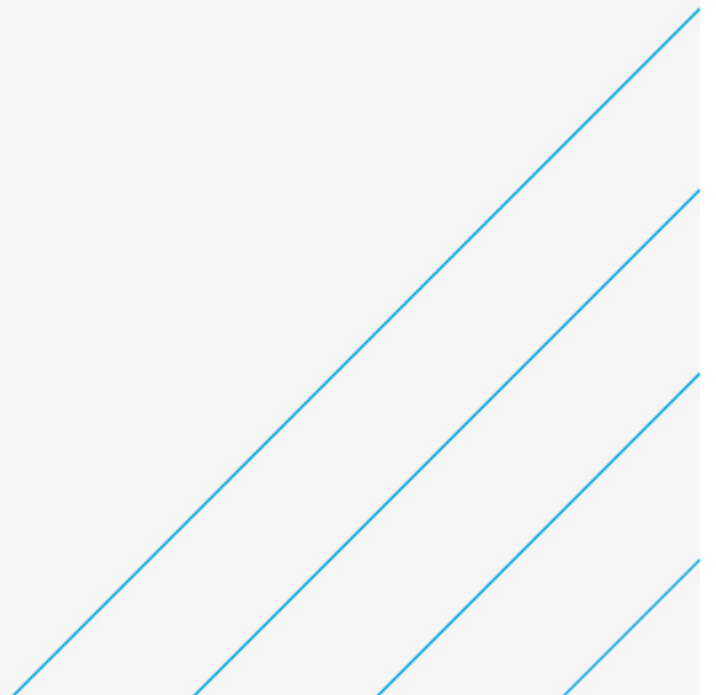


## Coastal Quarter SHD 2

Construction Resource and Waste  
Management Plan

Shankill Property Investments Limited

Sept. 2022



# Notice

This document and its contents have been prepared and are intended solely as information for Shankill Property Investments Ltd. and use in relation to the Coastal Quarter SHD 2 Planning Application.

WS Atkins Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 41 pages including the cover.

## Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 0	Draft Comment for	JL/AMc	AMc	DL	GH	13/09/2022
Rev 1	Issued Planning for	JL/AMc	AMc	DL	GH	15/09/2022

## Client signoff

Client	Shankill Property Investments Limited
Project	Coastal Quarter SHD 2
Job number	5214419
Client signature / date	

# Contents

Chapter	Page
List of Acronyms	4
<b>1. Introduction</b>	<b>5</b>
1.1. Aim of the Plan	5
1.2. Methodology	5
1.3. Need for the Plan	6
1.4. Format of the Plan	6
<b>2. Policies, Legislation and Guidance</b>	<b>8</b>
2.1. National Level	8
2.2. Relevant Guidance	10
2.3. Regional Waste Management Plan	11
2.4. Waste Legislation	13
2.5. Waste Soils Classification	14
<b>3. Project Description</b>	<b>16</b>
3.1. Site Location & Surrounding Land Use	16
3.2. Proposed Development	16
3.3. Construction Phase	17
3.3.1. Details of the Non-Hazardous Wastes to be produced	17
3.3.2. Details of Potentially Hazardous Wastes to be produced	18
3.3.2.1. Fuels, Oils and Chemicals	18
3.3.2.2. Contaminated Soils	18
3.3.3. Non-native Invasive Species	18
<b>4. Roles &amp; Responsibilities</b>	<b>20</b>
4.1. Client	21
4.2. Design Team	21
4.3. Contractor	21
<b>5. Design Approach</b>	<b>22</b>
5.1. Design for Reuse and Recycling	22
5.2. Design for Green Procurement	22
5.3. Design for Material Optimisation	23
5.4. Design for Flexibility and Deconstruction	23
<b>6. Key Material &amp; Quantities</b>	<b>24</b>
6.1. Type of Waste	24
6.2. Summary of Potential Waste Streams (LoW / EWC Codes)	25
6.3. Soil Generation	27
6.4. Construction Waste Generation	27
6.4.1. Tracking and Documentation Procedures for Off-Site Waste	31
6.4.2. Construction Waste Management Costs	31
<b>7. Site Management</b>	<b>32</b>
7.1. Resource / Environmental Manager - Responsibilities	32
7.2. Site Compound Location	32
7.3. Training	34
7.4. Record Keeping	35
7.5. Communications	35
7.6. Outline Waste Audit Procedures	35
<b>8. Consultation with Relevant Bodies</b>	<b>37</b>

<b>9. References</b>	<b>38</b>
<b>Appendix A. Proposed Development Layout</b>	<b>40</b>

## Tables

Table 4-1 - Roles and Responsibilities	20
Table 6-1 - Breakdown of Types of Waste	24
Table 6-2 - Summary list of LoW Codes, which may be relevant to the site (See Note 1)	25
Table 6-3 - Estimated Construction Waste Generation for each residential development type – Breakdown for each Waste Stream	29

## Figures

Figure 1.1 - Site Location (showing red-line application / site boundary for the Coastal Quarter) (blue-line denotes overall ownership boundary).	7
Figure 2.1 - Accepted Best Practice Waste Hierarchy (EPA, 2018)	8
Figure 2.2 - The Circular Economy (DoCCA, 2020)	9
Figure 2.3 - Project Life Cycle of the RWMP (EPA, 2021)	11
Figure 3.1 - Proposed Site Layout Plan for the Coastal Quarter	17
Figure 6.1 - New residential construction composition by volume (m3) (C&D Waste) (EPA, 2009).	28
Figure 7.1 - Location of the Site Compounds (Phase 1, 2 and 3)	33

## List of Acronyms

The following list of abbreviations have been used within this document;

- AOD – Above Ordnance Datum
- C&D - Construction and Demolition
- DLRCC – Dún Laoghaire-Rathdown County Council
- DoEHLG - Department of Environment, Heritage and Local Government
- EPA - Environmental Protection Agency
- EWC - European Waste Catalogue
- NWCPO - National Waste Collection Permit Office
- PSCS - Project Supervisor Construction Stage
- PSDP - Project Supervisor for the Design Process
- SDS - Safety Data Sheet
- LoW - List of Waste
- WAC - Waste Acceptance Criteria
- WCC – Wicklow County Council
- WMP - Waste Management Plan

# 1. Introduction

This Construction Resource and Waste Management Plan (CRWMP) has been prepared by WS Atkins Ireland Ltd. (Atkins) on behalf of Shankill Property Investments Limited (the applicant) as part of the supporting documents required for a planning application for a proposed residential development at Ravenswell Bray County Wicklow, referred to as the Coastal Quarter SHD 2.

Shankill Property Investments Limited are applying to An Bord Pleanála (ABP) for permission for a Strategic Housing Development comprising 586no. residential units in a mix of apartments, duplexes and houses on an 8.812 hectare (ha) site. In addition, a childcare facility, café, retail unit and 1 no. mixed use commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface, undercroft and basement levels. The proposed houses and duplexes range in height from 2 – 3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units. It is proposed that 274 no. units will be located within the administrative area of Dún Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

Planning permission was previously granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit subject to compliance with the terms of conditions attached to reference ABP-311181-21.

The proposed development includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions and new proposals for Blocks A and B which were previously refused.

The proposed Coastal Quarter lands are the subject of this Strategic Housing Development (SHD) 2 application to ABP and are hereafter also referred to as ‘the Site’, or the ‘proposed development’. A detailed development description and further details are presented as part of the planning documents and drawings submitted for this planning application.

The principal objective of this CRWMP is to provide a framework at the planning stage of the project to facilitate the further development of a project specific Detailed C&D RWMP by the Contractor. The following waste management considerations will apply for the entire life-cycle of this construction project (hereafter referred to as ‘the project’).

## 1.1. Aim of the Plan

The purpose of this plan is to provide sufficient information to ensure that the management of construction waste is undertaken in accordance with all relevant legislation and best practice standards (as set out in Section 2 of this document). The principal aim of this plan is to ensure efficient use of material resources, reduce waste at source and reduce the quantity of waste that requires final off-site disposal to landfill in accordance with the waste hierarchy. A secondary aim is to facilitate the transition to a more circular economy thereby minimising the need for new inputs of virgin materials and energy, while reducing environmental pressures linked to resource extraction, emissions and waste management.

## 1.2. Methodology

This document has been prepared in accordance with the relevant industry standard guidance document; ‘Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects’ (EPA, 2021). This guidance supersedes the ‘Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects’ (Department of Environment, Heritage and Local Government (DoEHLG), 2006);

In addition, the following relevant best practice guidance documents have also been consulted;

- ‘Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous’ (EPA, 2018);

- 'A review of Design and Construction Waste Management Practices on Selected Case Studies – Lessons Learned' (EPA, 2015);
- Bray Municipal District Local Area Plan 2018-2024 (WCC 2017);
- 'Design out Waste: Preparation of Waste Reduction Factsheets for Design Teams' (EPA, 2015); and,
- 'Development of an Audit Methodology to Generate Construction Waste Projection Indicators for the Irish Construction Industry' (EPA, 2009).
- Dún Laoghaire-Rathdown County Development Plan 2022-2028 (DLRCC, 2022); Guidance Notes for Waste Management in Residential and Commercial Developments (DLRCC 2020);
- Wicklow County Development Plan 2016-2022 (WCC, 2016);
- Draft Wicklow County Development Plan 2022-2028 and proposed amendments (WCC, 2022); and, Draft Development and Design Standards (WCC, 2022).

### 1.3. Need for the Plan

Within Section 3.1 of the guidance (EPA, 2021), it states that *'it is recommended that planning authorities stipulate that a Resource and Waste Management Plan (RWMP) shall be submitted for all construction and demolition projects as best practice to inform the planning consent process. It is recommended that all planning permissions granted include compliance with the RWMP as a standard condition of planning.'*

The level of detail presented in the RWMP should be reflective of the scale and complexity of the project and whether the project is within Tier 1 (smaller scale projects) or Tier 2 (larger scale projects) threshold.

Tier 2: Larger scale projects are defined by the EPA as those *'including Strategic Infrastructure Developments, Strategic Housing Developments, infrastructure projects (road, rail, gas, energy)'* or any project above the relevant Tier 1 thresholds.

The proposed development comprises a Strategic Housing Development (SHD) of 586no. residential dwellings / units, therefore this project is classed as a Tier 2 development.

This document applies only to the construction stage of the proposed development. An Operational Waste Management Plan (Document Reference: 5214419D0009) (Atkins, 2022) has been prepared separately for the proposed development.

### 1.4. Format of the Plan

This is a live document which will be updated and added to throughout the project lifecycle. This document will provide a framework for waste management and will clearly identify the processes that will be implemented onsite, whilst also seeking to ensure compliance with relevant waste legislation, government policy objectives and project specific waste objectives. The Plan will provide a mechanism for monitoring and auditing waste management performance and compliance for the duration of the project.

The evolution of a single plan through a project lifecycle is recommended to ensure preventative and resource efficiency initiatives are undertaken, data are captured, and targets are set and measured throughout the project. This plan will evolve through the project from initial pre-construction phase followed by implementation at construction phase.

