



ROYAL ARSENAL RIVERSIDE
THE ROPEYARDS
PLOTS D & K

CIRCULAR ECONOMY STATEMENT

To Support a Reserved Matters
Application

MARCH 2024



HODKINSON



**Circular Economy
Statement**

Berkeley Homes (East Thames) Ltd

The Ropeyards

Final

Rebecca Durrant

BSc (Hons), MSc

March 2024

DOCUMENT CONTROL RECORD

REPORT STATUS: FINAL

Version	Date	Reason for issue	Author	Checked by	Approved for Issue by Project Manager
v.1	14.02.24	Draft	R Durrant	Z Croft	K Paxton
v.2	01.03.24	Final	R Durrant	Z Croft	pp J Lloyd-Davies
v.3	04.03.24	Final	R Durrant		pp J Lloyd-Davies
v.4	05.03.24	Final	R Durrant		pp J Lloyd-Davies
v.5	07.03.24	Final	R Durrant		pp J Lloyd-Davies

ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

This report has been prepared by Hodkinson Consultancy using all reasonable skill, care and diligence and using evidence supplied by the design team, client and where relevant through desktop research.

Hodkinson Consultancy can accept no responsibility for misinformation or inaccurate information supplied by any third party as part of this assessment.

This report may not be copied or reproduced in whole or in part for any purpose, without the agreed permission of Hodkinson Consultancy of Rickmansworth, Hertfordshire.

Executive Summary

The purpose of this Circular Economy Statement is to demonstrate that the proposed development at The Ropeyards, Royal Arsenal Riverside, Plots D&K by Berkeley Homes (East Thames) Ltd in the Royal Borough of Greenwich, has considered the following circular economy principles:

- > Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.
- > Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.
- > Designing for longevity.
- > Designing for adaptability or flexibility.
- > Designing for disassembly.
- > Using systems, elements or materials that can be reused and recycled.

The commitments below have been set to ensure that changes are made at a strategic level in order to ensure that the core principles of Circular Economy are adopted.

- > 95% non-hazardous construction waste is to be recycled or reused.
- > Municipal waste recycling target of 65% (residential) and 75% (commercial) by 2030. This will be monitored via an Operational Waste Management Plan which has been produced for the site.
- > At least 20% of materials will include reused or recycled content by value, where feasible.
- > Mechanical and electrical unit sizes and components reviewed to allow for replacement strategy avoiding the use of cranes where possible.
- > The offsite manufacturing of building elements has been maximised across the development including bolt on balconies and prefabricated facades, doorsets and utility cupboards.
- > The partitions have been designed as lightweight and can be removed in future if there is a requirement for a change in layout or function to this area. The building services design has also been designed to account for this potential change future use.

- > 100% of timber used on site, including timber used in the construction phase, will be sourced from sustainable forestry sources (e.g., PEFC and FSC).
- > The development will be designed to meet long-term resident needs, be robust, durable, and resilient to climate change.
- > All residential units will be provided with access to a refuse store, supporting the separate collection of dry recyclables (mixed plastics, metals, glass, card and paper) and food waste.
- > All residential units will be provided with a user guide to promote the principles of circular economy.

Further different strategic approaches that can be adopted and how they could be incorporated have also been outlined in the report and will support a circular economy approach for the development.

CONTENTS

Executive Summary	2
<hr/>	
1. INTRODUCTION	5
2. DEVELOPMENT OVERVIEW	6
3. POLICY AND REGULATIONS	9
4. APPROACH TO CIRCULAR ECONOMY	13
Circular Economy Workshop	13
Designing Out Waste Workshop	13
Targets and Monitoring	13
Strategic Design Making	14
Conserve Resources	15
Eliminating Waste	20
Managing Waste	25
Operational Waste	27
Plans for Implementation	34
End of Life Strategy	36
<hr/>	
5. CONCLUSION	37
APPENDICES	39
Appendix A Circular Economy Workshop	
Appendix B Designing Out Waste Workshop	
Appendix C Recycled Content Calculations	
Appendix D Site Waste Management Plan	
Appendix E Operational Waste Strategy	

1. INTRODUCTION

- 1.1** This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Berkeley Homes East Thames Ltd.
- 1.2** This Statement sets out the circular economy measures included in the proposed development at The Ropeyards, Royal Arsenal Riverside, Plots D&K by Berkeley Homes (East Thames) Ltd in the Royal Borough of Greenwich. The measures consider the following six principles:
- > Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.
 - > Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.
 - > Designing for longevity.
 - > Designing for adaptability or flexibility.
 - > Designing for disassembly.
 - > Using systems, elements or materials that can be reused and recycled.
- 1.3** The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the full planning application that is being submitted to the Royal Borough of Greenwich.
- 1.4** The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental change in the way that buildings are designed, built, operated, and deconstructed.
- 1.5** This report should be read in conjunction with the *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

- 2.1 The proposed development site is located in the Royal Borough of Greenwich as shown in Figure 1 below.



Figure 1: Site Location – Map data © 2024 Google

- 2.2 The Site is located on the western edge of the wider Royal Arsenal Riverside masterplan and is approximately 2.3 ha. The Site currently sits on a temporary park and is bound to the south by the A206, the RAR A & B Building to the north (and north east) and RAR Phase 3, the Brass Foundry and The Guard House to the west.
- 2.3 Beyond the immediate site boundaries, to the north of the site is the River Thames and to the south and south east of the site is Woolwich Town Centre including the main shopping area along Powis

Street, General Gordon Square, the Woolwich Arsenal Overground Train Station and the Woolwich DLR Station.

- 2.4 There are two Crossrail tunnels that run below the site. The proposed development will ensure that the integrity of the tunnels is preserved.

Proposed Development

- 2.5 The proposed development is described as follows:

“Submission of Reserved Matters (Appearance, Landscaping, Layout and Scale) pursuant to Condition 2 of planning permission reference 16/3025/MA, dated 17.03.2017, for residential units and non-residential floorspace within Plots D and K, along with public / private landscaping details, car / cycle parking, refuse / recycling facilities and play provision.”

- 2.6 Figure 2 and 3 below illustrates the proposed site layout.

