

Operational and Construction Waste Management Strategy Plot 1

Cardiff Peninsula

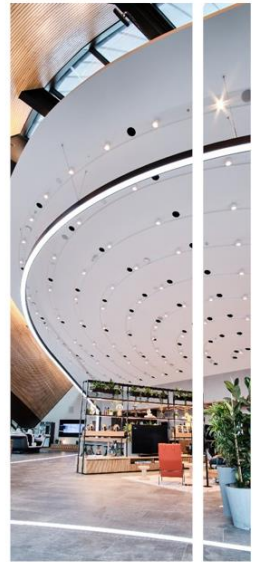
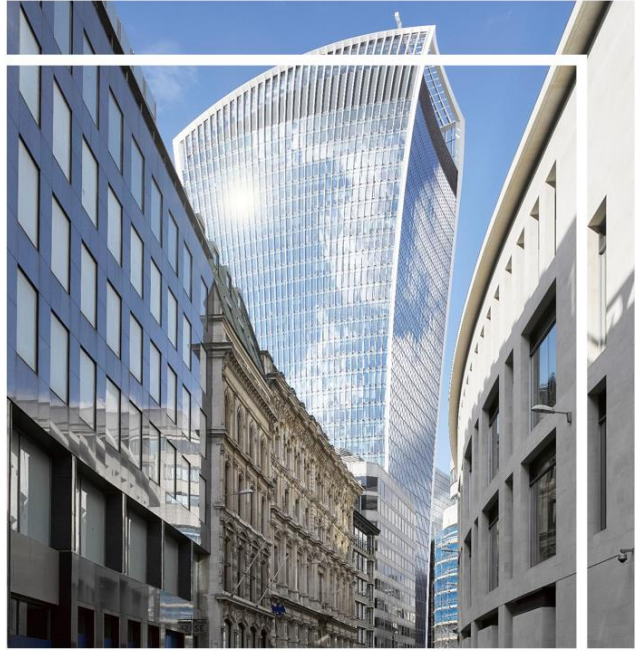
Orion Land & Leisure Ltd

26 April 2024

CPM-HIL-1A-0000-RP-E-
PL-1001

Issue P01





Project Name: Cardiff Peninsula

Report Name: Operational and Construction Waste Management Strategy

Plot 1

Issue Status: Final

Reference: CPM-HIL-1A-0000-RP-E-PL-1001

Date of Issue: 26 April 2024

Issue: P01

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Document History:

Issue	Date	Details
P01	26/4/2024	FINAL

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1. Introduction

Hilson Moran have been commissioned by Orion Land & Leisure Ltd to provide a Construction and Operational Waste Management Plan in support of the Proposed Development of Plot 1, Cardiff Bay Peninsula.

The location of the Application Site is identified below in **Figure 1.1**. The site will hereafter be referred to as the ‘Proposed Development’ or ‘Application Site.’

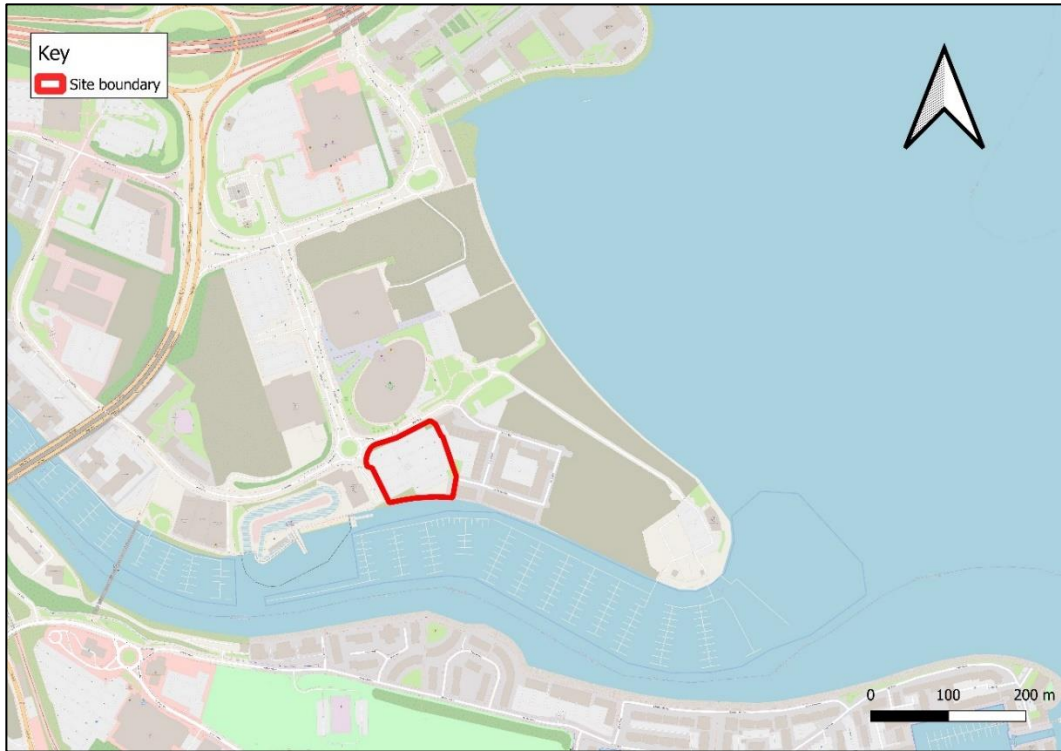


Table 1.1 Site Boundary (OpenStreetMap Sources 2024)

1.1. Application Site

The Application Site is located within the Grangetown (The Bay) ward under the jurisdiction of Cardiff City Council, positioned on the Cardiff Bay Peninsula, as detailed in **Figure 1.1**.

The Application Site encompasses an area of 2.05 acres and it currently occupied by a carpark, and devoid of any buildings. Adjacent to the water on the eastern side of the site, there is a modest amount of overgrown grass, bushes, and trees.

Directly to the south of the Application Site is the mouth of the River Ely which houses several pontoons occupied by recreational boats. To the Northeast of the Application Site is Cardiff International Sports Village, which houses state of the art sporting facilities, including a white water rafting centre, international pool and gym, ice skating arena, as well as residential and retail developments.

1.2. Proposed Development

The proposals for the development include senior living accommodation with associated car parking, cycle parking, and landscaping.

At this stage the proposals for Plot 1 at of the Cardiff Bay Peninsula development encompass development of a 5-story tall apartment (Building A) which will contain approximately 77 new residential senior living accommodation units, with 40 parking spaces. The Proposed Development will also introduce soft landscaping, which will help with the visual enhancements of the land by introducing green spaces and tree planting within the Application Site, as well as contributing to the housing demand within the City of Cardiff, which under the Future Wales Policy is to deliver 24,000 houses between 2021-2036 (1,600 p/a)¹.