This construction resource and waste management plan (CRWMP) will be added to by the contractor. The CRWMP needs to be regularly revisited throughout a project's lifecycle so that opportunities to maximise waste reduction/ efficiencies are exploited throughout, and that data is added to on an ongoing basis so that it is as accurate as possible.



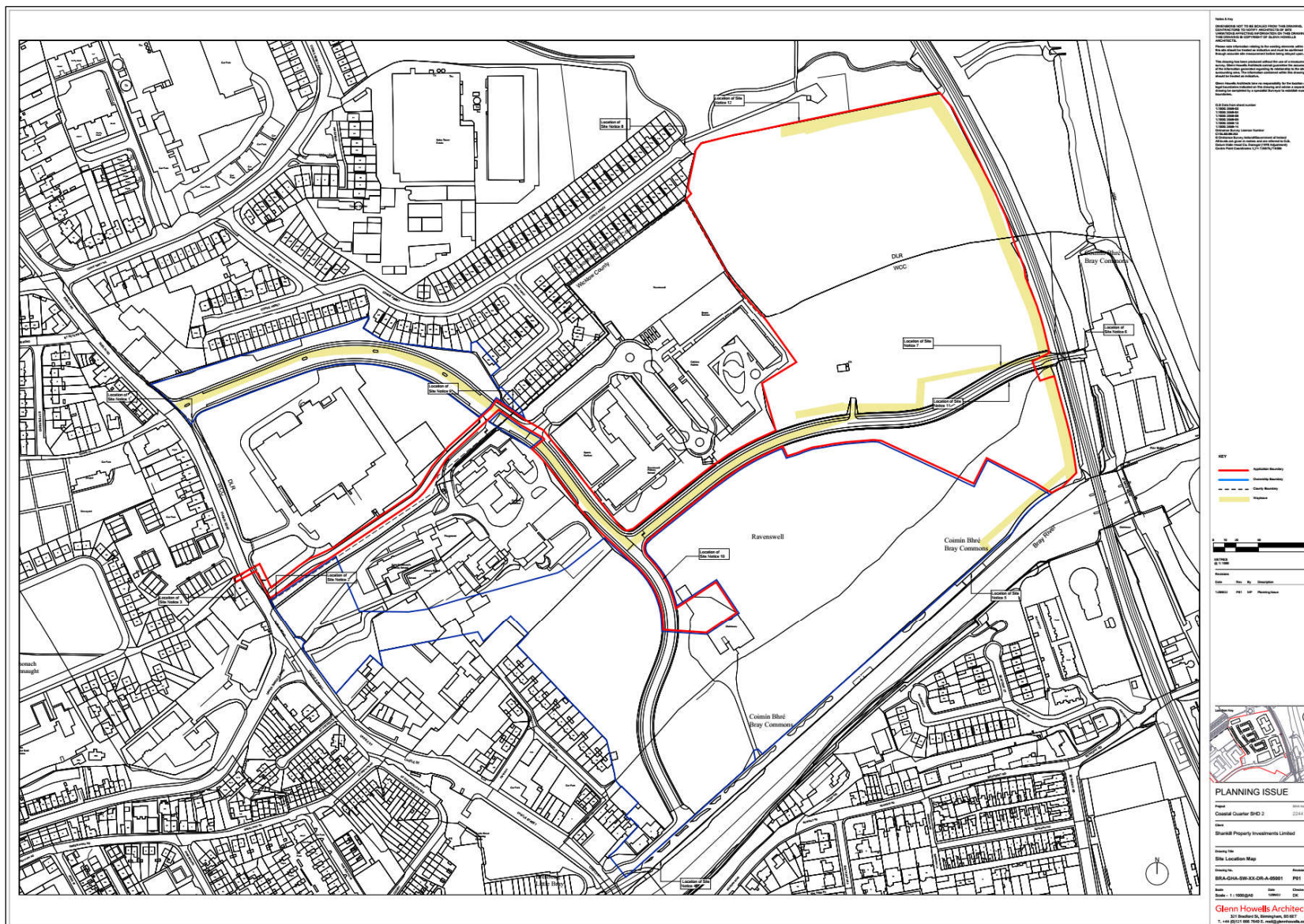


Figure 1.1 - Site Location (showing red-line application / site boundary for the Coastal Quarter) (blue-line denotes overall ownership boundary).

## 2. Policies, Legislation and Guidance

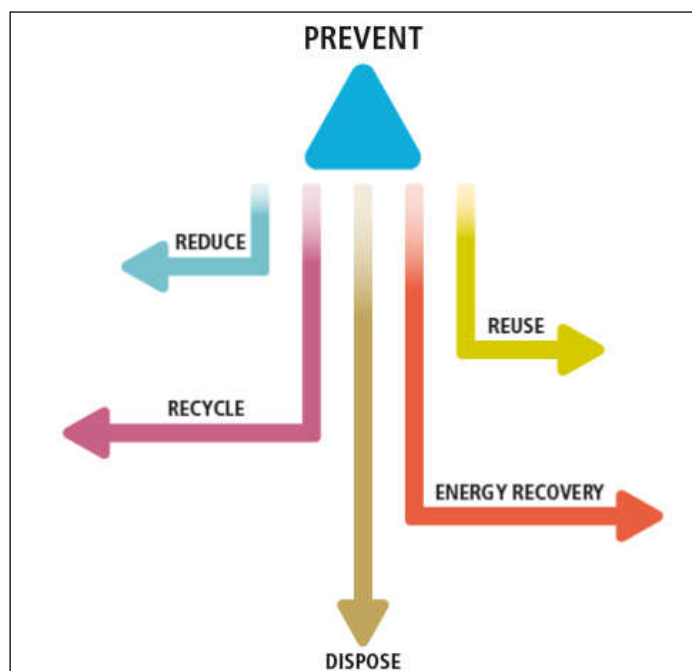
### 2.1. National Level

The implementation of the Waste Management Act in 1996 provided a legal basis for waste management, practice and infrastructure in Ireland. Following the implementation of this Act, government policy moved from primarily relying on landfill disposal towards a more sustainable system of waste treatment through the promotion of recycling and recovery. The policy document entitled 'Changing our ways' (DoEHLG, 1998) set specific targets for recycling and consolidated the now familiar waste hierarchy of prevention, minimisation, reuse/recycling, energy recovery and disposal. This approach was supported by subsequent legislation.

In 2002, the policy statement 'Preventing and Recycling Waste: Delivering Change' (DoEHLG, 2002) specifically focused on waste prevention and recycling. This document emphasised the importance of adopting a hierarchical approach, with prevention highlighted as the most desirable option. Various national waste prevention programmes and best practice guidance documents were subsequently delivered by the government.

The relevant guidance document in respect of the preparation of waste management plans for the construction sector was subsequently published by the DoEHLG in 2006, entitled 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'. The purpose of these guidelines was to promote an integrated approach to the management of C&D waste which all parties from planners, designers, contractors and regulators can adopt throughout the project lifecycle, to ultimately minimise the generation of C&D waste and to establish specific thresholds for the requirement of Waste Management Plans.

In 2011 the revised EU Waste Framework Directive was transposed into Irish law by the European Commission (Waste Framework Directive) Regulations 2011 (SI 126 of 2011) (EC, 2008). The Waste Framework Directive focussed on sustainable and efficient materials management strategy and provides a legal basis for the waste hierarchy. Therefore, the waste hierarchy presented in Figure 2.1 should be applied as a priority in Ireland.



**Figure 2.1 - Accepted Best Practice Waste Hierarchy (EPA, 2018)**

In 2012 the Government published a new policy document entitled 'A Resource Opportunity Waste Management Policy in Ireland' (DoECLG, 2012). This document sets out the steps to be implemented on a national scale to make further progress on resource efficiency and seeking the elimination of landfilling of municipal waste in Ireland. This approach is further supported by subsequent guidance including the EPA publication 'Green Procurement: Guidance for the Public Sector' (EPA, 2014) which clearly states the following Core Green Public Procurement (GPP) Criteria for the Construction sector:

- Construction environmental management plan;
- Staff training;
- Management of fuel and hazardous substances;



- Use of secondary aggregate and recycled materials;
- Water Management; and,
- Waste Management.

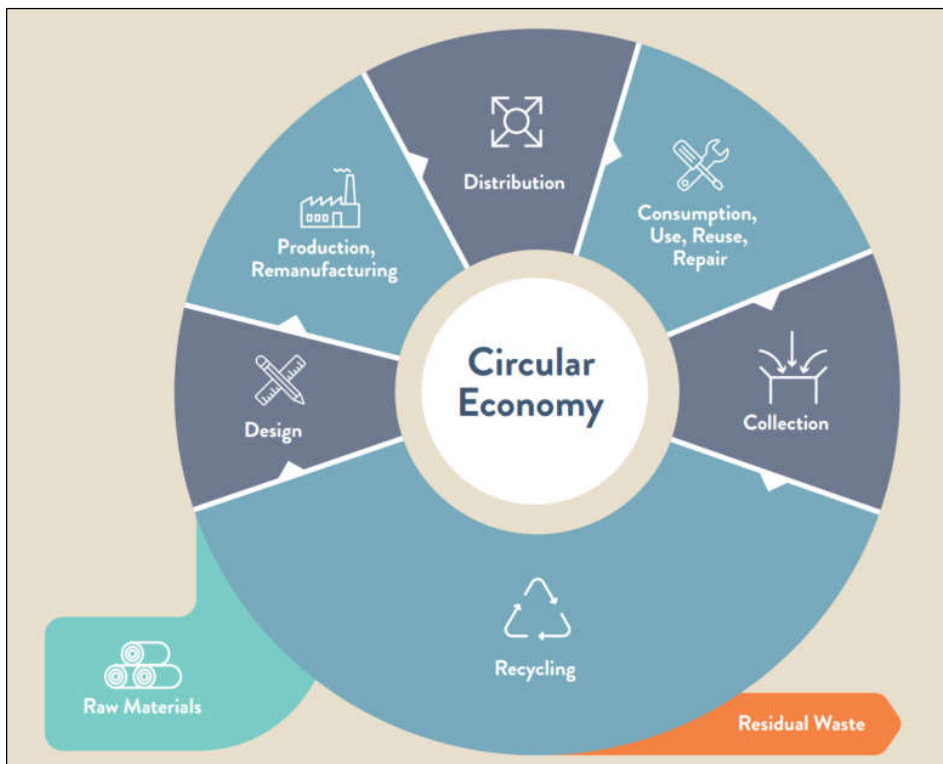
This EPA (2014) publication ‘Green Procurement: Guidance for the Public Sector’ clearly sets out the responsibility of the Contractor with regard to waste management and disposal, as follows:

*‘The Contractor must apply appropriate measures in order to reduce and recover waste that is produced during the construction activity. The Contractor shall prepare and submit a waste management plan with its tender which shall form part of the Construction Management Plan to be agreed with the Contracting Authority in advance of the commencement of works. The waste management plan must be prepared in accordance with the Department of Environment, Community and Local Government Best practice guidelines on the preparation of waste management plans for construction and demolition projects (2006).’*

*‘Contractors are responsible for disposing of all waste generated under the contract in accordance with the Waste Management Act 1996 as amended. The Contractor must have full use of, or access to, waste disposal facilities with appropriate licenses and permits. The Contractor must provide copies of valid EPA Waste licences and Local Authority Waste Permits (including those relating to their subcontractors or brokers, where applicable) for collection and waste treatment/disposal/export facilities.’*

According to the EPA (2021) ‘Green Public Procurement: Guidance for the Public Sector’ ‘Ireland has committed to implementing green public procurement (GPP) in all tenders using public funds by 2023’. The Department of Communication, Climate Action and Environment published ‘A Waste Action for a Circular Economy – Ireland’s National Waste Policy 2020-2025’ report, in September 2020. This document was prepared in response to the ‘European Green Deal’ and sets out a roadmap for the transition to a new economy, where climate and environmental challenges are instead seen as opportunities. This report replaces the previous National Waste Management Plan ‘A Resource Opportunity Waste Management Policy in Ireland’ (2012).