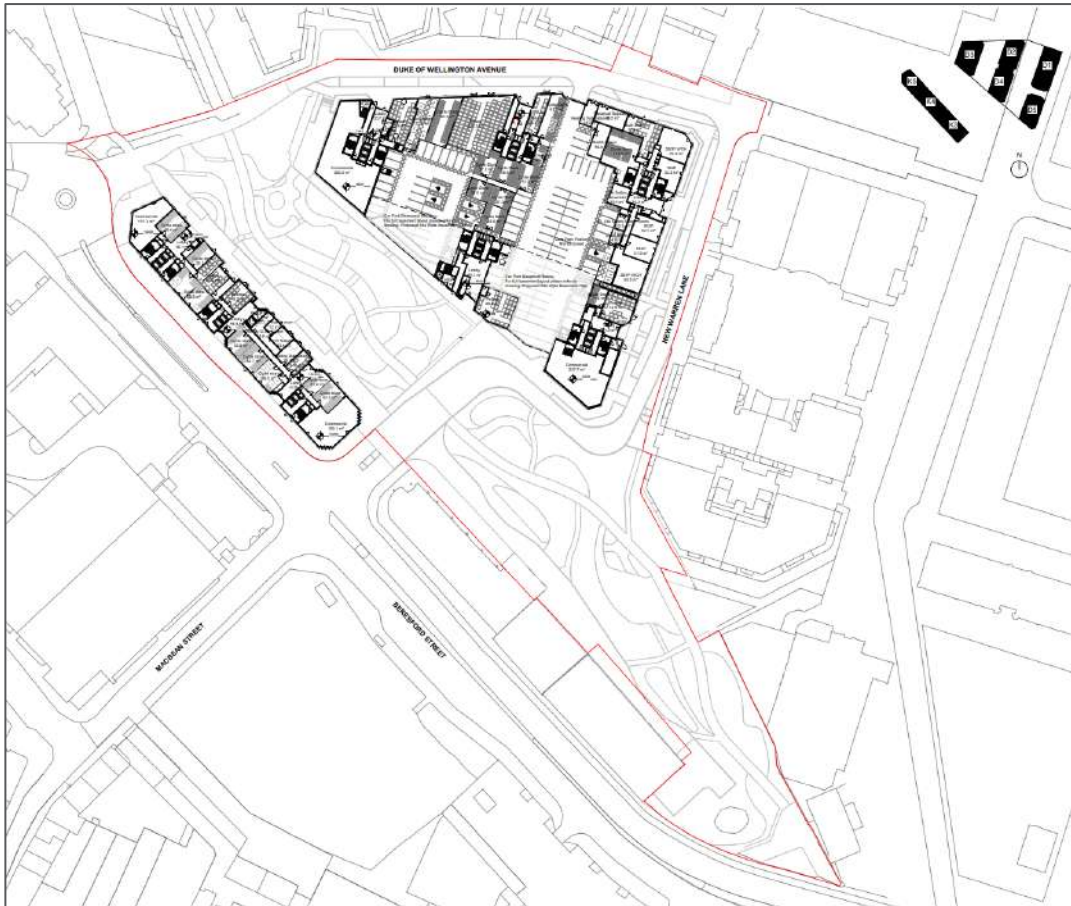


Figure 2: Proposed Sitewide Ground Floor Plan (PRP, February 2024)



Figure 3: Site Layout (Ropeyards Royal Arsenal Riverside, Pre-App 06 Meeting – January 2024)

- 2.7 The total Gross Internal Floor Area (GIA) for the proposed development is 65,635.9 sqm. The principles noted within this report apply to this GIA.

3. POLICY AND REGULATIONS

3.1 This chapter highlights the policies and regulations which are relevant to the proposed development at The Ropeyards.

Regional Policy: London Plan (2021)

3.2 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

Policy SI7 Reducing Waste and supporting the Circular Economy.

- A. Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:
1. Promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
 2. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;
 3. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass, and food).
- B. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:
1. How all materials arising from demolition and remediation works will be re-used and/or recycled;
 2. How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life;
 3. Opportunities for managing as much waste as possible on site;
 4. Adequate and easily accessible storage space to support recycling and re-use;
 5. How much waste the proposal is expected to generate, and how and where the waste will be handled;

6. How performance will be monitored and reported.

Local Policy: Royal Borough of Greenwich

- 3.3 The Royal Borough of Greenwich's Local Plan was adopted in July 2014 sets out the spatial strategy, long term spatial vision, spatial objectives and core policies for development within Royal Greenwich to cover the period up until 2028. The following policies are considered relevant to this Statement:
- 3.4 Policy DH1 Design seeks to ensure a high quality of design via the following:
 - > The quality and nature of materials, both traditional and modern;
 - > patterns of movement and circulation particularly for pedestrians and cyclists;
 - > acceptable noise insulation and attenuation.
 - > a safe and secure environment for users and the public;
 - > accessible and inclusive environments for all;
 - > maximised energy conservation, through effective layout, orientation, use of appropriate materials, detailing and landscape design;
 - > climate change mitigation and adaptation;
 - > enhanced biodiversity consistent with the Greenwich Biodiversity Action Plan;
 - > living roofs and/or walls;
 - > on-site waste management including evidence of waste reduction, use of recycled materials and dedicated recyclable waste storage space;
 - > water efficiency and demand management measures;
 - > building materials are responsibly sourced and minimise environmental impact;
 - > surface water flood risk is reduced, and the environment is landscaped to allow for permeable surfaces;
 - > a BREEAM rating of 'Excellent' for non-residential buildings.

Royal Borough of Greenwich Urban Design SPD

- 3.5 The Urban Design Supplementary Planning Document (SPD) supports the Royal Borough of Greenwich's Local Plan. It is a formal supplement to the adopted Local Plan and forms part of the material considerations in decision-making on planning applications. The following principles are considered relevant to this Sustainability Statement:
- 3.6 **Principle B.12: Reducing Carbon Impact** highlights that major developments should be designed to net zero standards and set out principles for reducing carbon impact over the full life cycle of the development from conception to end of life/reuse.

BREEAM

- 3.7 The proposed development will be assessed to target a minimum of BREEAM 'Excellent' rating under the New Construction 2018 scheme, thus representing a high level of sustainable design and construction. A full BREEAM Pre-Assessment has been prepared and accompanies the application.
- 3.8 Implementing a circular economy approach can support achieving the following credits:
- > **Waste 01 Construction Waste Management** – Aims to reduce construction waste by encouraging reuse, recovery, and best practice waste management practices to minimise waste going to landfill. It ensures procedures are in place for sorting construction waste into waste groups. Encourages circular routes for construction waste;
 - > **Waste 03 Operational Waste** – Encourages the recycling of operational waste through the provision of dedicated storage facilities and space. Highlights the importance to provide sufficient storage areas within the building to reflect the recyclable waste streams that are generated and then collected by the local waste authority;
 - > **Waste 05 Adaptation to Climate Change** – Encourages to take measures to mitigate the impact of extreme weather conditions arising from climate change over the lifespan of the building. Requires an assessment of structural and fabric resilience to extreme weather conditions arising from projected climate change, with mitigation where feasible. Reduces likelihood of needing to replace products and materials due to damage or poor functionality resulting from changing climate conditions;
 - > **Waste 06 Design for Disassembly and Adaptability** – Aims to avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy;
 - > **Materials 01 Environmental Impacts from Construction Products** – Building and Life Cycle Assessment (LCA) – This encourages the use of reused / recycled / reclaimed and reusable /

recyclable / durable / adaptable materials, products and systems in the building services and superstructure reduces life cycle impacts;

- > **Materials 05 Designing for Durability and Resilience** – Aims to reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape. It requires protecting vulnerable and exposed parts of the building from damage and material degradation, thus increasing longevity and resilience of building components, resulting in fewer resources required for repairs and refurbishment; and,
- > **Materials 06 Material Efficiency** – Aims to avoid unnecessary material use arising from over specification without compromising structural stability, durability, or the service life of the building. Targets and reporting on opportunities and methods to optimise the use of materials, at various stages of design and construction will be required. It will be necessary to develop and record the implementation of material efficiency at various stages of design construction. Targets and actual material efficiencies achieved will need to be reported. Less over-specification means that there is less wastage of materials and reduced overall demand.

3.9 Reports demonstrating compliance for the above credits will need to be provided to the BREEAM assessor post planning.

Guidance Documents

3.10 Guidance was released by the Greater London Authority (GLA) “*Circular Economy Statement Guidance*”, issued in March 2022. It outlines guidance on Circular Economy statements that should accompany all referable planning applications in line with the London Plan Policy SI 7.

3.11 The guidance is accompanied by a Circular Economy template, which provides separate tabs outlining the information that should be submitted at each stage. This template has been provided as a standalone document which should be read in addition to this report.

3.12 The guidance notes that Circular Economy Statements should be submitted at three stages:

- > **Outline/pre-application (RIBA Stage 1/2)** - Draft Circular Economy Statement with a focus on the strategic approach;
- > **Full application (RIBA Stage 2/3)** - Detailed Circular Economy Statement outlining how the principles will be addressed through detailed design.
- > **Post-completion stages (RIBA Stage 5/6)** - Post-Planning Updates should outline the progress in meeting the targets and commitment can be provided during the construction process.

3.13 As the proposed development is already at RIBA Stage 2 with a full application being submitted, a detailed Circular Economy Statement is required.

4. APPROACH TO CIRCULAR ECONOMY

Circular Economy Workshop

4.1 In November 2023, the design team met for a Circular Economy Workshop. The minutes of this workshop are available within **Appendix A**. Early collaboration between the key stakeholders ensured that Circular Economy Principles can be achieved and embedded in the design.

Designing Out Waste Workshop

4.2 A designing out waste workshop was held by Berkeley in November 2023. Collaboration between design team members resulted in innovative methods to ensure waste generation is minimised during construction. The minutes of this workshop are available in **Appendix B**. Below are the key actions taken from this workshop:

- > Reuse of soil to for landscaping, which has a varying topography, where possible.
- > Temporary park street furniture, lighting and bin store fencing to be removed, stored and reused at the end of the project.
- > Use of off-site construction for bathroom pods, shower rooms and utility rooms.
- > Wall types, floor types and roof types are standardised.
- > Brick dimensions made to fit for the building and openings.