1.3. Purpose

This document describes the Waste Management Strategy for the development of the Application Site and details how the infrastructure and management procedures will ensure that the development operates under the best environmental practice for the construction period as well as the lifespan of its operation. The strategy will provide a framework for the design and operation of waste infrastructure in order to deliver cost effective, sustainable waste management procedures. A key component of this approach is the provision of best practice, sustainable waste management guidance that will allow the project to contribute significantly to waste minimisation and recycling in the area.

1.4. Scope

The scope of the Waste Management Strategy considers both the construction and operation of the development. The scope does not include all clearance, earthworks and infrastructure building. The principles of this report should be applied to these activities through a Construction Environmental Management Plan (CEMP) – which accompanies the planning application, ensuring appropriate waste storage, handling and collection are provided.

1.5. Disclaimer

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2. Legislation and Policy Framework

2.1.1. Environmental Protection Act 1990

The Environmental Protection Act 1990² (as amended) is the principal legislation regarding waste, establishing the definition as provided in the Waste Framework Directive as *'any substance or object which the holder discards or intends or is required to discard'*. Further to this, and of relevance to this assessment, the Act also distinguishes in Section 75 between household, industrial and commercial waste, collectively known as *'controlled waste'*. The Controlled Waste (England & Wales) Regulations 2012³ provide further interpretation of controlled waste to which the Act applies.

Importantly, the Act places a duty of care on any person that imports, produces, carries, keeps, treats or disposes of controlled waste. This duty of care requires all reasonable steps to be taken to:

- Prevent unauthorised or harmful deposit, treatment or disposal of waste;
- Prevent a breach (failure) by any other person to meet the requirement to have an environmental permit, or a breach of a permit condition;
- Prevent the escape of waste from your control;
- Ensure that any person you transfer the waste to has the correct authorisation; and,
- Provide an accurate description of the waste when it is transferred to another person.

The Waste Duty of Care Code of Practice⁴ provides guidance on the duty of care and methods of complying with the requirements of the Act. This includes methods of ensuring waste is handled and stored safely and securely, ways of checking authorisation for waste removal and methods of ensuring waste descriptions are accurate.

The Act places a duty on the Secretary of State to establish a Strategy regarding the recovery and disposal of waste in England and Wales and permits waste collection authorities to enact waste reduction schemes in line with Schedule 2AA of the Act.

2.1.2. The Waste (England & Wales) Regulations, 2011

The Waste (England & Wales) Regulations 2011 (as amended)⁵ transpose the revised Waste Framework Directive (Directive 2008/98/C). The Regulations also repealed the Environmental Protection (Duty of Care) (England & Wales) Regulations 1991 and replaced them with provision in the Environmental Protection Act 1990 (as amended).

The Regulations set requirements for the collection, transport, recovery and disposal of wastes. Notably, the Regulations require businesses/organisations to confirm, upon transfer of waste, all reasonable measures have been taken to apply the waste hierarchy, in the following order of priority:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery (*e.g.* energy recovery); and
- Disposal.

The Regulations, including 2014 amendment, establish new requirements for the completion of a Waste Transfer Note, including use of alternative documentation provided it complies with the legal requirements for what must be included.

The Waste (Circular Economy) (Amendment) Regulations 2020⁶ amend a number of primary and secondary legislation on waste and introduce a revised framework for the identification of steps to reduce waste and establish robust long-term plans for the reuse and recycling of wastes.

2.1.3. Hazardous Waste (England and Wales) Regulations 2005

The Hazardous Waste (England and Wales) Regulations 2005 (as amended)⁷ transposes the Hazardous Waste Directive (Directive 91/689/EC) and defines the way in which hazardous wastes are classified and subsequently treated and disposed of in England and Wales. The Regulations draw together definitions of hazardous waste from previous European and UK legislation, and set a range of chemical and physical parameters for determining the nature of waste. Hazardous wastes are listed in the European Waste Catalogue (EWC).

Wastes listed as hazardous include a range of everyday items, such as waste oils from vehicle maintenance, fluorescent tubes, and some electronic and electrical equipment. A full list of hazardous wastes is provided in the EWC and the List of Wastes (England) Regulations 2005⁸.

The Regulations place strict controls on the methods of treatment and disposal of hazardous waste. The Landfill (England and Wales) Regulations 2002⁹ restrict the landfill disposal of hazardous waste to specific hazardous waste landfill sites. As with the wider Landfill Regulations, the aim is to enforce tighter control of the nature of the landfill and cause less end-of-life problems with toxic landfill leachate and landfill gas production. The requirement imposed by the Hazardous Waste Regulations to treat hazardous waste prior to disposal is intended to reduce the toxicity of the materials deposited and recover value from them prior to landfill to encourage sustainable resource use.

The Hazardous Waste Regulations require waste producers, whether domestic or commercial, to separate hazardous materials from their general waste to allow separate disposal. Failure to do is in breach of the Hazardous Waste Regulations and Duty of Care requirements in the Environmental Protection Act 1990 (as amended).

2.1.4. Environmental Protection

The Environment Act 2021

Part 3 of the Environment Act 2021¹⁰ follows a holistic approach and allows for action to be taken at all stages of the product lifecycle, as each stage provides opportunities to move towards a more circular economy.

The Act makes provision for product design and related requirements to ensure products are more durable, repairable, and recyclable. It also notes provisions could be made for clearer labelling of products so consumers can easily identify recyclable products.

The Environment Act also makes provision for the introduction of new extended producer responsibility schemes, which will allow for producers to be responsible for the full net costs of managing their products and packaging for disposal. Charges on single-use plastics will also be introduced as well as the provisions for introduction of a deposit return scheme for waste items such as drinks containers.

The Act will also address the consistency and frequency of recycling collections across England and Wales, and councils operate weekly separate food waste collections.

The Environment (Wales) Act 2016

The Environment (Wales) Act 2016¹¹ is focused on safeguarding Wales' natural assets and promoting sustainable practices. It requires the Welsh government to develop and advance policies that support the responsible management of resources, including biodiversity conservation, climate resilience, and ecosystem health.

This Act establishes guidelines for setting clear objectives, targets, and measures to assess progress toward environmental sustainability. The Act emphasizes an integrated approach to decision-making that recognizes relationship between natural systems and human well-being.