The ‘Waste Action for a Circular Economy’ report focuses on transition to a circular economy, shown in Figure 2.2, and the need to plan for C&D waste management at the earliest possible stage in a construction project, ideally at concept stage.



**Figure 2.2 - The Circular Economy (DoCCA, 2020)**

The overarching objectives of this action plan are to:

- *'Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;*
- *Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market;*
- *Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials); harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and,*
- *Support clear and robust institutional arrangements for the waste sector, including through a strengthened role for Local Authorities (LAs).'*

The headline points on C&D waste in the Waste Action Plan are as follows:

- *'Project Ireland 2040 sets out the State's development goals over the next 20 years which allows for the opportunity to forecast large, specific C&D waste streams with a focus on preventing or efficiently managing the waste from these areas;*
- *Prevention of soil arisings which are a significant financial burden on the sector are to progress by placing value on the used material where possible. There is a strong focus on Article 27 by-product and Article 28 end-of-waste decision making process. These processes are to be streamlined and detailed guidance will be developed for specific problematic materials;*
- *The use of recycled construction materials will be incentivised (potentially by introducing a levy on virgin aggregates);*
- *The plan looks to make national end-of-waste decisions for specific construction and demolition waste streams at the earliest possible stage; and,*
- *The 2006 Best Practice Guidelines for construction and demolition waste will be revised to improve the Preparation of Waste Management Plans for Construction and Demolition Waste Projects'.*

## 2.2. Relevant Guidance

The EPA (2021) *'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects'* supersedes the Department of Environmental, Heritage and Local Government (DoEHLG) (2006) *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects'*.

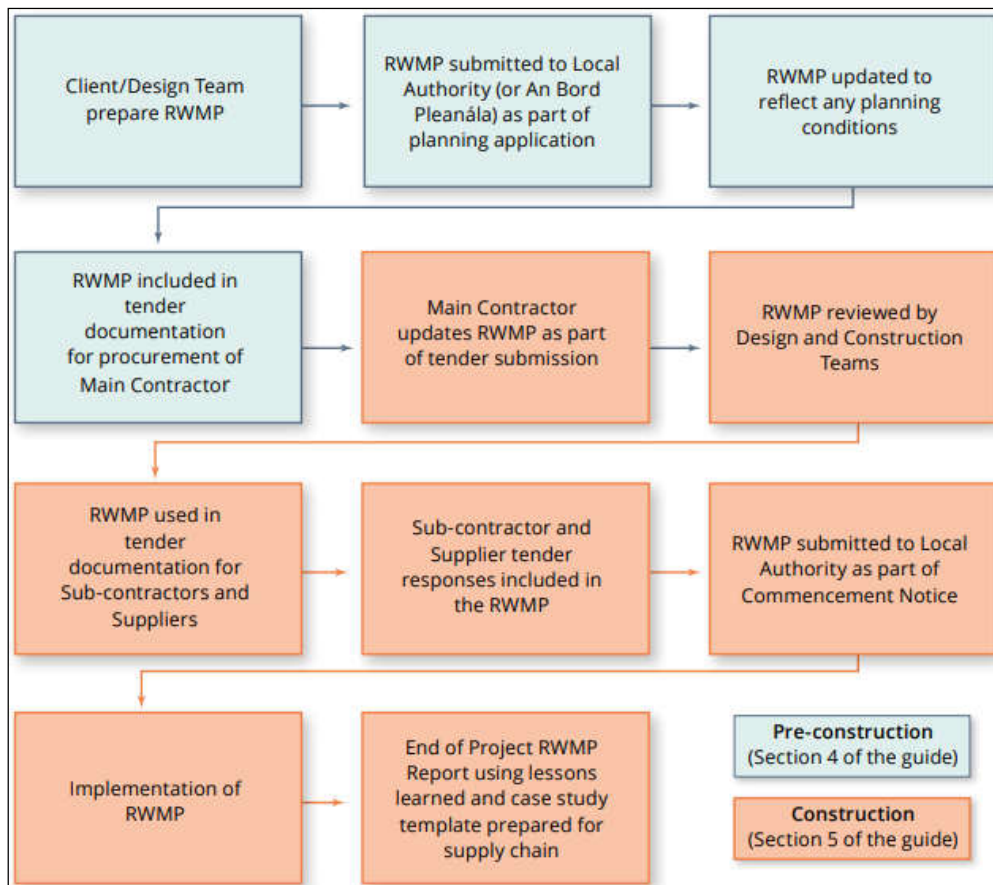
Since the publication of the 2006 guidelines, waste policy in Europe has shifted from the established linear economic model to a circular economic model. *'Circular economy-inspired interventions focus not only on increasing recycling quantitatively but also on:*

- *Reducing the use of virgin resources;*
- *Keeping materials in the economy as long as possible;*
- *Maintaining their intrinsic value/quality as high as possible; and,*
- *Reducing hazardous substances in products and waste'. (EPA, 2021).*

The resource and waste management approaches presented in the EPA (2021) guidelines are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and,
- Flexibility and Deconstruction.

These principles are applied to the Resource and Waste Management Plan (RWMP) through both the pre-construction phase and the construction phase. The evolution of a single plan through a project lifecycle is recommended to ensure preventative and resource efficiency initiatives are undertaken, data is captured, and targets set and measured throughout the project. The evolution of the plan through the project from initial pre-construction phase (in green) followed by implementation at construction phase (in orange) is illustrated in Figure 2.3 below.



**Figure 2.3 - Project Life Cycle of the RWMP (EPA, 2021)**

According to the EPA (2021) the level of detail presented in the RWMP should be reflective of the scale and complexity of the project and whether the project is within the following Tier 1 or Tier 2 thresholds.

- Tier 1: Smaller scale projects, below the following thresholds:
  - New residential development of less than 10 dwellings;
  - Retrofit of 20 dwellings or less;
  - New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m<sup>2</sup>;
  - Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m<sup>2</sup>; and,
  - Demolition projects generating in total less than 100m<sup>3</sup> in volume of C&D waste.
- Tier-2 projects: Larger scale projects, including Strategic Infrastructure Developments, Strategic Housing Developments, infrastructure projects (road, rail, gas, energy) or any project above Tier 1 thresholds (presented above).

## 2.3. Regional Waste Management Plan

The relevant Regional Waste Management Plan for Dún Laoghaire-Rathdown County Council (DLRCC) and Wicklow County Council (WCC) is the Eastern-Midlands Region Waste Management Plan 2015-2021. The Eastern-Midlands Region encompasses the following local authorities: Dublin City, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow. The regional plan, which was launched in May 2015, provides the framework for waste management up to 2021 and sets out a range of policies and actions in order to meet mandatory and performance targets. The key objectives of this plan are as follows:

- Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan;
- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020; and,

- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.

The overarching objectives of the Eastern-Midlands Region Waste Management Plan 2015-2021 have been incorporated into the latest development plan pertinent to this site i.e. Dún Laoghaire-Rathdown County Development Plan 2022-2028 (DLRCC), Wicklow County Council's Bray Municipal District Local Plan 2018-2024 and Draft Wicklow County Development Plan 2022-2028 and proposed amendments (WCC, 2022). According to Wicklow County Development Plan 2016 – 2022 the Regional Waste Management Plans) 2015-2021 provides the following:

*'Framework for solid waste management in the region and sets out a range of policies and actions to meet specified mandatory and performance based targets. The WMP seeks to assist and support resource efficiency and waste prevention initiatives. A key WMP target is to achieve a 1% reduction per annum in the quantity of household waste generated per capita over the period of the WMP. In tandem, the WMP identifies measures to develop a circular economy whereby waste management initiatives are no longer confined to treating and disposing of waste, instead supporting initiatives that value waste as a resource or potential raw material.'*

The Dún Laoghaire-Rathdown County Development Plan 2022 - 2028 specifically states the following with regards to Resource Management and the Circular Economy approach to construction and demolition waste management:

#### **Policy Objective EI11: Resource Management –**

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources.

#### **Policy Objective EI12: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling (Circular Economy approach)**

It is a Policy Objective:

- 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.
- To aim to provide a supporting waste management infrastructure in the County for the processing and recovery of waste streams such as mixed municipal waste in accordance with the proximity principle.
- To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities.

#### **Policy Objective EI13: Hazardous Waste**

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.

The Wicklow County Development Plan 2016 – 2022 specifically states the following with regards to construction and demolition waste management:

#### **Objective WE1 –**

To require all developments likely to give rise to significant quantities of waste, either by virtue of the scale of the development or the nature of the development (e.g. one that involves demolition) to submit a construction management plan, which will outline, amongst other things, the plan for the safe and efficient disposal of waste from the site.

#### **Objective WE2 –**

To require all new developments, whether residential, community, agricultural or commercial to make provision for storage and recycling facilities (in accordance with the standards set out in Development & Design Standards of this plan).

#### Objective WE5 -

To have regard to the Council's duty under the 1996 Waste Management Act (as amended), to provide and operate, or arrange for the provision and operation of, such facilities as may be necessary for the recovery and disposal of household waste arising within its functional area.

#### Objective WE6 -

To facilitate the development of sites, services and facilities necessary to achieve implementation of the objectives of the Regional Waste Management Plan.

#### Objective WE7 -

To facilitate the development of sites, services and facilities for the disposal of hazardous household wastes in accordance with the objectives of the Regional Waste Management Plan.

The Draft Wicklow County Development Plan 2022-2028 and proposed amendments outlines the following relevant objectives regarding construction and demolition waste management:

#### CPO 15.1 -

To require all developments likely to give rise to significant quantities of waste, either by virtue of the scale of the development or the nature of the development (e.g. one that involves demolition) to submit a construction management plan, which will outline, amongst other things, the plan to minimise waste generation and the plan to protect the environment with the safe and efficient disposal of waste from the site.

#### CPO 15.2 -

To require all new developments, whether residential, community, agricultural or commercial to make provision for storage and recycling facilities (in accordance with the standards set out in Development & Design Standards of this plan).