Targets and Monitoring

4.3 Circular economy targets have been agreed with the design team and will be used to influence decisions and design as we progress through the project. These are outlined in Table 1 overleaf:

4.4 An overview on how the Applicant will meet these targets is outlined in this report and in the accompanying GLA spreadsheet.

Table 1: Circular Economy Targets

Circular Economy Targets	Target aiming for (%)	Policy Compliant?	Exceeds Policy?
Demolition waste (where found)	98%	✓	✓
Excavation waste materials	98%	✓	✓
Construction waste materials	98%	✓	✓
Municipal waste – residential (by 2030)	65%	✓	-
Municipal waste – non-residential (by 2030)	75%	✓	-
Recycled content	20%	✓	-

4.5 To monitor the targets, the Applicant will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded using Qflow (a waste and materials deliveries data tool). Operational waste will be measured post-construction to ensure that the targets set are achieved. Finally, the recycled content will be monitored through the development of the actual Bill of Materials.

4.6 More detailed information on the monitoring process is outlined in the section below.

Strategic Design Making

4.7 The GLA Decision Tree has been used to determine the most appropriate design approach for the site. Figure 4 overleaf highlights how the design team have progressed through the decision gates regarding the proposed development.

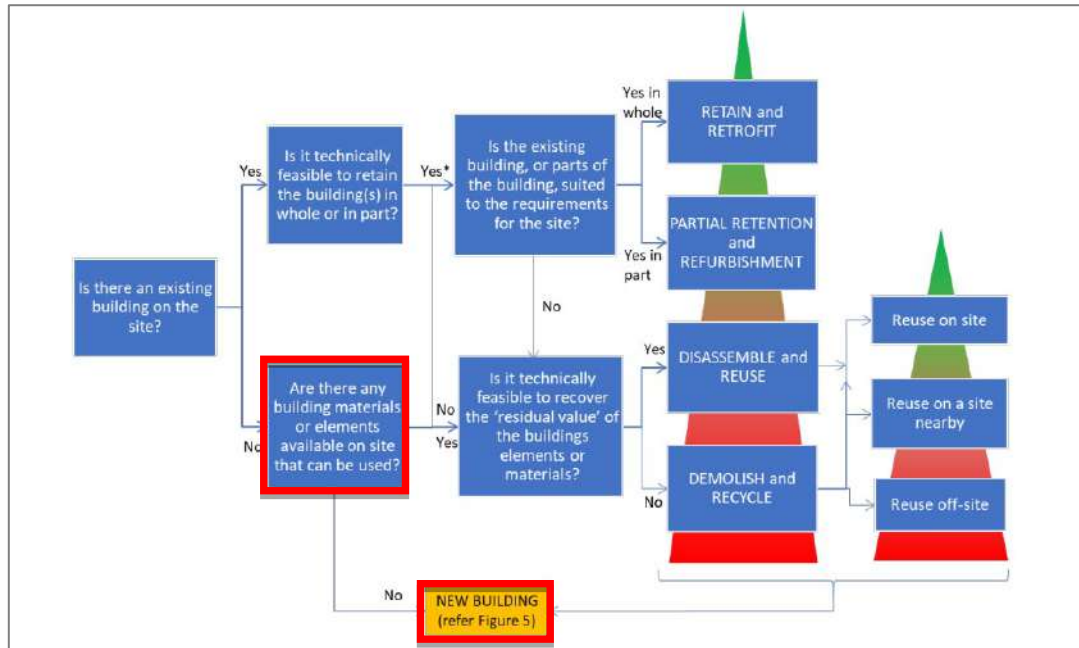


Figure 4: Decision tree for design approaches for existing structures/buildings (Circular Economy Statement guidance, GLA, March 2022)

4.8 This has been determined to be a ‘new building’ as confirmed in the GLA Circular Economy Spreadsheet. This is because there are no existing buildings on site, and therefore, no demolition will take place.

Conserve Resources

Existing Buildings

4.9 A pre-demolition audit is not needed for the development, there are no previous buildings on site.

4.10 A target of 20% for reuse has been set; this will maximise the reuse of existing materials in the proposed development.

4.11 The following re-use and recycling techniques will take place ahead of demolition, where found from underground services:

- > Steel, lead, and other metals will be stripped and recycled via a suitable merchant.
- > Pipe work and electric cabling will be stripped and recycled via a suitable merchant.

4.12 As the main building will have to be piled, there will be a piling mat installed to allow for the piling installation, this will be reused elsewhere on the site as the sub-grade for the ground bearing slab.

Sustainable Procurement

4.13 Berkeley Homes (East Thames) Ltd will operate within the Berkeley Group Sustainable Procurement Strategy. They define sustainable specification and procurement to be the responsible selection and sourcing of products and services, considering environmental, social, economic and ethical aspects over their whole lifecycle. This procurement strategy aims to do the following:

- > Select contractors based on their sustainability credentials and work in partnership to create a more sustainable supply chain:
 - > Encourage all contractors to have appropriate policies and management systems in place as standard.
 - > Work in partnership with appointed contractors to ensure that the environmental and social impacts of their work are minimised and that each operative is appropriately trained.
 - > Encourage contractors to sign up to the Supply Chain Sustainability School.
- > Preferentially source sustainable products and materials:
 - > Consider transportation distance and mode, including from the original source of extraction/manufacture.
 - > Review the sustainability credentials of materials and their suppliers as part of the procurement process.
- > Consider the sustainability of materials from the outset and specify sustainable products throughout the design process:
 - > Consider environmental impacts when specifying products and ISO 20400 Sustainable Procurement Standard where appropriate.
 - > Specify products with consideration to the likely source and processing locations of materials, with a preference given to those which are produced within Organisation for Economic Co-operation and Development (OECD) countries.
 - > Incorporate sustainable specification aspirations within briefs for consultants and architects.
 - > Give preference to materials which have a low environmental impact, have high recycled content, and have recognised sustainability ratings.

4.14 They have an extensive materials supply chain which is critical to meeting production needs. To support resilience and continuity of supply for typical materials, Berkeley Group are launching a new

materials strategy and are forming strategic agreements with suppliers. They will ensure materials meet quality, safety and sustainability requirements and are procured ethically.

- 4.15** They will build on this further by preferentially partnering with companies that share their commitment to climate action, maximising the use of products with lower embodied carbon, and working together on sustainability targets such as waste reduction and following the principles of the circular economy.
- 4.16** The Material Exchange Board, exclusive to Berkeley Group, allows projects to request items which are needed for their site. Projects can also list items which they no longer intend to use, and other projects may collect them. This makes it easier for construction sites across the Group to share excess construction materials resulting in cost savings, from reduced waste disposal costs and reduced material procurement costs, and reduced environmental impact.
- 4.17** Materials will be sourced in accordance with the following guidance:
- > 100% of concrete and steel will be BES 6001 certified (Responsible Sourcing of Construction Products).
 - > Where possible rebar will be sourced from suppliers rated under the CARES Sustainable Constructional Steel Scheme or via suppliers with BES6001 certification.
 - > Other major construction materials will be certified under an Environmental Management System (EMS) such as ISO 14001.
- 4.18** All timber specified will be legally harvested and traded timber and should be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation and PEFC (Programme for the Endorsement of Forest Certification) – which ensures that the harvest of timber and non-timber products maintains the forest’s ecology and its long-term viability.