It also places responsibilities on public bodies to protect and enhance biodiversity, manage water sustainably, and address air quality issues. In essence, the Environment (Wales) Act 2016 underscores Wales' commitment to preserving its environment for current and future generations through thoughtful and strategic environmental management.

Well-being of Future Generations (Wales) Act 2015

Well-being of Future Generations (Wales) Act¹² was designed to ensure that decisions made by public bodies in Wales consider the long-term impact on people, communities, and the environment.

This Act outlines seven key well-being goals that public bodies must work towards, including goals related to prosperity, resilience, health, equality, and community cohesion. It requires public bodies to collaborate and take a preventative approach to improve well-being for present and future generations. The Act also emphasizes the involvement of future generations in decision-making processes to address their needs and priorities. Overall, this legislation aims to create a more sustainable and inclusive Wales by prioritizing the well-being of both current and future residents.

2.2. Planning Policy

2.2.1. National

2.2.1.1. Towards Zero Waste – The Waste Strategy for Wales (2010)

Towards Zero Waste: The Waste Strategy for Wales¹³ outlines a comprehensive plan by the Welsh Government to revolutionize waste management practices. The strategy sets a bold vision for Wales to become a country which generates minimal waste, emphasizing the principles of prevention, reuse, recycling, and energy recovery. It sets ambitious targets to achieve zero waste to landfill by 2050, driving a shift towards a circular

economy where resources are used efficiently and environmental impacts are minimized. Central to the strategy is the waste hierarchy, guiding prioritization towards waste prevention and reduction, followed by reuse, recycling, and energy recovery.

The strategy encompasses a range of actions to realize its objectives, including the implementation of waste prevention measures, enhancement of recycling infrastructure, support for innovative waste management technologies, and the promotion of public awareness and engagement.

2.2.1.2. The Waste Prevention Programme for Wales

The waste prevention program in Wales¹⁴ focuses on reducing waste generation and promoting sustainable consumption and production practices. It operates through various strategies, including education, outreach, and policy implementation. Through educational campaigns, residents and businesses are encouraged to adopt practices such as reducing packaging, reusing items, and composting organic waste to minimize the amount of waste sent to landfills or incinerators. Moreover, the program emphasizes the importance of product design that prioritizes durability and recyclability, aiming to create a circular economy where resources are used efficiently and waste is minimized.

2.2.2. Regional

2.2.2.1. Recycling Strategy for Cardiff 2022-2025

The Recycling Strategy for Cardiff¹⁵ sets out the council's targets and comprehensive approach for waste reduction and increasing recycling from 2022-2025. It involves both educational initiatives and practical measures to encourage residents to recycle effectively. Through public awareness campaigns and community engagement programs, Cardiff promotes the importance of recycling and provides information on how to properly sort and dispose of recyclable materials. Additionally, the city provides convenient recycling facilities and collection services to make it easy for residents to participate in recycling efforts.

2.2.2.2. Waste Collection and Storage Facilities (2016)

The Waste Collection and Storage Facilities¹⁶'s guidance note, offers guidance relating to the provision of Waste Management facilities for new developments. The Note acts as a practical guide of minimum standards to assist in planning and designing storage facilities in commercial and domestic developments.

2.3. Guidance

2.3.1. Delivering Good Practice Waste Management

The WRAP Achieving Good Practice waste management guidance¹⁷ presents practical guidance for construction design teams and contractors. Its aim is to assist main contractors and their subcontractors meet the waste management objectives set by their clients and developers. The report also provides detailed practical guidance on how good practice Waste Management can be delivered. The guidance is divided into 10 guidance notes, which cover the following points:

- i. Setting project requirements;
- ii. Identifying key opportunities for waste minimisation;
- iii. Planning waste management by developing the site waste management plan;
- iv. Tender and contractual requirements for good practice;
- v. Setting targets and Key Performance Indicators;
- vi. Allocating responsibilities and contracts;
- vii. Identifying waste arisings, reuse and recycling routes;
- viii. Developing site design and training;
- ix. Monitoring waste management;
- x. Reviewing performance of the SWP and lessons learnt.

2.3.2. Designing Out Waste

The WRAP Designing out Waste guidance¹⁸ focuses on the influence design decisions have on construction waste and how waste can be reduced. The guide is split into 2 parts in terms of design principles and technical solutions.

Building projects usually require large quantities of materials and have the potential to generate large quantities of waste. The biggest opportunities to reduce these occur through decisions made at the design stage, as these determine the approach that will be adopted at the construction stage. The guidance also sets out a three-step process to Identify, investigate and implement solutions, as identified in Figure 2.1.



Table 2.1 The WRAP 3-Step Process

- **Step 1 - Identify** opportunities for alternative design solutions, which reduce materials use and/or waste creation, and prioritise those which will have the biggest impact and are the easiest to implement;
- **Step 2 - Investigate** prioritised solutions further, and quantify the benefits; and
- **Step 3 - Implement** agreed solutions through the technical drawings, specifications, project reports and procurement process, and ensure that they are recorded in the Site Waste Management Plan (SWMP) or Resource Management Plan (RMP).

3. Construction Waste Management

Construction projects can generate large quantities of waste that have a significant impact on waste generation, however much of this can be recovered and reused. As a result, through careful planning of the construction phase it will be possible to improve resource efficiency, increase reuse and recycling of materials and reduce waste generation and the burden on treatment capacity.

The overarching strategy for the management of construction waste should follow the Waste Hierarchy, as shown in **Figure 3.1** below, which provides a prioritised list of options for waste with landfill being the least desirable option.