## 2.4. Waste Legislation

It will be the Contractor's responsibility to ensure that they are familiar and comply with the requirements of all relevant waste legislation for the duration of the project. The following non-exhaustive list of legislative requirements typically apply to the construction stage of major developments:

- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended, 2018 (S.I. 2018/851);
- European Communities (Waste Directive) Regulations (Directive 2008/98/EC) 2011 (SI 126 of 2011) as amended 2016 (S.I 315 of 2016), as amended, 2018 (S.I. 2018/851), as amended 2020 (S.I. No. 323 of 2020);
- Waste Management Act of 1996, 2001 and 2003;
- Litter Pollution Act of 1997, and as amended in 2009 and 2017;
- Litter Pollution Regulations 1999, S.I. No. 359 of 1999);
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. 355 of 2011), as amended 2011 (S.I. No. 397 of 2011) 2013, (S.I. No. 32 of 2013);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014) and 2019 (S.I No. 233 of 2019);
- Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019);
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Waste Management (Miscellaneous Provisions) Regulations, 1998, S.I. No. 164 of 1998;
- Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015), 2019 (S.I. No.182 of 2019);
- Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management (Shipment of Waste) Regulations 2007, S.I. No. 419 of 2007;



- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011, S.I. No 324 of 2011;
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96/2018);
- European Union (Batteries and Accumulators) Regulations 2014, S.I. No. 283 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I. No. 286 of 2009, as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002;
- Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015);
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015 as amended 2018 (S.I. No. 383/2018);
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990, as amended 1996 (S.I. No. 264/1996);
- EC (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I. No. 417 of 2013), 2016 (S.I. No. 2016/1628);
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011);
- EU F Gas Regulations 2014, S.I. No. 517 of 2014;
- Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended 2015 (S.I. No 542 of 2015);
- Planning and Development Acts 2000 to 2015, as amended 2018, 2019 and 2020;
- Protection of Environment Act 1992 as amended 2003 and 2017;
- European Union (Ship Recycling) (Waste) Regulations 2019 (SI. No 13/2019);
- European Union (Environmental Impact Assessment) (Waste) Regulations 2013
- SI. No. 505 of 2013;
- Industrial Emissions Directive 2010/75/EU; and,
- Landfill Directive 1999/31/EC.

## 2.5. Waste Soils Classification

According to the EPA Document 'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous' *'correct classification is the foundation for ensuring that the collection, transportation, storage and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements'* (EPA, 2018).

The waste classification system within this EPA guidance document applies across the EU and is the basis for all national and international waste reporting obligations.

Since 2015, waste classification is based on:

- Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) [referred to hereafter as 'The List of Waste (LoW)'].

- Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.

Soils requiring offsite disposal should be appropriately characterised, prior to transport and disposal, as follows;

- Representative chemical analytical results are input into a waste classification tool (to determine the relevant List of Waste (LoW) Code) and if the waste soils are hazardous or non-hazardous;
- Representative Waste Acceptance Criteria (WAC) analytical results are then separately screened against the relevant screening values (as established under the European Communities Council Decision ((EC) 92003/33/EC) 'COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC); and,
- All waste soils removed from site must be transported by appropriately permitted hauliers and must be disposed of to an appropriately authorised disposal / recovery facility (via. valid Certificate of Registration, Waste Facility Permit, or Waste Facility Licence).

## 3. Project Description

### 3.1. Site Location & Surrounding Land Use

The proposed development site is located at an existing 8.812 hectares (ha) parcel of land within the former Bray Golf Course lands off Ravenswell Road and the Dublin Road, Bray, County Wicklow and County Dublin. For the purposes of this report the site boundary is outlined in red in Figure 1.1.

The Site is currently grassed with mature and semi mature trees scattered throughout. The Site is located within 2no. county jurisdictions; Dún Laoghaire-Rathdown County Council (DLRCC) and Wicklow County Council (WCC).

The Site is generally bounded to the north by the existing public open space at Woodbrook Glen and existing housing estate at Corke Abbey, to the east by the Irish Rail Dublin-Rosslare main rail line, to the south and south-west by the River Dargle and Harbour Point Masterplan lands, and to the west by the existing Ravenswell schools campus. An existing underground Irish Water foul storage tank, foul services and existing utilities are also currently present within the Site boundary.

### 3.2. Proposed Development

The proposed development will provide 586no. residential units in a mix of apartments, duplex and houses, all associated and ancillary development and infrastructural works, hard and soft landscaping and boundary treatment works, associated car and bicycle parking spaces at surface and undercroft levels on the former Bray Golf Club lands in the administrative areas of Dún Laoghaire-Rathdown and Wicklow County Councils. It is proposed that 274no. units will be located within the administrative area of Dún Laoghaire-Rathdown County Council and 312no. residential units, a childcare facility, café, retail unit, and a mixed use commercial unit will be located within the administrative area of Wicklow County Council. The proposed development is situated on a 8.812ha parcel of land, to the north of Bray Town Centre. The proposed maximum height of the apartment blocks will be 12no. storeys.

The layout of the proposed development is presented in Figure 3.1 and Appendix A. Further details of the proposed development are presented in the planning documents and drawings submitted as part of this planning application. No demolition works will be required on this project.



Figure 3.1 - Proposed Site Layout Plan for the Coastal Quarter

### 3.3. Construction Phase

#### 3.3.1. Details of the Non-Hazardous Wastes to be produced

Waste materials generated during the construction stage will primarily comprise topsoil and excavated subsoil during the installation of structural foundations, installation of the storm water (including 2no. attenuation tanks) and foul water drainage works, watermains and laying of cable ducts, surplus general building waste materials, and waste generated by construction workers.

In accordance with good practice, excavated soils will be reused onsite where feasible, including for boundary treatment and landscaping purposes, if suitable. Any surplus soils will be disposed of offsite in accordance with all relevant waste management legislation and best practice requirements.

Should any ground contamination be encountered during the construction phase of the development the Employer and Employers Representative, and the Resource Manager should be immediately notified and consulted with. Appropriate measures must be put in place, as set out below, including appropriate transport and disposal of such waste materials to a suitably licenced facility in accordance with all relevant waste legislation.

According to the EPA 'Correct classification is the foundation for ensuring that the collection, transportation, storage and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements'. Hence soils requiring offsite disposal must be characterised as per the requirements of the relevant Waste Acceptance Criteria (WAC) under the European Communities Council Decision ((EC) 92003/33/EC) 'COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC'. Soils requiring offsite disposal will also require waste classification in strict accordance with the requirements of the EPA as set out in the following document 'Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous' (EPA, 2018). All waste soils removed from site must be transported by appropriately permitted hauliers and must be disposed of to an appropriately authorised disposal / recovery facility (via. valid Certificate of Registration, Waste Facility Permit, or Waste Facility Licence).



Surplus construction materials including concrete blocks, cladding, metals, tiles, glass, plastics, packaging, and timber will be generated during the Construction Phase. Materials will be segregated and recycled where possible; all other materials will be disposed of offsite in accordance with all relevant waste management legislation and best practice requirements. Additional waste generated by onsite personnel during the construction works will broadly include the following; canteen waste, waste arising from temporary onsite self-contained welfare facilities, and a minor volume of waste electrical and electronic equipment. A breakdown of the likely waste streams which will be generated is presented in Section 6.

### 3.3.2. Details of Potentially Hazardous Wastes to be produced

#### 3.3.2.1. Fuels, Oils and Chemicals

Hazardous materials (fuels, oils and chemicals) will be used at the site during the Construction Phase. As per industry standards any fuel and oils temporarily stored onsite will be stored in double skinned / appropriately bunded storage tanks, in a secure dedicated fuel storage location onsite. All other chemicals including paints, varnishes, glues, adhesives, degreasing agents and cleaning agents will be securely stored in a dedicated temporary bunded chemical store onsite. All machinery including any generators / pumps used onsite should be checked at the start of each work shift for evidence of any fuel or oil leaks (and removed offsite for any repairs as may be required).

Fuel, oil and chemical spill kits should be available at the designated storage areas, along with the relevant Safety Data Sheet (SDS). SDS documents contain information on the potential hazards (health, fire, reactivity and environmental) and how to work safely with the relevant chemical. All site operatives should receive training in appropriate refuelling methods and machinery checks, and chemical handling methods to be implemented onsite. Taking account of these control measures, along with the fact that the volumes of paints, varnishes, glues, adhesives etc. will be minor, it is not expected that any waste fuel, oil or chemicals will be generated during the Construction Phase.

#### 3.3.2.2. Contaminated Soils

Based on available information no potential sources of significant onsite ground contamination associated with current or historic land-use have been identified. Therefore, the risk of encountering significant ground contamination (i.e. hazardous soils) beneath the site is considered to be highly unlikely at this preliminary juncture.

Nonetheless excavation works during the Construction Phase should be monitored and in the highly unlikely event that contaminated materials are encountered these will need to be segregated from all uncontaminated soils, temporarily stored (any stockpiles should be lined and covered by heavy duty 1000-gauge plastic), sampled and analysed for relevant parameters (Waste Acceptance Criteria suite e.g. Rilta Disposal Suite). Any contaminated soils must be characterised as per the requirements of the relevant Waste Acceptance Criteria (WAC) under the relevant European Communities Council Decision (EC) (92003/33/EC) and classified in accordance with the requirements of the EPA as set out in the following documents 'Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous' (EPA, 2018). Any contaminated soils must be transported by appropriately permitted hauliers and disposed of to an appropriate EPA licensed Waste Facility in accordance with all relevant waste management legislation.

### 3.3.3. Non-native Invasive Species

The Site was surveyed by an Atkins Senior Ecologist for invasive plant species listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/ 2011. Species surveyed for included Japanese knotweed (*Reynoutria japonica*) and associated hybrids. Surveys were undertaken during August 2020 and July 2022 which is within the seasonally appropriate window to assess the Site for the presence of invasive plant species.

No evidence of third schedule invasive plant species were recorded within the extents of the Site.

However, in the highly unlikely event that any non-native invasive species including Japanese knotweed (*Fallopia japonica*) are identified prior to or during construction activity, appropriate measures (designed, scoped and managed by a relevant specialist) will be required in order to remediate any identified Japanese Knotweed stems and any soils impacted by the plant roots.

In regard to non-native invasive species the following points should be noted;



- Regulations 49 and 50 of Part 6 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) outlines the legal context for the prohibition of the introduction and dispersal of certain plant and animal species. Specifically, Section 49, paragraph 2 states that any person without the required licence “who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow” any plant species listed in Part 1 of the Third Schedule within the State shall be guilty of an offence.
- Under Section 50 paragraph 1, a person without the required licence “shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release” of any plant species listed in Part 1 of the Third Schedule or anything from which “a plant referred to in Part 1 of the Third Schedule can be reproduced or propagated or “a vector material listed in Part 3 of the Third Schedule”.

## 4. Roles & Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed development should be determined at the very outset of the construction stage of this project. Key roles are typically performed by the Client, Engineer, and Contractor as presented in Table 4-1 below. Specific details will be determined during the Detailed Design and Contract stage.