Recycled Content of Materials

- 4.19** The Applicant is committed to target a benchmark of 20% reused or recycled content by value, where feasible. A brief bill of materials summary table has been provided in the GLA Circular Economy Template, submitted alongside this application. This bill of materials has been created using the inputs provided in the Whole Life Carbon Assessment (Hodkinson Consultancy, February 2024) and will need to be updated as the project progresses.
- 4.20** With regards to contributing towards circularity the recycled content within the construction elements will be maximised as much as possible, 20% is the current target. The list below indicates a way this target could be met:
- > Reinforced steel: 97% share of recycled material in the product by mass

- > Gypsum: minimum 30% share of recycled material in the product by mass
- > Aluminium: 35% share of recycled material in the product by mass
- > Insulation: 20% share of recycled material in the product by mass
- > Ready mix concrete: Up to 5% of recycled material in the product by mass
- > Concrete, gravel and aggregates in hard landscaping: 50% share of recycled materials in the product by mass

4.21 Please see **Appendix C** for the recycled content calculations from One Click. The design team will seek to improve upon the current 11.3% recycled content by value as the design progresses. It will be monitored through Life Cycle Assessment updates to ensure the 20% goal is achieved at the end of the project.

4.22 The monitoring of the recycled content in materials will be done throughout design by all members of the design team via a 'live' bill of materials. The final bill of materials (to be provided post construction) will verify the implementation of this target.

Minimised Material Use

4.23 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (e.g., lean design), and / or less waste is produced in the construction process, without compromising the design concept.

4.24 The design team will regularly review material efficiency strategies to ensure a lean design that reduces material quantities without inhibiting future flexibility. Engagement with the design team has been undertaken to address the end-of-life strategy for the material.

4.25 Off cuts from plasterboard works will be stored on pallets for use in more detailed work near completions. Also, it is proposed that smaller off cuts are to be used for filling in ceiling voids and any plasterboard in temporary partitions are to be re-used as inner skin of permanent walls, whenever practicable.

4.26 In addition to the above, measures to reduce the overall volume of concrete as much as possible have been undertaken. The Structural Engineers for the project (Waterman) have limited the use of concrete to areas in which its properties are most advantageous and have taken care to ensure that cover levels and member thicknesses are minimised.

4.27 As little brick waste will be made possible throughout the development process. The development will utilise either a full brick or brick and a half for the reveals. By building to a brick or half brick this will help to reduce the amount of waste throughout the development.

- 4.28** Slabs in the buildings will be kept to 225 mm, minimising the amount of silt. The Structural Engineers (Waterman) have also worked hard to optimise slab thicknesses, reducing these from 250mm to 225mm. This significantly reduces material use and it also has a positive impact on the embodied carbon emissions for the proposed development.
- 4.29** Regular structural grid pattern ensures for future adaptation of the building and unique opportunities to create flexible spaces. Coupling this with long spans used throughout, the structure provides a highly adaptable and flexible space.
- 4.30** The development has also taken steps to ensure other resource use will be kept to a minimum. Examples include:
- > The development will achieve a total reduction in regulated CO₂ emissions of more than 35% over the Building Regulations baseline through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies. For example, the leisure centre has incorporated an energy centre including rooftop air source-heat pump plant rooms thereby minimising energy use and carbon emissions.
 - > All new dwellings will target a minimum internal water efficiency standard of 105 litres/person/day in accordance with the recently adopted London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).
 - > Site set up will consist of longitudinal temporary modular welfare cabins sized adequately for the predicted number of operatives and management on site during the enabling works, remediation and piling phases. The site welfare will then be supplemented with additional temporary modular welfare cabins to ensure that welfare requirements for the predicted number of operatives is met. These welfare modules are not new and have been re-used on construction sites before and will be re-used on different sites once construction is complete. This re-use is facilitated by the modular nature of the welfare compounds.
 - > Both a tower crane and welfare facilities are being re-used from the adjacent Waterfront blocks at RAR.
- 4.31** For waste reduction, minimisation of excavation, simplification and standardisation of materials and components of choice, and dimensional coordination have been considered.
- 4.32** Furthermore, the temporary refuse store fences made from timber will be integrated into the landscaping alongside the accumulated cut from creating the undercroft of the development.
- 4.33** The temporary lighting used throughout the development stages of the buildings will also be used throughout the park landscaping. This includes lamp posts, lighting and benches - helping to minimise the overall lighting services that will be used throughout the development.

Cut and Fill

- 4.34 There is an estimated 24,200m³ of material on site that will need to be removed.
- 4.35 The cut and fill sequence will be reviewed in detail to maximise the re-use of material on site via treatment and distribution.
- 4.36 The proposed development will reuse the soil on site for levelling the ground. The development will also reuse soil to for landscaping, which has a varying topography, where possible - see designing out waste workshop minutes for further detail in **Appendix B**.

Eliminating Waste

Designing for Longevity

- 4.37 The proposed development will seek to design with longevity in mind. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.
- 4.38 Appropriate durability measures will be incorporated in vulnerable parts of the internal building (both residential and non-residential) so as to minimise the frequency of replacing materials and therefore optimising material use. Examples of such measures include hard-wearing floor finishes and bollards and kerbs in servicing/vehicle areas.
- 4.39 All windows are top hung and fully reversible outward opening, the glass can be replaced internally, including full height glazing to balconies. These tall narrow full height panes may be manhandled up the stairs respecting necessary Health and Safety policies.
- 4.40 The feasibility of producing an Operational and Maintenance Plan will be explored at detailed design stage. If produced, this would outline how on-site systems will be monitored and maintained during the expected life of the development, including parties responsible for maintenance and management of the systems, onsite operations and maintenance, and resident engagement.
- 4.41 The frame of the buildings will consist of reinforced concrete – a durable material that can be separated and recycled in its constituent parts at the end of its life. In addition, the external façade will comprise of brickwork which can also be reused and recycled at the end of its life. These materials provide a highly durable superstructure.
- 4.42 All glazing, including doors and windows has been designed to be composite – both timber and aluminium. Composite windows and doors benefit from the thermal performance and warm feel of timber windows, whilst also receiving the durability and maintenance benefits of aluminium windows.

- 4.43** Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.

Design for offsite construction

- 4.44** Modular construction techniques are being considered for the development. The benefits of offsite factory production in the construction industry are well documented and include the potential to considerably reduce waste especially when factory-manufactured elements and components are used extensively.

- 4.45** The following elements are being considered for offsite manufacturing at the proposed development:

- > Bolt on balconies.
- > Utility and bathroom/ensuite pods.
- > Kitchen countertops.
- > Façade cladding.
- > Prefabricated columns.
- > Prefabricated shuttering.
- > Prefabricated Steel Framing System.
- > Precast stairs.
- > Wardrobes for the master bedrooms will be 'part of the furniture' for the second bedroom; the wardrobes will be constructed offsite.
- > Services - risers and corridor sections will be considered but will be presented with allowance for future services that might be put in place.

Designing for Assembly, Disassembly and Recoverability

- 4.46** A materials inventory will be created for the entire building that includes a detailed breakdown of all building elements that sets out the constituents of each product and material, the structural loadings, and the ability for each material to be reused and/or recycled.

- 4.47** Where possible, materials will have the option to be taken apart through mechanical and reversible fixings to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be minimised where feasible, to enable end of life deconstruction and salvage of building elements. Fixings will be easily accessible, where possible, for disassembly.

- 4.48** Mechanical and electrical unit sizes and components reviewed to allow for replacement strategy avoiding the use of cranes where possible. Larger equipment located on buildings provided with accessible road frontage.
- 4.49** The Applicant will commit to selecting materials and systems that are designed ensuring safe disassembly and removal at the end of their service life, thus increasing the amount of material which might be recycled or reuse and reducing the overall environmental impact of the façade system.
- 4.50** All glazing will be able to be replaced from inside the building, aiding the replacement and maintenance cycles. Glazed units will be manoeuvred into the window frame using a lightweight hoist if required. This also means that the need for scaffolding is removed as the windows will fit inside the internal lifts.
- 4.51** Brick slip systems will not be placed at height but just on the ground floor levels, reducing overall material use.
- 4.52** The proposed development will be designed with disassembly in mind as well as maintenance and replacement of elements. The following disassembly measures have been incorporated:
- > Accessible or visible pod-to-façade connection to allow easy access to connection points of pods and façade panels to facilitate maintenance, repair or renovation;
 - > Bolted connections for steel elements;
 - > Independent cladding layer from pods such that cladding panels can be removable for maintenance/replacement; and
 - > Independent structure to allow other elements to be replaced where necessary.
 - > Steelwork will be bolted together without the use of welding, this will facilitate the dismantling of this steelwork at the end of its design life.
- 4.53** The proposed play space is comprised of a timber platform, climbing wall and stepping poles, all of which have been designed to be disassembled to allow for different reconfigurations and recycling at the end of their life.