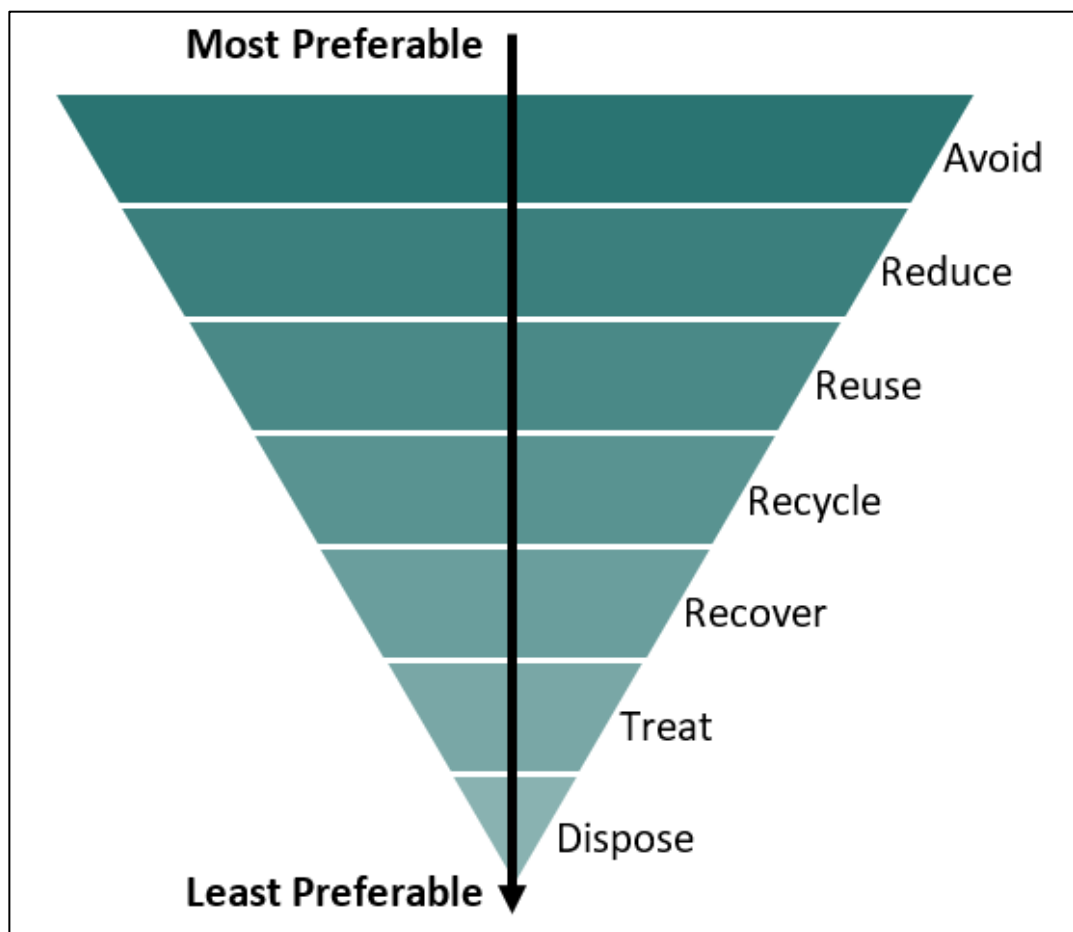


Figure 3.1 Waste Hierarchy

3.1. Waste Forecasts

The contractor should identify the specific waste streams that will offer highest potentials for recovery rates and propose recovery targets based on their working practices. Commercial developments for example have metals as their typical waste stream, while residential developments typically have concrete and bricks, packaging, timber and plasterboard as their top waste streams.

Table 3.2 highlights the main waste management actions that can be implemented for the expected waste streams.

Table 3.2 Waste Management Actions for Construction Works (adapted from WRAP)

Waste Materials	Activity Likely to Produce Waste	Waste Minimisation Opportunities	On-Site Recycling/Re-Use	Off-Site Recycling/Re-Use
Concrete	Demolition, concrete frame, ground works	Prefabrication offsite, on site batcher	Excess can be dried and reused on site as backfill	Segregation, land reclamation, reprocessed and reused in construction industry
Rubble	Demolition	Using part of the existing structure within the completed construction	Use as hardcore on site	Segregation, land reclamation, reprocessed and reused in construction industry
Soils	Groundwork, earthworks	Store on site	Reuse in landscaping, use as backfill	Land reclamation
Metal	Steel frame, temporary works, concrete frame	Pre-fabrication, correct ordering, just in time delivery, store correctly	Reused in temporary works	Segregate waste and send to metal recycler
Timber	Concrete frame, ground works, joinery	Use steel shuttering, reuse all shuttering	Reuse for temporary hoardings, and general carpentry	Segregate for chipping to use in other timber products or use as mulch
Plasterboard	Drylining	Cut offsite, offsite design Reduce plasterboard size	Keep in dedicated areas for reuse for off-cuts	Send for recycling Manufacturer take back schemes
Pallets	Material supply and delivery	Return pallet to supplier or	Reuse pallets for internal storage and	Send pallets for reuse

Waste Materials	Activity Likely to Produce Waste	Waste Minimisation Opportunities	On-Site Recycling/Re-Use	Off-Site Recycling/Re-Use
		use plastic pallets	movement of materials	
Green Waste	Earth work, demolition, landscaping	Excavate and replant larger specimens such as trees	Chip on site for landscaping	Segregate, send for composting, use as mulch on land
Hazardous Waste	Demolition, earth works, ground works	N/A	Remediate on site	Remediate off site

According to WRAP, excess waste can be generated on construction sites in a variety of ways, including:

- Changes in design specifications;
- Material damage;
- Lack of recording of materials supplied and used;
- Excess material due to over ordering;
- Off-cuts of different materials;
- Office and canteen waste; and,
- Vandalism.

3.2. Management & Waste Generation

Sensitive management of resources and waste can minimise the waste produced through the construction phase, for example through procurement of materials and reducing off cuts. A number of steps will be implemented within the project to reduce the amount of waste produced during development and increase resource and cost efficiency. These may include:

- Develop a Site Waste Management Plan. Although not required through legislation, this will help by identifying the types and volumes of waste that will be produced, and identify where they can be reused or recycled within the development;
- The main contractor should appoint a licensed waste management service provider to the project and ensure that they can demonstrate materials disposed of are being recycled or reused, or the disposal route for non-recyclable elements;
- Identify where waste can be reused or recycled on site, *e.g.* secondary aggregate, excavated soils;
- Separate waste streams at source to minimise contamination, and consequently cost of disposal. This should include specific waste streams produced by different trades, such as sealants and paints. Clearly label waste disposal and recycling facilities;

- Identify areas where materials can be reused and stored on-site for later use or sent to external organisations or sites. These materials could include crushed material, timber, brick and block.
- Train staff and subcontractors in appropriate waste management and reduction;
- Set targets for waste production and incentivise/penalise meeting (or not) those targets;
- Implement 'just-in-time' deliveries to ensure materials are not left on site unused, making them susceptible to damage, and hence wastage;
- Provide adequate, safe storage for materials to reduce damage and wastage;
- Engage the supply chain to reduce packaging materials (use corner protection for products, rather than full packaging for example), introduce take-back schemes for unused materials and ordering non-standard materials to size to reduce alterations;
- Appoint a dedicated Site Waste Manager with sufficient authority to monitor and implement waste management practices;
- Utilise off-site manufacture or fabrication to reduce materials delivered to site;
- Minimise skip void space by planning skip management as waste disposal methods;
- Making use of recycled elements such as steel beams for example; and,
- Utilising recycled aggregate where possible, as fill material, as a component in concrete/road surfacing, *etc.* or as a cement replacement (such as pulverised fly ash, PFA), providing it also meets the relevant British Standards requirements for the works. This could include cut and fill waste produced at the beginning of the project, or material brought in from other local schemes or recycling facilities.

