrial Estate Bluebell Avenue Dublin 24
Mixed Construction and Demolition Wastes	17 09 04	Callan Recycling Limited	WFP-DS-16-0001-05	Unit 51 Fourth Avenue, Cookstown Industrial Estate, Tallaght, Dublin 24 D24 NY76
		JFK Environmental Limited	WFP-DS-11-0002-08	Unit 512B Greenogue Business Park Rathcoole Dublin 24
		Citius Limited	COR-DS-22-0001-01	Club Road Ballymount Dublin 22

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Appendix C: Estimated Quantities

Apartment Block			
Lambs Cross Dun Laoghaire-Rathdown		Unit	
Substructure	Foundation Excavations and Disposal	m^3	580
	Concrete in Foundations	m^3	174
	Blockwork in Foundations (215mm)	m^2	22
	Blockwork in Foundations (440mm)	m^2	242
	200mm Concrete Floor Slab	m^3	301
External Walls	100mm block outer leaf, 150mm cavity, 100mmblock inner leaf	m^2	3952
Internal Walls	215mm block	m^2	1536
	Lift and Stair Shaft Walls	m^2	209
Floor Slab	200mm Precast Hollowcore Unit with Screed over	m^2	1949
	Transfer Slab 600mm Concrete	m^2	1542
Roof	200mm Precast Hollowcore Unit with Screed over to falls	m^2	1085
	150mm RC concrete	m^2	0

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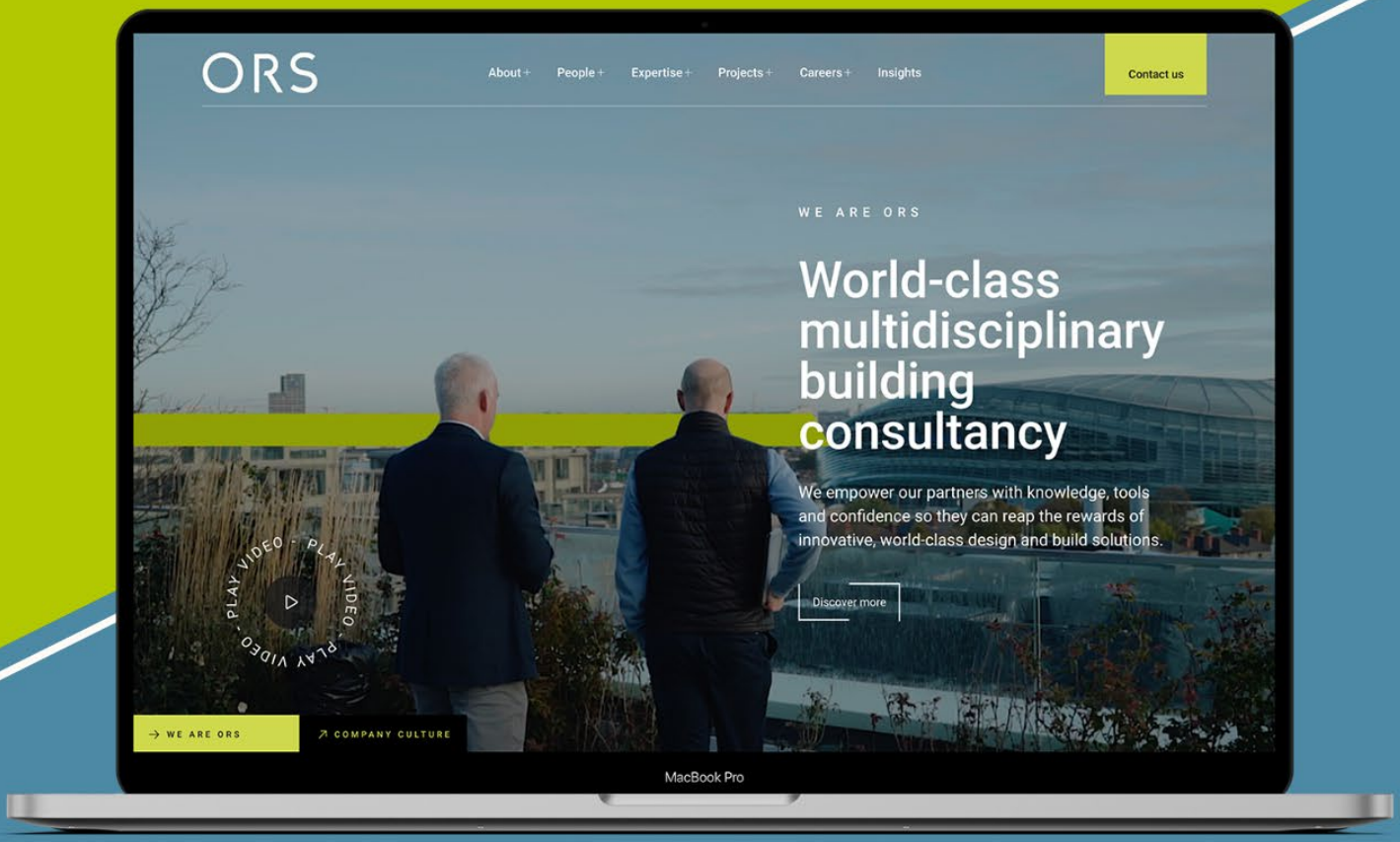

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