Designing for Adaptability or Flexibility

- 4.54** To avoid unnecessary material use, cost and disruption arising from the need for future adaptation works the designs will look to incorporate functional adaptability. These changes could be required as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a Circular Economy.

- 4.55** The reinforced concrete frames designed by Structural Engineers (Waterman) have flat slabs and minimal internal columns and no loadbearing partitions. These two features mean that future layout changes are relatively simple.
- 4.56** The proposed development has incorporated the following adaptability measures:
- > Reconfigurable furniture in private dwellings that can be repurposed to allow for easy reconfiguration of rooms for other purposes. Residential units will also limit structural elements within the internal layout allowing for adaptability and reconfiguration as required in the future.
 - > It will be possible to remove and replace all major items of plant within the building without the need to demolish sections of wall or floor. Lifting beams and hoists will be incorporated into the design where necessary.
 - > The partitions have been designed as lightweight and can be removed in future if there is a requirement for a change in layout or function to this area. The building services design has also been designed to account for this potential change future use.
 - > Residential units have been designed to meet long-term resident needs, be robust, durable, and resilient to climate change. This includes being designed for accessibility, with a variety of apartment size, catering for individuals and family living with adequate storage for buggies and wheelchairs (Part M).
 - > Wheelchair homes are distributed across various buildings in the development and at different floor levels to enable the greatest choice, size and positioning for individuals who use wheelchairs.
 - > The site features a large range of dwelling types, with various internal layouts, bedroom numbers, and tenure types, including the provision of affordable housing. As per the policy in providing more housing within the Borough, the proposed development ensures that the community needs are met, and the range of housing provided allows for future flexibility.
 - > Specification of structural elements that anticipates for additional stories to be added at a later stage (subject to regulatory constraints).
 - > Additional capacity in building services to enable for future expansion and adaptation.
 - > Circulation / fire strategy incorporation to anticipate future adaptation, such as locating corridors that can be extended at a later stage.
 - > The commercial units are being delivered as shell and core, allowing the future tenant complete flexibility on the fit out works.
- 4.57** Infrastructure and hard landscaping are typically less adaptable than other elements of the built environment. At present a resilient hard landscaping design has been designed which enables servicing and maintainability. The detailed design of the site layout should include opportunities to

make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.

Lean Design

- 4.58 Different layout strategies were reviewed to ensure the most efficient design (for M&E services and standardisation) was taken forward.
- 4.59 Plot K buildings have been reduced in length at their northern end in order to maintain the existing roundabout and create greater separation between the K Plot buildings and those located on Plot A – this results in less material use, and subsequent positive benefits for embodied carbon.

Standardisation

- 4.60 The proposed development will consider designing and construction methods by applying, where feasible, standardised elements for materials and products that enable a reduction in construction waste and easier reuse in next life.
- 4.61 The development will aim to use standardised design formats to enable future reuse, e.g., no bespoke cutting of materials as this can make replacements difficult to obtain.
- 4.62 The development will reduce the floor types, materials, windows and sliding doors. These elements will be standardised.
- 4.63 The plasterboard contractor (once appointed) is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard. It will be a requirement that plasterboard sheet sizes will be matched to storey height, loading out to correct quantities.
- 4.64 The following outlines further standardisation that is proposed across the development, based on a standardisation strategy put forward by the architect (PRP) in Stage 2.
 - > Utility pods.
 - > Standardised Risers.
 - > Bathroom types.
 - > Standardised Kitchen counter tops.
 - > Floor-plated stack to facilitate structural and MEP.
 - > Blocks are set up with a central axis with mirrored dwellings to reduce the amount of flat types.
 - > Standardised approach to circulate and access all apartments with 1500m wide corridors and only use 3 lifts throughout.

- > Balconies will be standardised as much as possible throughout the development. They will be bolted on throughout the development – also allowing for a more clean design.

Bill of Materials

- 4.65** A Bill of Materials has been provided using the inputs from the Whole Life Cycle Carbon Assessment (Hodkinson Consultancy, March 2024). This is provided within the appended Circular Economy Statement. In accordance with the GLA guidance, the Bill of Materials includes kg/m² for the proposed new development and commits to target a benchmark of 20% (by value) for reused or recycled content.

Managing Waste

Site Waste Management

- 4.66** Prior to any works on site, a detailed Site Waste Management Plan (SWMP) has been produced by Icení (March 2024). This has been provided in **Appendix D**.
- 4.67** It includes details on waste minimisation strategies incorporated in design and procurement stages. It also includes information on how waste will be managed during the construction phase, along with predictions for various waste streams.
- 4.68** The location of the waste handling site that materials will be taken to, will vary dependent upon their specific make up, of which is yet to be confirmed (on appointment of Principal Contractor). Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination landfill(s) has/have the capacity to receive waste.
- 4.69** Waste facility sites in the Royal Borough of Greenwich may be used amongst others as appropriate. Wherever possible, materials will be recycled and re-used either onsite, or provided for use elsewhere. Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.
- 4.70** A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. This will increase efficiency and minimise wastage due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of 'just in time' deliveries will be encouraged.
- 4.71** Further to the Material Exchange Board which is Berkeley Group exclusive, the applicant will explore using Enviromate to find nearby projects which may want site materials. This will reduce the amount of site waste and promote the circular economy principles.

Project Waste Management Plan

4.72 Berkeley Group are committed to using a Project Waste Management Plan (PWMP) which outlines the procedures and commitments to:

- > Minimise waste production.
- > Manage waste on site efficiently (including segregation of waste streams where possible).
- > Divert waste from landfill through re-use or recycling.

4.73 The following waste streams have been identified within the PWMP: Asphalt and Tar, Bricks, Canteen / Welfare / Office Waste, Cardboard and Paper Packaging, Ceramics and Tiles, Concrete (blocks, rubble, paving slabs, pipes etc), Electrical and Electronic Equipment, Floor Coverings (carpets, vinyl etc), Furniture, Glass, Hazardous Materials (mastic tubes, spray cans, used spill kit materials etc), Insulation, Liquids (non hazardous only, e.g. canteen oils), Metals, Miscellaneous, Oils (fuels and oily waters only), Other Plaster and Gypsum-Based Material, Other Plastics (corex etc), Paint Tins / Containers, Paper, Plasterboard, Plastic Packaging, Soils (Contaminated), Soils (Uncontaminated) and Timber.

4.74 Figure 5 below identifies the projected end destination for all of the above identified waste streams. None of the identified waste streams are projected to be sent to landfill – supporting Berkeley’s commitment to a circular economy.