**Table 4-1 - Roles and Responsibilities**

Employer	Planning Agents
The Client: Shankill Property Investments Ltd. Tel: 01 625 9100 Contact: Cathal Dalton	The Planner: RPS Tel: 01 488 2900 Contact: Maria Lombard / Michael Higgins
Employers Representative	Design Team
The Engineer: Atkins Tel: 01 8108000 Contact: Garry Hanratty	The Architect: Glenn Howell Architects Tel: +44 12 1666 7640 Contact: Daniel Mulligan
Project Supervisor for the Design Process (PSDP)	Civil, Structural and Environmental Team
The Engineer: to be confirmed Tel: to be confirmed Contact: to be confirmed	The Environmental Consultant: Atkins Tel: 01 8108000 Contact: Garry Hanratty / Deirdre Larkin
Masterplan Architect	Landscape Architect
The Engineer: Glenn Howells Architects Tel: +44 12 1666 7640 Contact: Daniel Mulligan	The Landscape Architect: Park Hood Tel: +44 28 9029 8020 Contact: Mark Johnston
Project Supervisor Construction Stage (PSCS)	Contractor
The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed	The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed

The EPA (2021) 'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects' state that a number of responsibilities for the development of resource & waste management plans are identified for parties under Waste Framework Directive 2008/98/EC including the following:

- 'Original Waste Producer means anyone whose activities produce waste or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste (in this case the Client); and,
- Waste Holder means the waste producer or the natural or legal person who is in possession of the waste (the Client)'.

The EPA (2021) 'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects', highlights the responsibilities of the following key personnel for implementing resource & waste management plans.

## 4.1. Client

The responsibilities of the client are as follows:

- Require the preparation and submission of an RWMP as part of the design and planning submission;
- Require the preparation and submission of an updated RWMP as part of the construction tendering process;
- Ensure that the RWMP is agreed and submitted to the local authority prior to commencement of works on site; and,
- Request the end-of-project RWMP from the Contractor.

## 4.2. Design Team

The responsibilities of the design team are as follows:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a Resource Manager (RM) to track and document the design process, inform the Design Team and prepare the RWMP;
- Include details and estimated quantities of all projected waste streams;
- Incorporate relevant conditions imposed in the planning permission into the RWMP;
- Handover of the RWMP to the Contractor at commencement of construction for the development of the RWMP in a similar fashion to how the safety file is handed over to the Contractor; and,
- Work with the Contractor as required to meet the performance targets for the project.

## 4.3. Contractor

The responsibilities of the contractors are as follows:

- Adding to, implementing and reviewing the RWMP through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified Resource Manager (RM) who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- End-of-waste and by-product notifications addressed with EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing; Full records of all resources (both wastes and other resources) should be maintained for the duration of the project;
- Carry out training and site inductions; and,
- Preparing a RWMP Implementation Review Report at project handover.

## 5. Design Approach

### 5.1. Design for Reuse and Recycling

The site preparation works will involve excavation for the installation of foul and surface water drainage system works, flood storage compensation area, structural foundations, internal roads and underground utilities during the construction phase.

The total volume of topsoil to be excavated is ca. 51,900m<sup>3</sup> and the volume of fill to be imported to the site is ca. 27,600m<sup>3</sup> which will be required for the proposed development.

In accordance with good practice, excavated soils will be reused onsite where feasible, including for boundary treatment and landscaping purposes, if suitable. Any excess topsoil to be transported offsite will be transported to an appropriately licenced, permitted or registered facility. The soil will be characterised in accordance with EPA, 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' and Council Decision, 2003 on establishing criteria and procedures for the acceptance of waste at landfills.

An application may be made to the EPA under Article 27 of the European Communities (Waste Directive) Regulations 2011 for the use of excess soil or materials as a by-product if a definite use and need for this material can be determined. Also an application may be made to the EPA under Article 28 which sets out the grounds by which a material, which is recovered or recycled from waste, can be deemed to be no longer a waste and complies with a set of end-of-waste criteria (substance/ object to be used for specific purposes, a market or demand exists, fulfils technical requirements and no overall adverse impact to human health or the environment).

During the construction, the contractor will review availability of recycled aggregates and other materials in the local area and decide on the most sustainable options, for example, the use of an on-site crusher for recycling of residual concrete to generate aggregates for use on site (subject to the appropriate waste consent, such as an Article 28 end of waste decision and once processing is industry standard practice, such as ensuring the aggregate outputs comply with the specifications of IS EN 13242).

The contractor will review 'new' materials to be used as part of the proposed development, which contain a recommended percentage of recycled content if they meet the functional, performance and regulatory requirements and are available locally at a reasonable cost.

Design for Reuse and Recycling is the most efficient way of designing low carbon infrastructure and feeds into the circular economy as opposed to a linear economy where product is treated as 'waste' at the end of its life.

All apartment buildings have been designed to use standardised pre-cast structural columns and floor slabs allowing for their easy disassembly and reuse at end-of-life stage. All houses have been designed using a timber frame construction that allows for their disassembly and re-use at end of life stage. Furthermore, standardised internal dry lining systems, standardised flooring systems and internal doors have all been considered within the design.

### 5.2. Design for Green Procurement

When selecting suppliers, it is essential to assess the technical capabilities required for the products or services being procured. This is valuable from the buyers' point of view as suppliers that clearly cannot meet the requirements will be eliminated. In addition, it is also useful for the suppliers to get a clear understanding of how committed the Client is to protect sustainability and what will be essential for any submission to be successful.

At an early stage (pre-procurement), the client will have discussion with potential contractors, subcontractors and suppliers regarding the following:

- Waste prevention and minimisation during the construction stage;
- Proposed design solutions to encourage innovation in tenders and incentivise competitions to recognise sustainable approaches;
- Use ordering procedures that avoid waste, i.e. no over-ordering, take-back schemes for both material surplus and offcuts;
- Discuss options for packaging reduction with subcontractors and suppliers using measures such as 'Just-in-Time' delivery; and,
- Set reuse and recycling rates.

Green procurement integrates environmental considerations that include a combination of cost and quality into the procurement process. In order to help achieve this, both operational and embodied carbon targets for this project will be set out early on in collaboration with the design team in order to ensure that green procurement can take place. Through comparative data on embodied carbon, low carbon materials options will be favoured where possible. A sustainable construction plan will be developed that addresses all aspects of construction relating to design from reducing demolition, considering reuse / upcycling and recycling of existing materials to approaching suppliers for green construction materials e.g. Responsible Steel and adopt Design of Off-Site Construction. *'The use of off-site manufacturing reduces residual wastes by up to 90% (volumetric building versus traditional)'* (EPA, 2021). Low carbon additives to industry standard components will also be considered as part of this process e.g. the use of GGBS in concrete can be a way to reduce its carbon footprint whilst still achieving the structural and fire benefits of concrete.

On the Coastal Quarter, modern methods of construction (MMC) are proposed. The use of pre-fabricated concrete panels and the use of timber frame construction will lead to a large proportion of the waste generated during the prefabrication processes being recycled within the factory, leading to less than ca. 10% of materials ultimately going to landfill. Designing using MMC also provides for a safer work environment for suppliers and builders, and it reduces risks of air pollution on the site and its surrounding areas through construction activities (e.g. dust generation) or transport (fuel emissions).

### 5.3. Design for Material Optimisation

As stated in the EPA (2021) guidelines the key design principle for design for material optimisation *'is to ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities.'*

Design for material optimisation includes the use of standardised sizes for certain materials to help reduce the number of offcuts produced on site, focusing on promotion and development of off-site manufacture.

Wherever possible the Coastal Quarter development will be designed to size standards and repeat modules e.g. in façade components to reduce unnecessary wastage and additional costs. An effort will also be made to design out unnecessary complex fixings.

### 5.4. Design for Flexibility and Deconstruction

It will be the contractor's responsibility to ensure that all products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled, where possible. As per the EPA (2021) guidelines, the design team will *'consider material efficiency for the duration and end of life of a building project; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction'*.

Within the Coastal Quarter, a pre-cast primary structural grid is proposed with a light weight dry lining system for all internal walls. This will allow for the easy re-configuration of buildings in the future. The design team take account of future deconstruction as part of the overall design process, to allow for the re-use of building components e.g. using bolts instead of welding and screws instead of nails or the use of adhesives. Large architectural components such as pre-cast columns and hollow core slabs that could be taken apart and reused at end-of-life are also considered.



## 6. Key Material & Quantities

### 6.1. Type of Waste

The waste generated onsite is surplus or waste materials arising from either the materials imported to site or from those generated on site. Imported materials are those which are imported to site for inclusion into the temporary and permanent works (such as concrete, construction aggregates, asphalt and cabling etc.). Included within this waste stream is product packaging. This waste stream is produced from a range of potentially preventable activities. Such activities include damaged materials and the over ordering of materials. This waste stream is described as construction (C) waste within the RWMP. Site generated materials are those which exist within the proposed works footprint such as topsoil and sub-soil etc. This waste stream is categorised as excavated (E) waste within the RWMP. Refer to Table 6-1 for the breakdown of types of waste. For both groups of materials there are a number of considerations to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing data.

**Table 6-1 - Breakdown of Types of Waste**

Type of waste	Description
Imported material	Where possible, consideration should be given to the re-use of material back into the project development works. Any waste produced through the importation of materials needs to be monitored and included in the RWMP under construction works. Where possible, consideration should be given to the use of recycled imported material such as concrete, which has a higher recycled content.
Excavated materials (E)	Materials such as excavated soils should be segregated during the excavation process. Appropriately experienced staff should supervise the excavation works to manage the segregation of soil materials. Site-derived materials of a similar nature should be stockpiled together and any changes in the physical and/or chemical properties should prompt further segregation. Soils should be placed in clearly identified stockpiles and chemical testing undertaken to confirm the potential for re-use on site, or, if considered inappropriate for re-use (due to geotechnical or chemical properties or being surplus), to inform off site treatment and/or disposal routes. Where soil materials meet the geotechnical and chemical criteria for re-use given the proposed end use scenario, such materials may be re-used on site, if required. Any surplus materials should be removed from site for either direct beneficial use elsewhere (such as land remediation schemes) where an application may be made to the EPA under Article 27 of the European Communities (Waste Directive) Regulations 2011 for the use of excess soil as a by-product if a definite use and need for this material can be determined or for recycling or recovery at an appropriately permitted off-site facility. Where excavated materials are affected by contamination, such materials should be separated and sent for either treatment, where appropriate, or disposal at appropriately permitted facilities. Disposal of excavated material will be by licensed carriers, to licensed landfill sites and handled in accordance with the Waste Management Regulations.
Concrete	This waste will be generated by works and the buildings for the proposed project.
Wood	Packaging such as pallets.
Packaging	From construction materials, etc.
Plastic	Offcuts of pipework/ducting etc.
Vegetation	The majority of the existing trees along the boundary are being retained for the proposed project with planting of hedgerow and ornamental shrub and Herbaceous plants proposed. Additionally meadow planting is proposed as well as amenity grass and open spaces. Further landscape details are included in the Landscape Design for the proposed project (Parkhood, 2022).

	Where vegetation / landscaping elements are being removed, re-use of such materials should be considered where possible. E.g. suitable vegetation could be turned into mulch or compost to be re-used for landscape purposes.
Metals	Offcuts from reinforced concrete for building foundations. Metal components or assets removed for site clearance.
Paper and Cardboard	Packaging from components delivered to site.
Segregated Haz Waste	Nominal 1% to account for packaging that contained hazardous material such as oils, solvents, sealants etc.