3.3. Contractor Responsibilities

3.3.1. Key Responsibilities

Key waste manager responsibilities include:

- Compliance with environmental legislation and, where required, environmental permits;
- Monitoring compliance with the Waste Management Strategy;
- Managing waste on site by:
 - Ensuring there are sufficient and adequate waste containers and facilities on-site;
 - Keeping accurate records of all waste generations, recycling, reuse, sent to landfill;
 - Ensure hazardous waste (such as batteries, asbestos, oil, solvents, paints and chemicals) is dealt with in accordance with local applicable regulations;
- Waste generation and reduction strategies should be monitored through a Waste Management Plan. Contractors should track and record waste arisings on site and include the information on the wider Waste Management Plan. This log should also be used to monitor the amount of what is reused on site, removed from site for recycling and/or reuse and/or sent to landfill.

3.3.2. Implementation of Good Practice

In order to ensure that good practice is implemented on-site, the contractor would need to be clearly briefed on all requirements and goals of the project. Contractor involvement

in meetings regarding sustainability and waste targets is important. WRAP also recommends a number of strategies to overcome the barriers to implement good practices on site. Some of these strategies include the following:

- Incentives - good onsite performance should be rewarded through the organisation's scheme;
- Organisational support structure;
- Allocation of a sustainability/waste champion throughout the project to ensure all targets are monitored and met;
- Involve and train the workforce to contribute to adoption of good or best practice;
- Ensure high waste performance and Key Performance Indicators (KPIs) are communicated during subcontractor tenders and set selection criteria for subcontractors;
- Perform waste audits and checks;
- Ensure a strong corporate commitment where goals and targets are clearly set, communicated and shared on all communication channels.

3.3.3. Waste Segregation

Waste generated on-site should be segregated according to the following expected waste streams as a minimum:

- Inert waste (concrete, broken asphalt, bricks, blocks, soils);
- Metals;
- Timber;
- Finishing materials (*e.g.* tiles (roof, wall, floor), paints);
- Packaging materials;
- Mixed waste;
- Hazardous waste.

Construction and demolition waste should be segregated and stored in appropriate designated receptacles or storage areas. Each container or storage areas must be appropriately sized and clearly labelled for each waste stream. These should also be cleaned regularly. Training of site personnel should be conducted covering instructions on separation, handling, recycling, re-use and return methods.

If material is required to be disposed of off-site then the material will need to be classified for waste disposal purposes. The presence of asbestos or other contaminants could render materials to be hazardous waste depending upon the concentration of the substance within the soil. All materials to be disposed of off-site will need to be done so in accordance with the Duty of Care Regulations.

If contaminated soils are able to be re-used on-site, then a Materials Management Plan (MMP) will need to be developed and submitted to the Environment Agency ahead of the works. A verification report will need to be produced following the re-use of materials to demonstrate that the MMP has been followed. Details of the scope should be as outlined in the CL:AIRE Definition of Waste: Development Industry Code of Practice (the Code of Practice)¹⁹.

Hazardous waste should be appropriately handled and stored in appropriate containers as per applicable regulations. These should be transferred to an appropriate treatment disposal facility. Hazardous waste containers should be sheeted and lidded or closed to prevent the escape of any waste. The contractor should also conduct regular inspections of these containers to ensure they remain in good conditions and are not leaching.

3.4. Waste Targets

Appropriate targets for waste recovery are provided by WRAP guidance²⁰ and provided in Table 3.3, which identifies how good and best practice opportunities can deliver an improvement on waste recovery rates associated with standard practice in the construction industry. Appropriate waste recovery targets will be established for the development within a Construction Environment Management Plan (CEMP) or similar document.

Table 3.3 *Standard, Good and Best Practice Recovery Rates by Material (from Wrap)*

Material	Standard Recovery %	Good Practice Quick Win %	Best Practice Recovery %
Timber	57	90	95
Metals	95	100	100
Plasterboard	30	90	92
Packaging	60	85	95
Ceramics	75	85	100
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical Equipment	Limited information	70 ¹	95
Furniture	0 - 15	25	50
Insulation	12	50	75
Cement	Limited information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information ²	Limited information [†]

¹ Required recovery target for the type of Waste Electrical and Electronic Equipment (WEEE) likely to be produced from construction sites (e.g. lighting).

² This cannot be 100 % as much hazardous waste, such as asbestos, must be land filled.

Examples of good and best practice opportunities within the construction phase are provided in Table 3.4 and should form the basis for the Principal Contractor to establish opportunities for waste management and recovery strategies.

Table 3.4 *Good and Best Practice for Different Waste Streams (adapted from WRAP³)*

Material	Good Practice	Best Practice
Plasterboard	Consider design opportunities to reduce material usage and opportunities to reduce cutting to size.	Segregate all plasterboard during fit out with identified markets for reprocessing and/or reuse.
Miscellaneous	Segregate organic waste for collection as part of green waste collection.	Composting of organic waste on site.
Inert	Maximise retention/reuse on site and limit waste going to landfill (<i>i.e.</i> identify local recycler/processor). Re-use as 'fill'.	Network whereby excess materials can be reused on site or at other nearby sites to avoid disposal.
Concrete	Segregate for 100 % recycling. Use as secondary aggregate on site.	100 % reuse on site.
Cement	Cost savings of 30 % between segregated skip and mixed skip.	Aim for 100 % segregation during site clearance phase.
Metals	Maximise reuse on site. Stockpile on site to send to recycling facilities.	Segregate on site and send for reprocessing. Maximise to 100 % segregation and recycling. Made to measure, correct just-in-time orders. Arrange take-back of unused items.
Packaging	Stockpile on site to put into segregated skip. Bale for transport (cardboard).	Aim for 100 % segregated paper and cardboard.

³ WRAP (n.d.) Achieving good practice Waste Minimisation and Management. Guidance for construction clients, design teams and contractors.

4. Operational Waste Strategy

4.1. Introduction

This section sets out the Waste Management Strategy to be implemented for the operational phase of the development, with the overall goal of diverting as much waste as possible from landfill. The overarching strategy will be to follow the “Waste Hierarchy”, as shown previously in **Figure 3.1**, which provides a prioritised list of options for waste with landfill being the least desirable option.

4.2. Current Waste Management Services

Current waste management services which are operating within the borough, along with the frequency of collections are listed in Table 4.1 below.