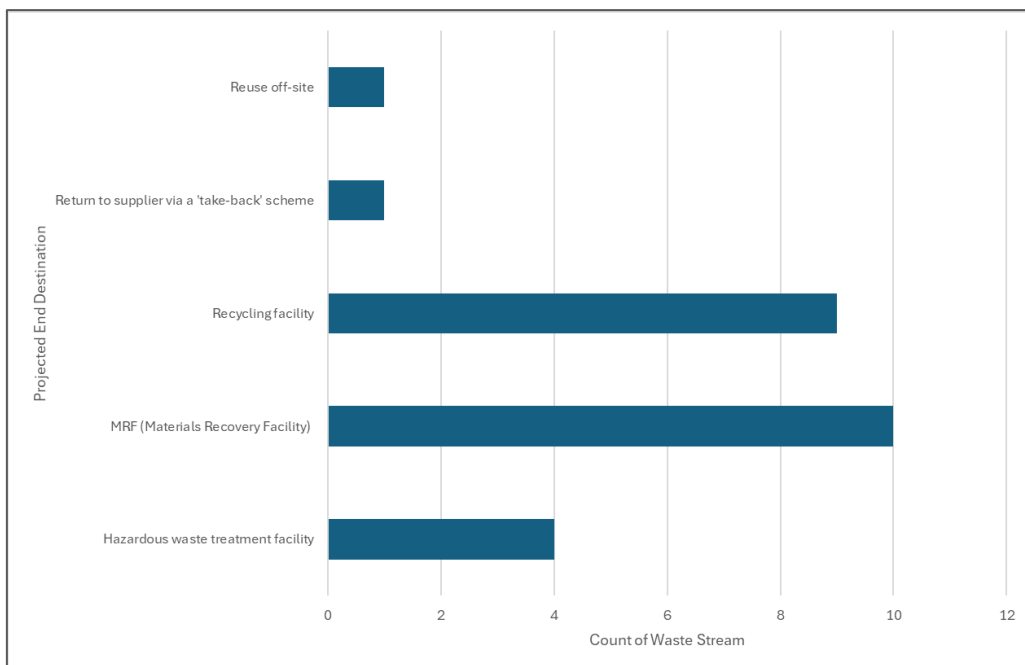


Figure 5: Projected End Destination for Identified Waste Streams

Construction Waste Monitoring

- 4.75** The Applicant is committed to reducing construction waste from landfill and they will be required to regularly monitor and record the site's waste reduction performance. A weekly progress report will be produced once construction works begin and will contain data for waste movements. This will be assembled by senior contract managers who shall review the previous week's activity during report compilation.
- 4.76** As part of their commitment to divert construction waste from landfill, the Applicant will be required to regularly monitor and record the site's waste reduction performance. This will be compared against a target benchmark where at least 98% (by volume) of non-hazardous construction waste is to be reused or recycled. This will be checked monthly, as noted in the SWMP in **Appendix D**.
- 4.77** The Proposed Development has a BREEAM 'Excellent' target, with an aim to achieve one Waste 01 credits. Through targeting Waste 01 credits the scheme will aspire to a high level of construction waste efficiency (<11.5 tonnes/m² GIFA).
- 4.78** Workshops at RIBA Stage 3 and 4 will track the development of potential waste opportunities and identify additional measures to ensure these targets are met.

Operational Waste

- 4.79** Waste reduction during the operational phase is also being considered for opportunities in implementing waste mitigation measures for the potential impacts arising during the operation of the development to ensure that such measures are consistent with both national and local waste policies and targets.



Figure 6: Waste Hierarchy

4.80 The Waste Hierarchy strategy in accordance with the London Plan will be used to ensure that waste is reduced or reused prior to being put out for recycling or refuse collection. The waste hierarchy, as shown in Figure 5 above, establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing if for re-use, then recycling, recovery and lastly disposal (e.g., landfill).

Waste Arising

4.81 The Proposed Development is anticipated to produce approximately 190,500 litres of waste from residential uses per week. Table 2 below outlines the expected residential weekly waste arisings.

Table 2: Domestic Weekly Waste Arisings

Building	No. of Homes	Weekly Arisings (litres)		
		Refuse	Dry Recyclables	Compostable
D1	83	12,100	12,100	500
D2	48	6,600	6,600	500
D3	136	18,700	18,700	500
D4	120	16,500	16,500	500
D5	101	14,300	14,300	500
K4	90	13,200	13,200	500
K5	85	12,100	12,100	500
Total	663	93,500	93,500	3,500

4.82 As outlined in the Operational Waste Strategy (Iceni, March 2024) the residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 500 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential blocks at ground level to ensure easy access for both residents and waste collection operatives.

4.83 The commercial spaces are anticipated to produce approximately 11,466 litres of refuse and recycling per week. Waste storage for these commercial spaces will consist of 1,100 litre Eurobins and 500 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for

commercial waste collection operatives. Table 3 below outlines the expected commercial weekly waste arising.

Table 3: Non-Domestic Weekly Waste Arising

Location	Use	GIA (m2)	Weekly Waste Volume (litres)	Proportion of Waste Stream		
				Residual	Recycling	Food
Building D3	Flexible/Commercial/Community Use	305	7,625	50%	50%	30%
Building D5	Flexible/Commercial/Community Use	408	2,040	50%	50%	
Building K3	Flexible/Commercial/Community Use	158.8	1,059	50%	50%	
Building K5	Flexible/Commercial/Community Use	111.3	742	50%	50%	

Refuse Store Locations

4.84 Space will be provided for segregated recycling waste bins within the kitchen areas. This will involve the installation of recycling bins, where waste can be segregated into paper, glass, cans, plastic and cardboard, if necessary. This will maximise the potential for residents to correctly sort waste within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

4.85 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their block on the ground floor. In accordance with the Council's waste collection requirements, waste storage bins are defined by the waste stream as follows:

- > Refuse: 1,100 litre Eurobins.
- > Dry recyclables: 1,100 litre Eurobins.
- > Compostable (without garden waste): 500 litre wheeled bins.

4.86 Figure 7 overleaf shows the refuse stores circled in red.

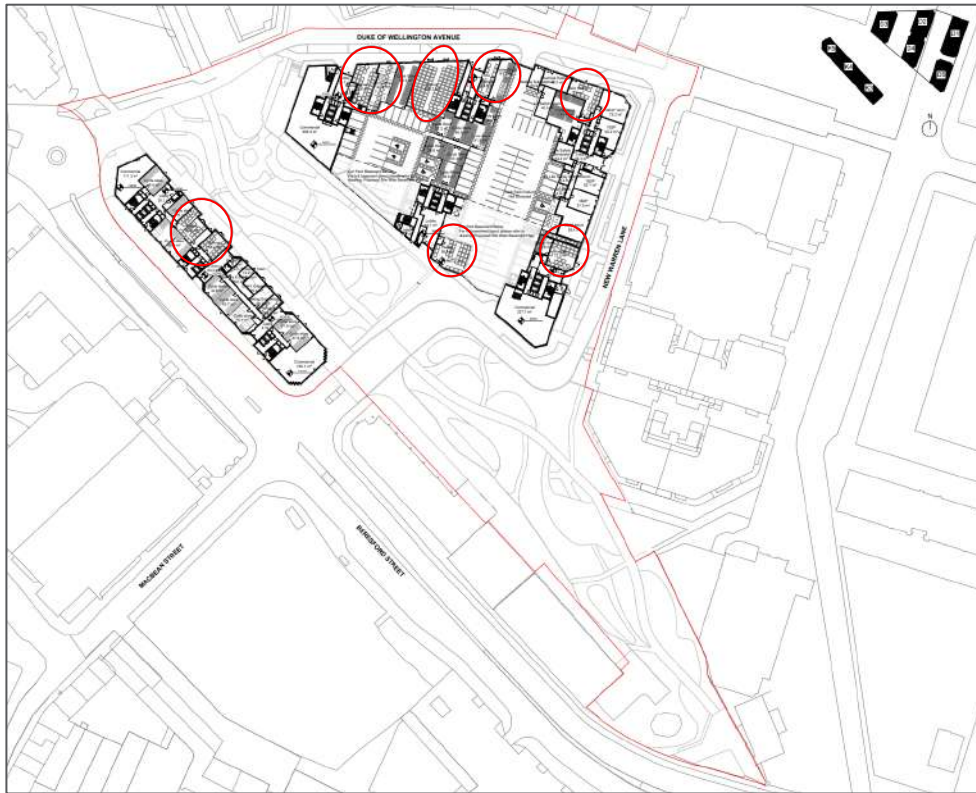


Figure 7: Refuse Store Locations on Proposed Site Wide Ground Floor Plan (PRP, February 2024)

- 4.87** Bulky waste will be accommodated within the dedicated bulky waste storage areas on the ground floor. These spaces are to be split out by core, and co-located with the waste storage areas. Please see the full Operational Waste Strategy in **Appendix E** for further detail.
- 4.88** Vehicular access to service the K building has been revised to provide egress onto Duke of Wellington Avenue and the refuse strategy is outlined in Figure 8 overleaf.