In relation to the overall works particular attention is drawn to the following waste/soil related activities:

- The site location deliveries/ removals are to phone ahead; Just-in-Time' (JIT) delivery processes; receive precise directions and named person to liaise with on site. The Contractor is to erect required signage approaching site and ensure deliveries are programmed to cause minimal disruption;
- Hazardous manual handling operations are to be avoided so far as is reasonably practicable; and,
- Note that waste generated by the project will be managed in compliance with Waste Management Act 1996, Waste Management (amended) Act 2003 and associated Regulations.

## 6.2. Summary of Potential Waste Streams (LoW / EWC Codes)

It is understood that all the waste arising from the construction works will be transported off site by an approved waste contractor holding all the necessary waste collection and transportation permits. All the waste arisings requiring reuse, recycling, recovery or disposal will be brought to facilities holding the appropriate Certificate of Registration, Waste Licence or Waste Permit, as required.

A summary of the main hazardous and non-hazardous waste streams which could arise during the Construction Phase are presented in Table 6-2, along with the relevant List of Waste (LoW) code. The LoW code (also referred to as European Waste Catalogue (EWC) code) serves as a common method of characterising various waste streams. Assignment of waste codes will determine how and where the generated waste can be disposed of. LoW codes must be selected for each waste type – a full description of each code is available on the EPA website<sup>1</sup>.

It should be noted that the summary list presented in Table 6-2 is a non-exhaustive list and it will be the Contractors responsibility to ensure all waste streams generated onsite during the Construction Phase for this project are appropriately characterised, managed and disposed of in accordance with all relevant waste management legislation.

**Table 6-2 - Summary list of LoW Codes, which may be relevant to the site (See Note 1)**

Waste Material	LoW Code
<b>Concrete, bricks, tiles and ceramics</b>	
Concrete	17 01 01
Bricks	17 01 02
tiles and ceramics	17 01 03
mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	17 01 07
<b>Wood, glass and plastic</b>	
Wood	17 02 01
Glass	17 02 02

<sup>1</sup> <https://www.epa.ie/publications/monitoring--assessment/waste/2019--FULL-template.pdf>

Waste Material	LoW Code
Plastic	17 02 03
<b>Bituminous mixtures, coal tar and tarred products</b>	
bituminous mixtures	17 03 02
<b>metals (including their alloys)</b>	
mixed metals	17 04 07
<b>Soil (including excavated soil from contaminated sites), stones and dredging spoil</b>	
soil and stones containing hazardous substances	17 05 03*
soil and stones other than those mentioned in 17 05 03	17 05 04
<b>Gypsum-based construction material</b>	
Gypsum-based construction material	17 08 02
<b>Other construction and demolition wastes</b>	
mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	17 09 04
<b>Wastes from electrical and electronic equipment</b>	
discarded equipment containing chlorofluorocarbons, HCFC, HFC	16 02 11*
discarded equipment containing free asbestos	16 02 12*
discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	16 02 13*
discarded equipment other than those mentioned in 16 02 09 to 16 02 13	16 02 14
hazardous components removed from discarded equipment	16 02 15*
components removed from discarded equipment other than those mentioned in 16 02 15	16 02 16
<b>Miscellaneous Waste</b>	
Paper and cardboard	20 01 01
biodegradable waste (Green waste)	20 02 01
batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	20 01 33*
batteries and accumulators other than those mentioned in 20 01 33	20 01 34
Waste fuel oil and diesel	13 07 01*
Waste petrol	13 07 02*
Waste other fuels (including mixtures)	13 07 03*
Chemicals – Solvents	20 01 13*
Chemicals – Pesticides	20 01 19*

Waste Material	LoW Code
Chemicals - paint, inks, adhesives and resins containing hazardous substances	20 01 27*
Chemicals - paint, inks, adhesives and resins other than those mentioned in 20 01 27	20 01 28
Chemicals - detergents containing hazardous substances	20 01 29*
Chemicals - detergents other than those mentioned in 20 01 29	20 01 30
fluorescent tubes and other mercury-containing waste	20 01 21*
insulation materials other than those mentioned in 17 06 01 and 17 06 03	17 06 04

**Note 1: The use of an asterisk on a LoW code denotes that the material is characterised as hazardous.**

### 6.3. Soil Generation

The site preparation works will comprise the stripping of topsoil across the Site, excavation of subsoil and pouring of foundations for the residential and commercial units, installation of the storm water (including 2no. attenuation tanks) and foul water drainage works, watermains and laying of cable ducts, and piling as required.

The total volume of soil requiring excavation for the proposed development is expected to be ca. 51,900m<sup>3</sup>. It is provisionally estimated that ca. 10,700m<sup>3</sup> of stripped topsoil will be reused onsite for landscaping purposes. Based on preliminary engineering calculations it is anticipated that ca. 41,200m<sup>3</sup> of excess topsoil (ca. 3,600m<sup>3</sup>) and subsoil (native soil and made ground, ca. 37,600m<sup>3</sup>) will require offsite disposal. It is anticipated that ca. 27,600m<sup>3</sup> of suitable engineering grade fill material (subbase / capping/building hardcore) will need to be imported to the Site.

All such material will be removed and disposed offsite to a suitably permitted / licenced waste recovery / disposal facility in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996, 2001 and 2003 and all subsequent waste management regulations as amended).

Any soil transported off-site will be characterised in accordance with EPA guidance, 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' and Council Decision, 2003 on establishing criteria and procedures for the acceptance of waste at landfills. An application may be made to the EPA under Article 27 of the European Communities (Waste Directive) Regulations 2011 for the use of excess soil as a by-product if a definite use and need for this material can be determined.

A ground investigation for the proposed development was carried out by IGSL Ltd. (IGSL) between August and September 2020 in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007), BS 5930:2015, and BS 1377 (Parts 1 to 9) (IGSL, 2021).

20no. representative environmental soil samples were collected during the ground investigation at representative locations across the Site and analysed for a comprehensive suite of analytical parameters by a UKAS accredited laboratory (including asbestos containing material, heavy metals, key indicator parameters, petroleum hydrocarbons, polyaromatic hydrocarbons (PAHs), Volatile Organic Compounds (VOCs including tentatively identified compounds (TICs)), Semi Volatile Organic Compounds (SVOCs including TICs), Polychlorinated Biphenyls (PCBs) and the full Rilta Waste Acceptance Criteria (WAC) soil disposal suite).

Soils analytical data is presented in Appendix 9.3 to Appendix 9.5, Volume 3 of the EIAR submitted as part of this planning application.

### 6.4. Construction Waste Generation

A typical breakdown of C&D wastes generated during construction of this development type in Ireland is presented in Figure 6.1 below (EPA, 2009). This figure indicates the percentage breakdown of waste from New residential construction.

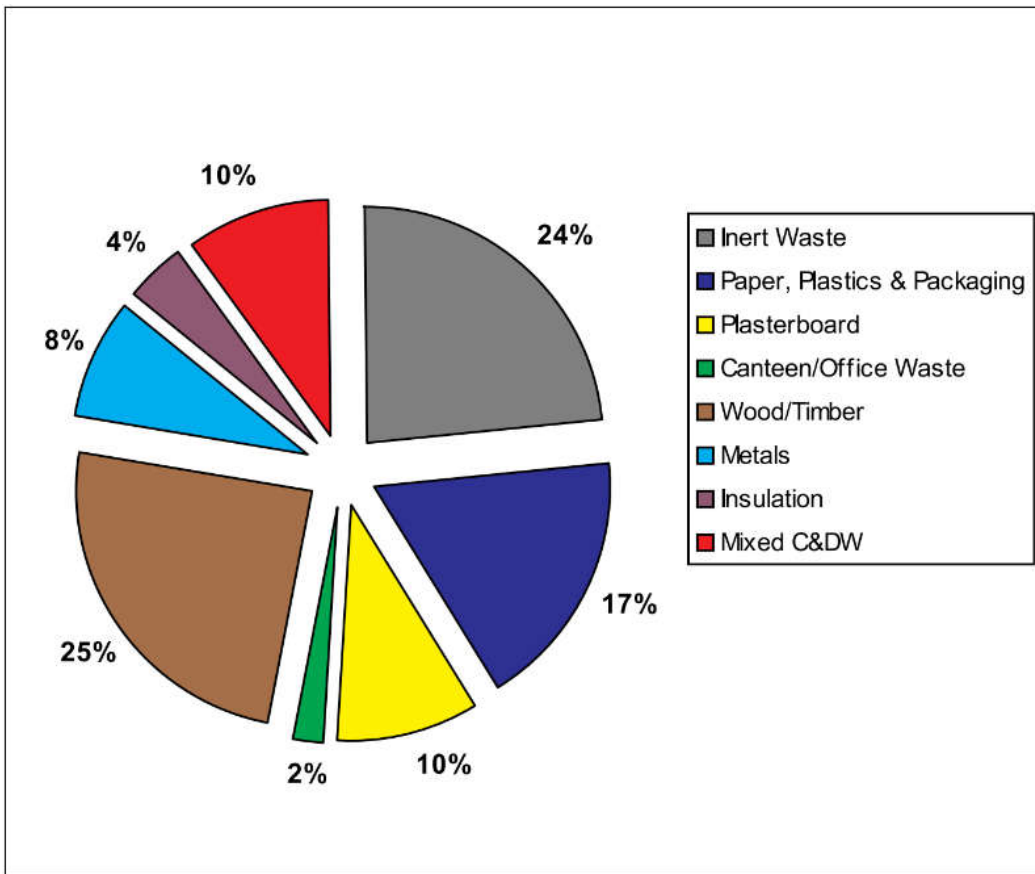


Figure 6.1 - New residential construction composition by volume (m3) (C&D Waste) (EPA, 2009).

Taking account of an average generated waste factor of 0.107m<sup>3</sup> per m<sup>2</sup> (of completed floor space) for 'new residential construction' (EPA, 2009)<sup>2</sup>, and based on the building floor space areas for the proposed development provided by the Architecture team, preliminary waste volumes have been calculated, and are estimated to be ca. 7,563m<sup>3</sup> or 6,524 tonnes.

The total estimated C&D waste volume of ca. 7,563m<sup>3</sup> (6,524 tonnes) has been further broken down into various waste streams tonnages, as presented in Table 6-3. This calculation is based on representative data gathered during a case study of waste composition arising from a new residential construction (EPA, 2009) (refer to Figure 6.1). Volumes have been converted to tonnes using factors obtained from relevant UK waste guidance<sup>3</sup>.

It is noted that these volumes are based on literature values for representative Irish construction sites and are an approximate guideline only. In addition, no specific allowance has been made for C&D waste arising from the construction of access roads, utilities and services or any commercial units. Final volumes can only be confirmed via. site audited waste disposal / recovery records.