Table 4.1 Waste Collection Services in Cardiff

Service	Details
Residual Waste	Fortnightly Collection
Dry Mixed Recycling	Fortnightly Collection
Paper and Card	Fortnightly Collection
Garden Waste	Fortnightly Collection
Food Waste	Fortnightly Collection
Bulky Waste	Paid for (£5) Bulky Waste collection service
Refuse and Recycling Centres	Bessemer Close Recycling Centre Lamby Way Recycling Centre

4.3. Waste Operations and Procedures

4.3.1. Waste Reduction

The development aims to be designed to operate at the highest practicable standards for environmental performance. A key component of this approach is the provision of long-term, sustainable and reliable waste management systems that will allow the project to contribute significantly to waste minimisation and recycling in the area. As such, this report has set the following aims:

- To contribute to Cardiff’s current and long-term targets for waste minimisation, recycling and reuse as identified in the Waste and Recycling document;
- To provide users of the development with convenient, clean and efficient waste management systems that enhance the operation of the development and promote high levels of recycling; and,

- To co-operate with local waste collection contractors to ensure that waste management at the development complies with their immediate and long-term waste collection and recycling objectives.

4.3.2. Operational Procedures

In line with the waste hierarchy and the Recycling Strategy for Cardiff, the following procedures are recommended for implementation in the operation of the Masterplan.

4.3.2.1. Avoid and Reduce

The first step of any waste management strategy is to avoid generation wherever possible, then to reduce the amount of waste generated. For the development, the following measures should be implemented in order to reduce the amount of waste generated:

- Educational awareness for occupants should be made a priority and potentially part of routine practices within the masterplan project, to raise awareness of unnecessary waste as an important environmental issue;
- Organic waste should be reduced by encouraging occupants to use dedicated organic bins for food waste.

4.3.2.2. Reuse

The following measures will be implemented for the re-use of waste generated at the facility:

- Provide occupants with information on local reuse programmes, such as buying/selling used furniture, clothing;
- Involve a charity that is involved with collecting such items from areas.

4.3.2.3. Recycling and Waste Reduction

Posters encouraging occupants and managing agents to recycle their waste should be put on display. It is intended that the recycling storage provided complements the likely waste streams to be produced.

As a predominately residential project, an element of control on the end users' behaviour can be applied. Through appropriate controls and awareness, occupants can be educated and encouraged to reduce waste to landfill and make more sustainable choices.



4.3.3. Waste Classification

In line with the Recycling Strategy for Cardiff²¹, recycling targets have been set at 70% in 2024/25 as a minimum for overall recycling targets. This includes the composting or organic wastes, we have accounted for a split of 60% dry recycle and 10% for organic wastes.

4.3.3.1. Residual Waste

Waste that cannot be recycled or diverted from landfill will be classed as residual and stored in assigned waste bins, this should make up 30% of the total waste generated. This waste will include unrecyclable plastics and packaging, packaging contaminated by food, *etc.*

4.3.3.2. Recyclable Waste

Recyclable waste that is expected to be generated within the project should make up 60% of the overall waste generated, and it includes:

- Plastic and glass bottles;
- Aluminium cans;
- Paper;
- Cardboard; and,
- Plastic wrapping and packaging.

4.3.3.3. Organic Waste/Composting

There is an opportunity to implement off-site composting of waste produced by the development. Compostable waste produced by the buildings will comprise of food/kitchen waste (including fruit and vegetable peelings, meat scraps, bones and plate waste) and green waste from landscaped common areas, produced through maintenance of the grounds. Organic waste should make up 10% of the total waste generated from the development. The project should consider a separate organic waste collection for collection and disposal to a composting facility.

4.3.3.4. Hazardous Waste and WEEE Waste

The development would be expected to generate some hazardous and WEEE wastes as a result of general activities, such as paints or mainly electrical goods. WEEE and Hazardous wastes will require specific collection and disposal arranged by the tenants for the management of a range of wastes, including batteries, fridges, light bulbs, televisions, and other electrical and white goods. Hazardous waste collection should be scheduled with the Council. These waste arisings could be directed to the facilities when required to ensure they are disposed of correctly.

4.3.4. Promoting Sustainable Waste Management

The proposed development should also aim to fulfil a role as a community educator, and as such should be seen as providing an example for sustainable development by endeavouring to promote all avenues of sustainability in its design and day-to-day operations. As part of this status, the management should aim to achieve sustainable waste management through achieving high recycling rates and demonstrating resource efficiency.

4.4. Operational Waste Generation and Management

The expected waste arising from a development after its completion and during its operation is estimated in line with the 'Waste Collection and Storage Facilities Planning Guidance' policy document, issued by the City of Cardiff Council²².

Table 4.2 highlights the waste generation using the metric provided in the guidance, the calculations are based off an allocation of 140L per flat for organic, recycling and general waste.

Table 4.2 Waste Generation from Plot 1

Number of Flats (l)	Recycling (l)	General (l)	Organic/Food (l)	Reuse/Bulky Storage	Garden
77	10,780	10,780	960	10m ²	N/A

4.4.1. Refuse Store

The designed refuse area is located in the north building on the ground floor. The location of the store in the context of the Proposed Development is indicated in the Ground floor plan in Appendix B.

All waste should be collected directly from the refuse room on the ground floor. A loading bay sufficient for servicing vehicles is located just outside the refuse store. Figure 4.1 shows the suggested layout for the refuse area and its proximity to the loading bay.

4.4.2. Provision of Waste Bins and Areas

The storage requirements for the total waste generated, are indicated in Table 4.3.

Table 4.3 Storage requirements based on fortnightly collection

Storage Capacity	Refuse Bins (1100l)	Recycling Bins (1100l)	Organic/Food Waste (240l)	Garden Waste	Bulky Storage
Containers	10	10	4	N/A	10m ²

The storage area will accommodate both refuse and recycling material. These areas have been designed to accommodate the required number of bins, bin wash facilities as well as sufficient area for circulation and movement to enable waste handlers to drop off and pick up waste from the area without any constraints.

Figure 4.1 shows a marked-up refuse area with sufficient storage space as specified in Table 4.3. This is based on using 1,100 L bins for each type of waste, allowing approximately 3 m² per bin for storage and movement. This calculation is based on a standard 1,100 L bin, which is 1.11 m deep and 1.37 m wide, with additional space for manoeuvring.