Figure 8: Refuse Strategy (The Ropeyards Royal Arsenal Riverside, Pre-App 06 Meeting – January 2024)

Operational Waste Monitoring

- 4.89 The development is committed to meet the Mayor's 65% target for municipal waste (residential) recycling by 2030 and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the proposed development, is operational. The development will also meet the Mayor's 75% target for municipal waste (commercial) recycling by 2030.
- 4.90 A project-specific Operational Waste Management Strategy has been prepared by Icenii (March 2024) in accordance with relevant requirements, in order to embed and enable sustainable waste management in operation, please refer to **Appendix E** for more information.
- 4.91 Waste monitoring will consist of the collection of waste reporting data by Facilities Management, such as the volumes of various waste streams and tracking of the percentage of waste recycled. This information will be used to monitor progress towards achieving waste avoidance targets.
- 4.92 New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates. The information will also include details on waste prevention schemes within the Royal Borough of Greenwich such as:

- > **Love Food Hate Waste** – aims to raise awareness of the need to reduce food waste and ways to take action;
- > **Community RePaint** – UK wide paint reuse network that aims to collect leftover paint and redistribute it to benefit individuals, families, charities and communities in need at an affordable cost;
- > **Greenwich Council Reuse and Recycling Centres** - Reuse and recycling centres allow residents to dispose of a wide range of reusable and recyclable items for free located on Nathan Way, London; and,
- > **Freecycle Network; and Freegle** – are networks that aims to increase reuse and reduce landfill by offering a free online based service where people can give away and ask for things that would otherwise be thrown away.

Recycling Waste Reporting Form

4.93 The recycling and waste metrics reporting will be agreed with the project manager and a site waste management plan (SWMP) will be drafted. The SWMP will contain improved estimates for figures shown in Table 4.

Table 4: Recycling and Waste Reporting – Construction and Municipal Waste – Residential only

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m² GIA)	0.553 (whole development)	N/A	0.149 (whole development)	0.019
Reuse Onsite (%)	3%	0%	0%	N/A
Reuse Offsite (%)	1%	0%	0%	N/A
Recycle Onsite (%)	1%	0%	0%	N/A
Recycle Offsite (%)	>95%	>95%	>95%	51%
Landfill (%)	0%	Max 2%	Max 5%	49%
Other management (%)	0%	Max 2%	Max 5%	0%

Table 5: Recycling and Waste Reporting – Construction and Municipal Waste – Non Residential only

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m² GIA)	0.553 (whole development)	N/A	0.149 (whole development)	0.0003
Reuse Onsite (%)	3%	0%	0%	N/A
Reuse Offsite (%)	1%	0%	0%	N/A
Recycle Onsite (%)	1%	0%	0%	N/A
Recycle Offsite (%)	>95%	>95%	>95%	50%
Landfill (%)	0%	Max 2%	Max 5%	50%
Other management (%)	0%	Max 2%	Max 5%	0%

4.94 Currently, as identified in Table 4 and 5, the municipal waste for residential and commercial units are not currently meeting the Mayor’s 2030 target of 65% and 75% respectively to be recycled. The municipal figures in Table 4 and 5 have been calculated as percentages of the total domestic weekly waste arisings as outlined in the Operational Waste Management Plan (**Appendix E**). Excavation waste has been calculated using cut and fill estimates converted to tonnes through taking an average density of soil to be 1.5tonnes per m³.

4.95 For the proposed development to improve upon their current municipal waste recycling percentage, Table 6 below outlines recommendations to be implemented by building management.

Table 6: Actions to help the reduction of waste generation

	Action
Cut Waste and Increase Material Reuse	Initiatives to focus on food waste reduction and behaviour change.
	Reduce single use plastics, including behaviour change.
	Restrict residual waste such as containerisation, reducing side waste, or reducing residual collection frequencies.

	Plans to implement circular economy principles such as repair, reuse or swap shop schemes.
	Repair skills workshops.
Maximise Recycling Performance	Increase the quality of recycling such as tackling contamination.
	Behaviour change workshops.
Reduce Environmental Impacts of Waste Activities	Actions to support the waste hierarchy alongside diversion from landfill and incineration. This can include reuse of any high-quality bulky items that are collected.

Plans for Implementation

4.96 Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):

- > Principal Contractor and Sub-contractors (when appointed).
- > Project Architect.
- > Structural Engineers.
- > Transport Consultants; and
- > Client.

Short to Medium Term

4.97 A brief plan of implementation and action list has been compiled. Key actions of which included:

- > Review and confirm the actual elements to be produced off site.
- > Continue to develop the BREEAM strategy with Circular Economy principles in mind.
- > Further consider how flexibility and adaptability can be considered in the design process.
- > Continue to compile an access and maintenance strategy to ensure that all building elements are designed with maintenance and longevity in mind.

- 4.98** Such requirements, along with the projects strategic approach to implementing circular economy principles, will be included in tendering specifications to contractors, ensuring responsibilities in line with these aspirations are embedded from the earliest opportunity.
- 4.99** Waste is a key performance indicator included in project performance dashboards, allowing for the ongoing monitoring of construction waste by site managers. This will help to ensure that construction waste targets are met.
- 4.100** Establish the final destination landfills in the Borough and ensure that they have sufficient capacity for the estimated generation.
- 4.101** Maintenance of all plant items will need to be implemented utilising the appropriate equipment and platforms, by appropriately trained engineers in accordance with relevant regulations. Prior to any of these tasks being implemented, method statements and risk assessments will need to be produced and issued to the building management team.

Longer Term

- 4.102** The Principal Contractor (once appointed) will be required to continue the work done by the design team to identify and provide solutions on key challenges with material use with the aim to reduce this even further.
- 4.103** Evidence will need to be provided to confirm that all commitments made, are addressed in the as built development. They will also need to confirm:
- > The Demolition Contractor and Main Contractor to report against all waste management targets.
 - > Provide evidence that a minimum of 20% of the total value of the selected products and materials will include recycled and/or reused content.
 - > The Main Contractor to provide evidence that materials have been procured in line with requirements set out in the tender document.
 - > Ensure that the operators are aware of the overall waste management strategy and the targets for at least 65% diversion of municipal waste from landfill for reuse, recycling, or recovery by 2030.
 - > Provide a Post-Construction report to the GLA which includes lessons learned that can be fed into future projects.

End of Life Strategy

- 4.104** Although the proposed development is still at an early design phase, engagement with the design team has been undertaken to address the end-of-life strategy for the building materials and components.
- 4.105** The One Click Building Circularity tool has been used to estimate opportunities for the materials at the end of their life. The results are based on inputs used for the Whole Life Cycle Carbon Emissions Assessment (Hodkinson Consultancy, February 2024).

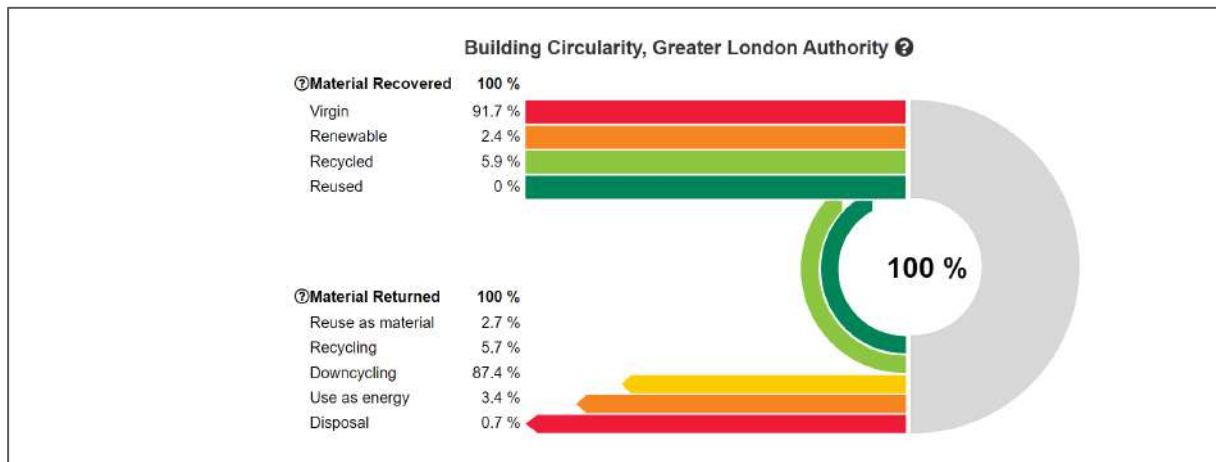


Figure 9: Building Circularity Tool

- 4.106** This building’s circularity is evaluated in terms of the mass of the recovered building material as compared to virgin material likely to be used in the building construction and the percentage of the material that can be returned to building construction at the end of life of the building.
- 4.107** ‘Materials Recovered’ (100%) represents the use of circular materials in the project. It is the mass-based share of recycled, reused or renewable materials of the total materials used.
- 4.108** ‘Materials Returned’ (100%) represents the end-of-life handling of materials that were used in the project. It is the mass-based share of materials that are either recycled or reused as material, added with 50% of the materials that are either downcycled (with value loss, such as reuse of concrete aggregates) or used as energy (such as wood or plastic product incineration).
- 4.109** Once the principal contractor is appointed, and the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifetime of the building through careful design and specification through the measures listed herein.