<sup>2</sup> Waste factor based on EPA audited data from 19no. new residential construction sites (2004 to 2005). EPA STRIVE Report Series 26 (2009) available at: [https://www.epa.ie/publications/research/waste/STRIVE\\_26\\_Kelly\\_ConstructionWaste\\_syn\\_web.pdf](https://www.epa.ie/publications/research/waste/STRIVE_26_Kelly_ConstructionWaste_syn_web.pdf)

<sup>3</sup> [http://www.sustainabilityexchange.ac.uk/conversion\\_factors\\_for\\_calculation\\_of\\_weight\\_to\\_vo??end](http://www.sustainabilityexchange.ac.uk/conversion_factors_for_calculation_of_weight_to_vo??end)



**Table 6-3 - Estimated Construction Waste Generation for each residential development type – Breakdown for each Waste Stream**

Property	Estimated Volume of C&D Waste (m3)	Estimated Waste Stream - Breakdown (tonnes)							
		Mixed C&D Waste (tonnes)	Wood / Timber (tonnes)	Plasterboard (tonnes)	Metals (tonnes)	Paper, Plastics & Packaging (tonnes)	Canteen / Office Waste (tonnes)	Inert Waste (tonnes)	Insulation (tonnes)
Block A	2017	242	353	202	194	206	30	484	48
Block B	2750	330	481	275	264	281	41	660	66
Block C	986	118	173	88	86	87	13	204	20
Block D	279	33	49	28	27	28	4	67	7
Duplex	593	71	104	59	57	60	9	142	14
House	939	113	164	94	90	96	14	225	23
<b>Tonnes</b>	-	<b>818</b>	<b>1193</b>	<b>671</b>	<b>646</b>	<b>682</b>	<b>101</b>	<b>1604</b>	<b>160</b>

Each waste stream will be managed onsite as follows. Table 6-4 shows the potential recycling/re-use targets of each waste stream for the proposed project.

Each waste stream will be managed onsite as follows.

### Native Non-Contaminated Soils

The estimated volume of soil generated during the construction phase has yet to be determined, however will be minimised by reducing / eliminating the need for excavation and importing of capping layers. Lime stabilisation may also be used to reduce the amount of soils generated onsite. The balance of soil materials excavated from the site will be reused where possible for landscaping purposes, and infill where appropriate, ensuring that any residual soil waste is kept to a minimum. Any surplus soil will be characterised and removed offsite in accordance with all relevant waste management legislation.

Based on preliminary engineering calculations it is anticipated that ca. 41,200m<sup>3</sup> of excess soil comprising topsoil (ca. 3,600m<sup>3</sup>) and subsoil (native soil and made ground, ca. 37,600m<sup>3</sup>) will require offsite disposal.

### Mixed C&D Waste

Following segregation onsite, any residual mixed C&D waste (est.: 908 tonnes) will be collected in containers specifically for mixed C&D waste; these will be removed offsite for subsequent offsite separation and disposal at a waste disposal / recovery facility.

### Wood / Timber

Timber waste (est.: 1324 tonnes) will be segregated in order to prevent contamination by other wastes and will be stored so as to limit the potential for this material to rot. Wooden pallets will be returned to relevant suppliers where possible. Timber offcuts will be reused onsite where feasible. A covered receptacle for waste wood will be placed in the waste storage area, prior to removal from site for recycling. All such timber will be free from chemical treatment.

### Metals

Metal waste (est.: 717 tonnes) will be generated during the project, particularly arising from the use of rebar. All waste metal will be segregated offsite at the waste disposal / recovery facility for reuse and recycling. Given the significant scrap value associated with metal waste, this waste will be stored in a dedicated container within a secure part of the site, and regular collections from site to the waste recycling facility will limit the potential for unauthorised entry and theft.

### Paper, plastics and Packaging

Packaging wastes (est.: 758 tonnes) will be removed (paper / cardboard / plastic / general waste) offsite for subsequent offsite separation and disposal at a waste disposal / recovery facility. Waste packaging will be stored in dedicated containers in the waste storage area for collection and subsequent segregation and recycling.

### Canteen / Office Waste

Onsite staff canteens will generate food and packaging waste (est.: 112 tonnes). Dedicated containers will be provided at each canteen to permit easy segregation of these wastes; brown bins will be provided for compostable food waste, green bins will be provided for dry recyclables (packaging, hard plastic, paper, cardboard, tetrapak etc.) and black bins will be provided for any residual waste.

### Other wastes

In addition to the above waste streams, other waste materials (est.: 2706 tonnes) will be generated during the construction phase. These residual wastes will typically comprise non- recycling waste such as soiled paper / cardboard / plastics / cloth, canteen food waste, fibreglass, polystyrene insulations and plasterboard. These materials will be stored separately to all other waste streams in order to prevent any cross contamination.

A minor amount of waste C&D material observed in a localised area within the southern portion of the Site will also be removed from site and disposed of in accordance with all relevant waste management legislation.

All C&D waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. The Contractor should clearly identify all proposed waste haulage contractors within the project specific

Detailed RWMP. Each waste haulage contractor must hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the Construction Phase must be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility.

**Table 6-4 - Potential Recycling/Re-use Targets**

Waste type	Recycling/ Reuse %* (*WRAP best practice recovery rates)
Imported material	70-90
Excavated material	70-100
Concrete, track ballast etc	50-90
Wood	90
Packaging	95
Plastic	95
Metals	100
Paper and Cardboard	100
Haz soil	50
Foul waste	100

### 6.4.1. Tracking and Documentation Procedures for Off-Site Waste

All waste transport and disposal / recovery must be carried out in accordance with relevant waste management legislation (outlined in Section 2) and any subsequent future legislation which may apply. A nominated Waste Manager for the project will be responsible for ensuring correct tracking and documentation procedures are undertaken for all waste removed from site during the project. Each consignment of waste removed from site will be tracked and recorded. A site record detailing the date, truck registration, waste type, estimated volume and destination will be filed onsite for each consignment, along with the corresponding truck docket and weighbridge record at the offsite disposal / recovery destination. A copy of the relevant waste collection permits and waste permit / waste licence for the relevant disposal / recovery facilities will be available onsite for the duration of the project.

### 6.4.2. Construction Waste Management Costs

Under the Waste Framework Directive 2008/98/EC and in accordance with the polluter-pays principle, there is a legal requirement that the costs of disposing of waste must be borne by the holder of waste or by the producers of the product from which the waste came, thereby placing the legal obligation for the management of the waste on the Client.

In terms of waste management and disposal costs, at this preliminary juncture it would not be feasible to estimate the total cost of waste management and disposal associated with the proposed development. Estimated costs will be determined by the Contractor.

# 7. Site Management

## 7.1. Resource / Environmental Manager - Responsibilities

The Contractor will nominate a Resource Manager for the duration of the Construction Phase. The Resource Manager will be responsible for the efficient operation of onsite waste management procedures; they will also be responsible for ensuring that all waste removed offsite is appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with all relevant waste management legislation. It will be the Waste Managers responsibility to maintain all waste management and disposal / recovery records onsite throughout the project. These site records should be made available for viewing by the Client, Employers Representative and statutory consultees (DLRCC, WCC, EPA) as required.

The Resource Manager should be appropriately trained in the correct documentary procedure, waste auditing and best practice methods in onsite waste minimisation and waste management toolbox talks with site operatives to highlight any specific waste management concerns will also be carried out should the need arise.

## 7.2. Site Compound Location

All C&D waste materials will be segregated onsite into the various waste streams, via. labelled dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. The Contractor should clearly identify all proposed waste haulage contractors within the project specific RWMP. Each waste haulage contractor must hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO).

The proposed locations of the site compounds are shown on Figure 7.1. The locations of the site compounds are selected to avoid any potential impacts to environmental receptors and to reduce any potential for impact on sensitive human receptors. The site compounds will also act as a storage centre for construction materials. The exact locations of the compound areas will be agreed with the appointed contractor and Dún Laoghaire-Rathdown County Council and Wicklow County Council prior to the commencement of development and will be used throughout the construction period.



Figure 7.1 - Location of the Site Compounds (Phase 1, 2 and 3)



## 7.3. Training

All site personnel should receive waste management information and environmental induction before commencing work on the project, which will include a module on resource management as part of their initial site briefing from the Resources Manager. The initial briefing should include a discussion of the key points set out in the RWMP, along with the specific procedures to be implemented onsite to segregate and appropriately store the generated waste and key control measures such as refuelling procedures and oil, fuel and chemical storage requirements. This will ensure that all onsite personnel are familiar with the site-specific waste management strategy.

As a minimum the following will be included in the induction, as per the EPA (2021) guidelines:

- *‘Scope and content of the RWMP;*
- *Project commitments and targets;*
- *List of anticipated resources and wastes and volumes to be generated;*
- *Procedures for the proper identification and segregation of resources and wastes;*
- *Temporary storage and the location of the WSAs; and,*
- *Clear instruction on hazardous wastes will be incorporated into the training programme and the particular dangers of each hazardous waste.’*

The environmental induction shall be provided and delivered by the Contractor and be tailored to suit the tasks and responsibilities of site personnel from management and supervisory level through to site operatives. Toolbox talks on resource management should be provided on a continuous basis. Regular toolbox talks shall ensure site staff are aware of the resource management practices associated with their work and the appropriate control measures that are required to carry out their work in compliance with the RWMP.

### 7.3.1. Disposal / Recycling Proposals for Each Waste Stream

All C&D waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. Waste will be removed from site by a suitably permitted waste haulage contractor. Each waste haulage contractor must hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO).

All waste materials generated during the Construction Phase must be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility.

### 7.3.2. Proposed Management Strategy for each Waste Stream

Key principles set out in the guidelines (EPA, 2021) include optimising resources and reducing waste on construction projects through:

- Prevention
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and,
- Flexibility and Deconstruction.

These principles are applied to the RWMP through both the pre-construction phase and the construction phase. Therefore, every effort should be made to prevent and limit the amount of waste generated at the very outset of the project. At the preparatory phase of the Construction Phase the following measures will aid the prevention of waste in the first instance;

- *Select procurement routes to minimise unnecessary packaging – for example applying ‘Just-in-Time’ (JIT) delivery processes to minimise material spoilage;*
- *Use of ‘consolidation centres’ to support JIT delivery – these are strategically-located storage and distribution facilities where materials can be stored prior to JIT delivery to sites;*
- *Implement ordering procedures and supply chain systems that avoid waste, i.e. no over-ordering, use of take-back schemes for packaging, material surplus and offcuts;*
- *Select procurement routes that minimise unnecessary packaging; and,*
- *Plan the work sequence to reduce the potential for on-site residual resource generation.*

## 7.4. Record Keeping

The Contractor, through the appointed Resource Manager, will be responsible for ensuring that the full details of all materials deliveries, materials movements and C&D waste generated is recorded during the Demolition and Construction Phases. Each C&D waste consignment removed from and to site will be tracked and documented to ensure full traceability of the material from site to the final destination. A single record will be completed for each individual consignment.

The Contractor will also receive printed receipts / weighbridge records from the waste disposal / recovery facilities for each individual consignment. These records will enable the Contractor to accurately quantify the total volume of waste removed for offsite disposal / recovery for each individual waste stream. These records will be maintained onsite and will be made available for auditing.