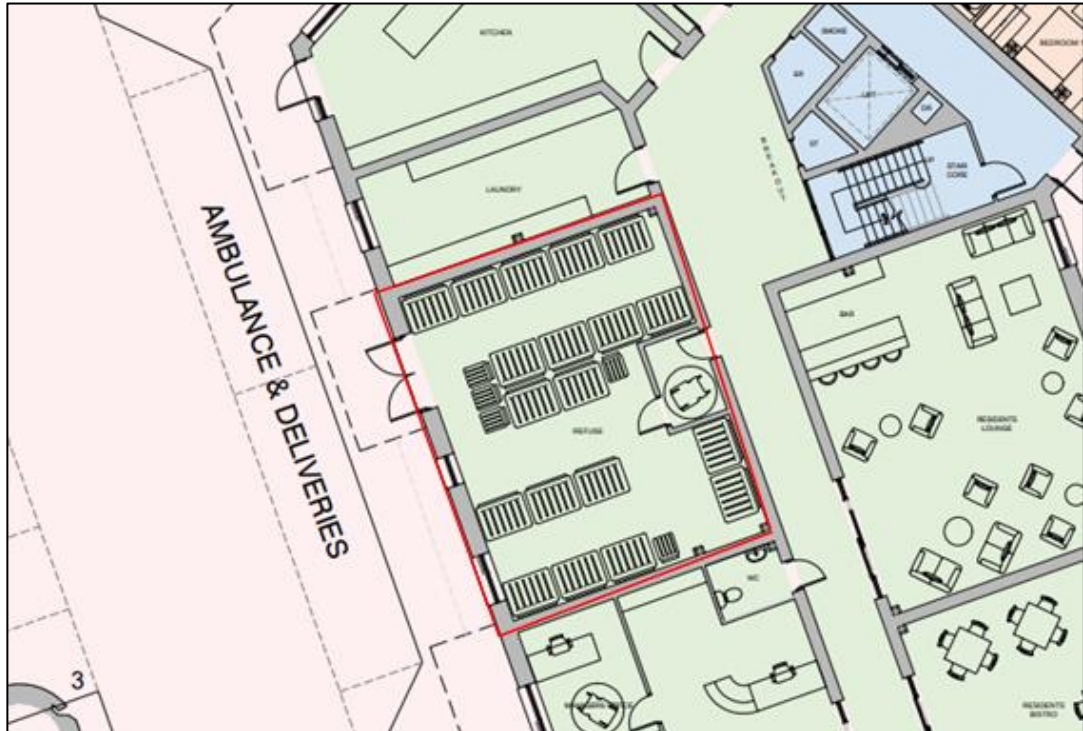


Figure 4.1 Plot 1 Refuse Storage Area

For each block, an additional area will also need to be considered as the storage space will need space for waste handlers to move bins in and out easily.

For all developments, consideration in the detailed design should be given to incorporating centralised collection facilities for hazardous waste, such as batteries, small electrical waste items or lighting equipment.

4.4.2.1. Transfer and Collection

In line with BS 5906:2005²³ and Part H6 of the Building Regulations²⁴, the following points have been considered and incorporated into the designs of the proposed development to ensure that the following waste storage requirements are complied with:

- There will not be any routes, where wheeled bins are to be pushed, that will have a gradient more than 1:14, or that include steps or kerbs;
- Waste collection operatives (designated waste company who will collect waste) will not be required to carry dustbins or up to 360 litre wheelie bins more than 20 metres in total, carry waste sacks more than 20 metres in total, transport a Eurobin up to 1,100 litres more than 10 metres in total and transport compacted waste or recyclable material along a gradient whether rising or falling;
- Storage areas for waste and recyclable material will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings;
- Gullies will be positioned as not to be in the track of container trolley wheels;
- Shelters constructed as an integral part of the building or out-building should be open to the air and be of a sufficient size to accommodate containers as specified. They should be of adequate height to permit the container lids to be removed or fully opened, without the withdrawal of the container;

- In cases where, for aesthetic reasons, containers are stored in screened compounds, gates or doors and where appropriate door or gate stops, frames, hinges, latches and striking plates etc., should be of sufficient strength and construction to withstand any impact from containers, etc. during the waste collection operation;
- Doors or gates, when provided, should not open out onto a footway.

The transfer of any waste items of hazardous nature or classified as WEEE will be the responsibility of the future tenants, with disposal using appropriate local collection facilities or waste collection contractors.

4.5. Collection Schedule

The storage requirements for the total waste generated, as indicated in Table 4.10, suggest that a fortnightly collection schedule would be appropriate for the residential element of the building.

5. Summary

This Waste Management Strategy provides a framework to operate within in order to deliver cost effective, sustainable waste management procedures.

A key sustainability component of the operation of the scheme will be the provision of long-term, sustainable waste management systems and, as such, due consideration has been, and will continue to be given, to the waste generated by the development during its operation. The development will aim to contribute positively towards the local and national waste minimisation targets. The development is also subject to national legislation, and therefore opportunities to minimise enabling and construction wastes for diversion from landfill will be adopted, where possible, to achieve the relevant targets.

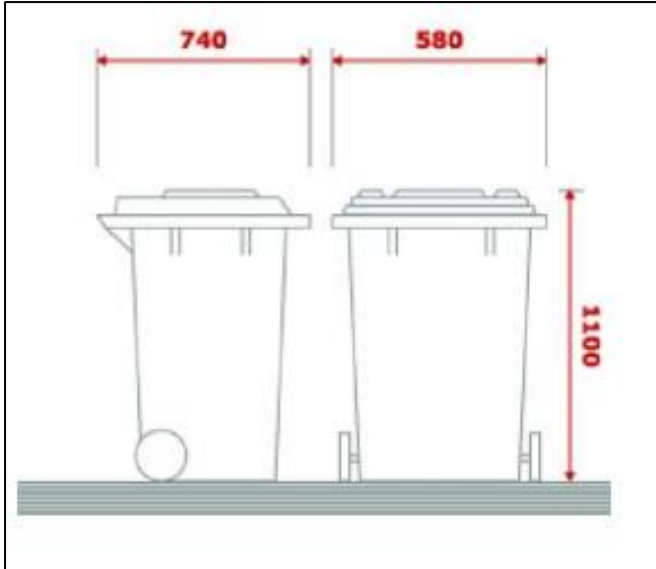
The future contractor will be responsible for the review and update of the CMP to ensure that all construction wastes are handled appropriately, minimised and recycled, where possible.