The type of information to be recorded in the site tracking system is described below in accordance with relevant guidelines and legislation:

- For each movement of resource off-site, a signed docket/invoice will be obtained by the RM from the haulier/contractor detailing the following:
  - Name the resource / waste stream.
  - List of Waste (Low) Code for each stream (where applicable).
  - Quantity of material moved off-site by the haulier/contractor (tonnes).
- The name and authorisation of the haulier to transport the material – in the case of a ‘waste’ this requires a valid Waste Collection Permit (WCP). In the case of by-product or other materials that are not a waste, no WCP is required. In both cases the vehicle registration number should also be recorded for each load of material removed from site.
- The name and authorisation of the destination site for the resource – again for a ‘waste’ this requires a valid Cert of Registration, Waste Permit or Waste Licence and in the case of by-product the relevant by-product determination.
- The waste contractors must be required to provide details of end-use or waste treatment in waste reports.
- This recording will be carried out for each resource type and the system will also be linked with the delivery records. In this way, the percentage of residual resource generated for each material can be determined.
- The system will allow the comparison of these figures with the targets established for the prevention, reuse and recovery of resources to highlight successes or failures against these targets.

## 7.5. Communications

The following communication tasks are recommended for the Resource Manager through the construction phase as per the EPA (2021) guidelines:

- *‘Internal reporting of resource statistics to the Client and the Contractor management. This includes performance relative to agreed targets and objectives which should be included as an agenda item at site meetings;*
- *Engaging with relevant local authority on any site inspection or enforcement audits undertaken at the site. All follow-up actions and corrective actions should be logged and reported to the local authority.*
- *Engaging with other stakeholders (EPA, public, etc.) as appropriate in relation to the resource management on site; and,*
- *Upon completion of construction, the RM will prepare a final report summarising the outcomes of resource management processes adopted, the total reuse and recovery figures and the final destinations of all resources taken off-site. This report will be issued to the Client, Contractor management and the local authority. The local authority may make such a requirement a condition of planning and require the formal sign-off of same by the local authority for full planning compliance.’*

## 7.6. Outline Waste Audit Procedures

According to EPA (2021) a resource Audit represents a systematic study of the waste management practices applied in the Project and is required to highlight firstly, the potential issues that can arise during the waste management process and secondly, the benefits of waste prevention and minimisation. Therefore, waste audits should be carried out routinely onsite by the Resource Manager. These audits will cover work practices, record keeping, and off-site tracking as follows in accordance with the EPA (2021) guidelines:

- When materials arrive on site, they will be properly recorded including the assignment of such materials to specific uses within the works;

- A review will be undertaken of onsite waste management practices to identify any improvements which may be required;
  - *'Ensure adequacy of site signage and need for any repairs or upgrades.*
  - *Adequacy of storage infrastructure and need for any repairs or upgrades.*
  - *Compliance with resource segregation protocols and observed contamination in any resource streams.*
  - *Assessment of observed Contractor and Sub-contractor work practices for compliance with the RWMP' (EPA, 2021).*
- Onsite waste management processes / material management from materials delivery through to waste disposal / recovery (including the quantity, type and composition of all waste) will be reviewed to identify any opportunities for waste reduction;
- Corrective actions will be highlighted and implemented following each audit. Such actions include applying 'lessons learned' regarding efficient waste management on this project to other projects in the future to enable further waste reduction; and
- The key steps and findings from each waste audit should be presented in a summary report.

## 8. Consultation with Relevant Bodies

Appropriate consultation should be undertaken with relevant bodies by various members of the project team as required throughout the project. Relevant consultees include, but are not limited to, the following;

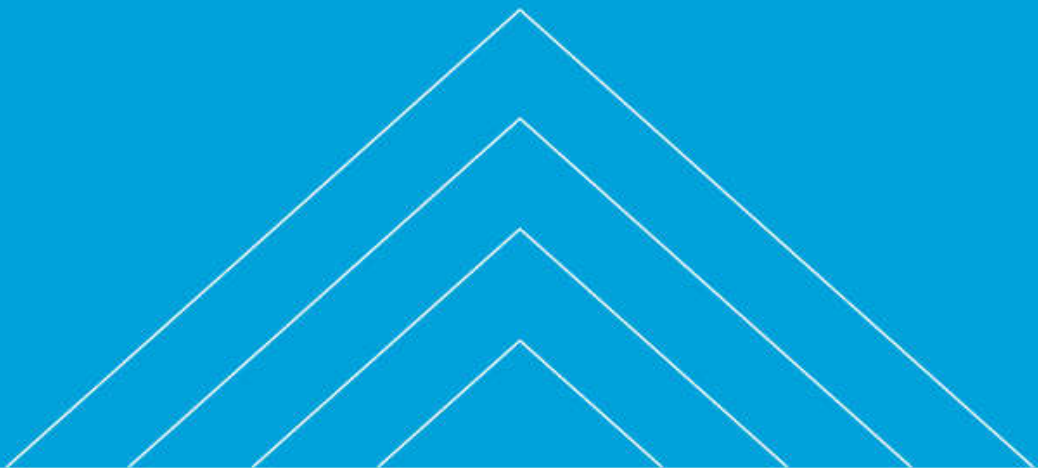
- DLRCC and WCC (as the relevant local authorities for waste matters);
- The EPA (as relevant regulatory body for environmental matters);
- NWCPO;
- Permitted hauliers; and,
- Suitably permitted / licenced waste disposal / recovery facilities.

## 9. References

- Atkins (2022) Coastal Quarter SHD 2 Volume 2 – Environmental Impact Assessment Report – EIAR Document
- Atkins (2022) Coastal Quarter SHD 2 Volume 3 – EIAR Appendices – EIAR Document
- Department of Communication, Climate Action and Environment (2020) ‘A Waste Action for a Circular Economy’
- Department of Environment, Heritage and Local Government (DoEHLG), 2012. ‘A Resource Opportunity - Waste Management Policy in Ireland’. DoEHLG, 2006. ‘Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects’.
- DoELG, 1998. ‘A Policy Statement – Waste Management - Changing our ways’.
- DoELG, 2002. ‘Preventing and Recycling Waste: Delivering Change’.
- Dún Laoghaire-Rathdown County Council (2022) Dún Laoghaire-Rathdown County Development Plan 2022-2028.
- Eastern Midlands Waste Regional Office, 2015. ‘Eastern-Midlands Region Waste Management Plan 2015-2021’.
- EC, 2011. European Commission (Waste Framework Directive) Regulations 2011 (S.I. 126 of 2011) (EC, 2008).
- EC, 2011. European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).
- Environmental Protection Agency (EPA), 2022. EPA Envision webmapping. Available at <http://gis.epa.ie/Envision>. Consulted September 2022.
- EPA, 2009. ‘Development of an Audit Methodology to Generate Construction Waste Projection Indicators for the Irish Construction Industry’. STRIVE Report Series No. 26.
- EPA, 2014. ‘Green Procurement: Guidance for the Public Sector’.
- EPA, 2015. ‘A review of Design and Construction Waste Management Practices on Selected Case Studies – Lessons Learned’.
- EPA, 2015. ‘Design out Waste: Preparation of Waste Reduction Factsheets for Design Teams’.
- EPA, 2018. ‘Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous’.
- EU, 2014. European Union (Waste Electronic Equipment) Regulations 2008 (S.I. 556/2008) (as amended).
- European Communities Council Decision (EC), 2003. ‘COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC’ (2003/33/EC).
- Waste Electrical and Electronic Equipment Directive 2002/96/EC (as amended).
- Wicklow County Council (2018) Bray Municipal District Local Plan 2018-2024.
- Wicklow County Council (2016) Wicklow County Development Plan 2016 – 2022.
- Draft Wicklow County Development Plan 2022-2028 and proposed amendments
- WRAP, 2018. ‘Capacity Requirements’. Available at: <http://www.wrap.org.uk/sites/files/wrap/Flats%20recycling%20capacity%20guidance.pdf>.



# Appendices



# Appendix A. Proposed Development Layout



- KEY**
- County Boundary
  - 1 Bed Apartment
  - 2 Bed Apartment
  - 3 Bed Apartment
  - 2 Bed Duplex
  - 3 Bed Duplex
  - House Type H1 (3BSP corner duplex over 2B4P ground floor apartment)
  - House Type H2 (3BSP terrace duplex over 2B4P ground floor apartment)
  - House Type H3 (2B4P terrace house)
  - House Type H4 (3BSP terrace house)
  - House Type H5 (4BSP terrace house)
  - House Type H6 (3BSP corner duplex over 2B4P ground floor apartment)
  - House Type H7 (4BSP end of terrace house)
  - House Type H8 (3BSP corner duplex over 2B4P ground floor apartment)
  - Children's facilities
  - Apartment Car Park
  - Residential Amenity / Facility Management
  - Commercial
  - Back of House
  - Main Entrance
  - Secondary Entrance

**Notes & Key**

**DIMENSIONS NOT TO BE SCALED FROM THIS DRAWING. CONTRACTORS TO NOTIFY ARCHITECTS OF SITE VARIATIONS AS THEY OCCUR FOR CREATION ON THIS DRAWING. THIS DRAWING IS COPYRIGHT OF GLENN HOWELLS ARCHITECTS.**

Please note information relating to the existing elements within this site should be treated as indicative and must be confirmed through accurate site measurement before being relayed upon.

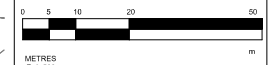
This drawing has been produced without the use of a measured survey. Glenn Howells Architects cannot guarantee the accuracy of the information generated regarding its relationship to the site of surrounding area. The information contained within this drawing should be treated as indicative.

Glenn Howells Architects take no responsibility for the location of legal boundaries indicated on this drawing and advise a separate drawing be completed by a specialist Surveyor to establish exact boundaries.

O.S. Data from sheet number  
 1:1000 3568-03  
 1:1000 3568-04  
 1:1000 3568-05  
 1:1000 3568-09  
 1:1000 3568-13  
 1:1000 3568-14

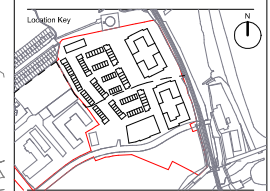
Ordinance Survey Licence Number  
 C15L0260263  
 © Ordnance Survey (reland) Government of Ireland  
 All rights are given in metres and are referred to O.S. Datum (Maiden Head Co. Donegal 1970 Adjustment)  
 Centre Point Coordinates X,Y = 720576.719356

Site Area = 8,812 Ha



Revisions

Date	Rev	By	Description
12/09/22	P01	MP	Planning Issue



**PLANNING ISSUE**

Project	GHA No.
Coastal Quarter SHD 2	2244
Client	
Shankill Property Investments Limited	

Drawing Title	
<b>Ground Level Uses Plan</b>	
Drawing No.	Revision
<b>BRA-GHA-SW-00-DR-A-05010</b>	<b>P01</b>
Scale	Date
Scale = 1:500@A1	12/09/22
Checked	DK

**Glenn Howells Architects**  
 321 Bradford St, Birmingham, B5 6ET  
 T. +44 (0)121 666 7640 E. mail@glennhowells.co.uk

Atkins House  
150 Airside Business Park  
Swords  
Co. Dublin  
K67 K5W4

© WS Atkins Ireland Limited except where stated otherwise