Additional to waste minimisation, the Waste Management Strategy seeks to ensure correct provisions for long-term waste management are made during the operation stage of the development. With regards to the design inclusion, the waste storage areas should be designed in accordance with the recommendations in this report. Based on the worst-case scenario using the Cardiff Guidance, the following space allocation should be provided for the development based on a single refuse collection per fortnight:

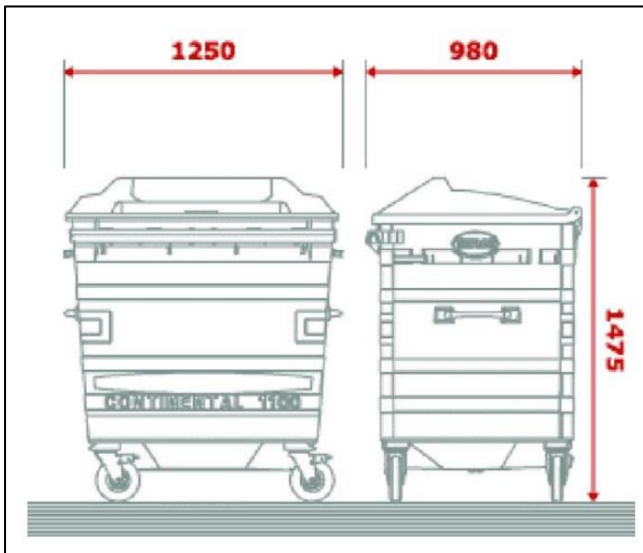
Recycling	– 10 bins (1100l eurobins)
General Waste/Refuse	– 10 bins (1100l eurobins)
Food Waste	– 4 bins (240l eurobins)

Appendix A – Bin Specification

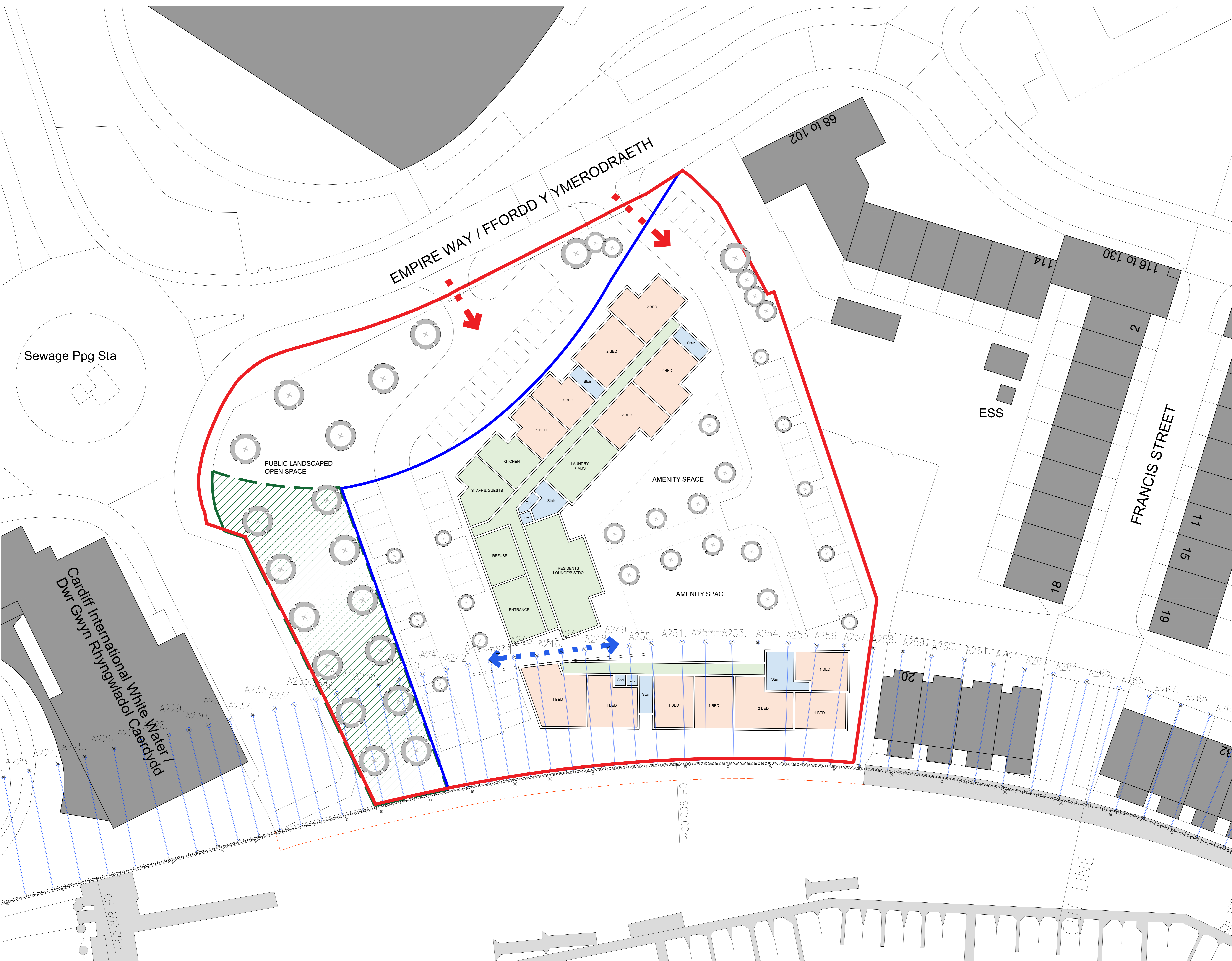
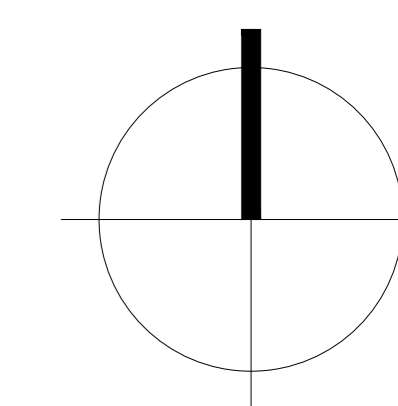
240 litre Wheeled Bin: Organic Waste (Green)



1100 litre Wheeled Bin (steel): Residual Waste (silver body, black lid), Recycling (green body, green lid)



Appendix B – Ground Floor Plan



Rev	Date	Drawn
DRAFT ISSUE		
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Client: Orion Land and Leisure Ltd		
Project Title: CARDIFF PENINSULA - PLOT 1		
Drawing Title: DRAFT GROUND FLOOR SITE LAYOUT		
Scale: 1:200 @ A0	Date: JAN '24	Drawn: -
Drawing No: 23 - J4303 - 01	Rev: -	
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- ²³ British Standard BS5906:2005 Waste Management in Buildings – Code of Practice
- ²⁴ HM Government (2015) The Building Regulations 2010, Approved Document H – Drainage and waste disposal.



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