- 4.110** Where individual elements have shorter design life periods, the development seeks to design for the repurpose and independent replacement of these individual elements.
- 4.111** Exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.
- 4.112** Building Information will be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material specification and manufacturers data sheets will be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, waste reduction
- 4.113** Once appointed, the contractor will also be required to produce a disassembly manual that provides guidance on which materials, elements or components can be reused, recycled, or composted. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building which will also enable BREEAM credits to be obtained for the buildings.
- 4.114** The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.
- 4.115** Assumptions made with respect to maintenance, repair and replacement cycles and the material "end of life" scenarios have been included within the GLA Spreadsheet that accompanies the Whole Life Cycle Carbon assessment (Hodkinson Consultancy, February 2024).
-

5. CONCLUSION

- 5.1** This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Berkeley Homes (East Thames) Ltd. It has been produced for the proposed development at The Ropeyards, Royal Arsenal Riverside, Plots D&K in the Royal Borough of Greenwich.
- 5.2** This Statement sets out the circular economy measures included in the proposed development at The Ropeyards, Royal Arsenal Riverside, Plots D&K in the Royal Borough of Greenwich. The measures consider the following six principles:
- > Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.
 - > Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.

- > Designing for longevity.
- > Designing for adaptability or flexibility.
- > Designing for disassembly.
- > Using systems, elements or materials that can be reused and recycled.

5.3 The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the full planning application that is being submitted to the Royal Borough of Greenwich.

5.4 This report should be read in conjunction with the GLA Circular Economy Spreadsheet which will be submitted alongside this report.

5.5 A series of targets have been proposed in this Circular Economy Statement, identifying and applying these approaches during concept design will enable them to be incorporated as part of the development brief and will help facilitate a circular economy approach.

5.6 A Post Construction Completion Report is to be provided at project completion. This will seek to set out the predicted and actual performance against all numerical targets and provide updated versions of the items noted in this report.

APPENDICES

Appendix A

Circular Economy Workshop

Appendix B

Designing Out Waste Workshop

Appendix C

Recycled Content Calculations

Appendix D

Site Waste Management Plan

Appendix E

Operational Waste Strategy



Appendix A

Circular Economy Workshop

CIRCULAR ECONOMY AND WHOLE LIFE CARBON WORKSHOP

Date: 29/11/2023
Time: 10:00 – 10:25
Location: Microsoft Teams
Attendees: Zeta Stebbings (Hodkinson Consultancy)
 Hannah Stevens (Hodkinson Consultancy)
 Marco Liberace (Berkeley Homes East Thames Ltd)
 Morgan Roberts (Berkeley Homes East Thames Ltd)
 Chris Hills (Berkeley Homes East Thames Ltd)
 Paloma A (Berkeley Homes East Thames Ltd)
 Malwina Naskret (HTA)
 Micheal Benbow (Buro Happold)
 Andrew Harrison (Watermans)
 Olarewaja Bello (Watermans)
 Grace Wileman (Iceni)
 Anastasia Vasilyeva (PRP)
 Chris Chistodoulou (PRP)
 Nicola Saetti (PRP)

Item	Summary	Action
1	<p>GLA Requirements stated by ZS as follows:</p> <ul style="list-style-type: none"> - 95% reuse of construction and demolition waste (where applicable). - 95% beneficial use of excavation waste. - 65% recycling of municipal waste. - 75% recycling of commercial waste. - 20% recycled content by value. <p>- PA states that the Berkeley-wide general targets are now 98% for reuse of construction, excavation, and demolition waste.</p>	ZS PA
2	<p>Evidence needed:</p> <ul style="list-style-type: none"> - ZS stated the required evidence needed for the operational waste management plan. Expressing how much waste will be generated per annum, refuse store, number of bins and pointing out if the number of waste could be lower would be great. GW stated they are waiting for the final calculations, and then this information will be distributed. - PA states that the site waste management plan will be handed over once internally checked. - MR confirms that no demolition is occurring on site. - GLA Cut and Fill – ML mentions these will be done at a preliminary level. AH notes he will do this. - AH states excavation calculations will also be undertaken minus bulking tonnes. - PA states that the Designing Out Waste Workshop will be completed once internally reviewed. <p>Circular Economy Ideas:</p> <ul style="list-style-type: none"> - AH notes that with the view of adaptability, second bedrooms can be used as an office instead. - AH notes that there are limitations to making the building more adaptable without the fear of over-engineering the development. 	ZS AH PA ML

	<ul style="list-style-type: none"> - AH states that for commercial units in A Block, there is an uplift to allow for more headroom to make the units more adaptable in the future. 	
3	<p>Whole Life Carbon</p> <ul style="list-style-type: none"> - AP confirmed that Burrows is doing the internal LCA report. - Upper and lower bounds will be given. AH stated this. - MR states that there will be nothing about cladding – it will be a brick façade. - Revit model will be built with Metta One Click - confirmed by AH - MR questioned about putting the recycled content information in the DAS, ZS states that this is to their own action if they decide to. 	Initials



Appendix B

Designing Out Waste Workshop

Designing-out Waste Workshop

Project: Royal Arsenal Riverside Plots D & K

Date: 27/11/2023

Action	Status as of DD/MM/YYYY	Action by	Status update
Design for reuse and recovery			
Reusing the soil on site for levelling the ground	27/11/2023	PRP	Noted
Reusing soil to for landscaping, which has a varying topography, where possible	27/11/2023	Landscape Consultant	Noted
Any materials able to be reused from the A Blocks will be brought to D&K	27/11/2023	BHET	To be confirmed
Temporary Park street furniture, lighting and bin store fencing to be removed, stored and reused at the end of the project	27/11/2023	BHET	To be confirmed
Materials with recycled content	27/11/2023	BHET	To be confirmed
Design for off-site construction			
Pre-cast columns	27/11/2023		Noted
Use of off-side construction for bathroom pods, shower rooms and utility rooms	27/11/2023		Noted
Maximise cement replacement	27/11/2023	Waterman Group	To be determined
Balconies standardised	27/11/2023		Noted
Kitchens standardised	27/11/2023		Noted
Explore SFS façade to be pre-fabricated	27/11/2023	BHET	To be confirmed
Design for materials optimisation			
Windows and doors standardised	27/11/2023		Noted
Brick dimensions made to fit for the building and openings	27/11/2023	PRP	Noted
Windows reveals to allow a brick or brick and a half	27/11/2023	PRP	Noted
Aim for materials to be made to measure to avoid waste e.g. plasterboard	27/11/2023	BHET	To be confirmed
Wall types, floor types and roof types are standardised	27/11/2023		Noted
Concrete slabs to be kept to a minimum (225mm). Consider using a proportion of unitised slabs	27/11/2023	Waterman Group	Noted

Commented [IY1]: I thought BHET Technical confirmed that no materials from the A Blocks can be re-used for the D&K Blocks? However, BHET Technical said that the tower crane and welfare facilities could be reused.

Designing-out Waste Workshop

Explore using Stair Master system to reduce waste	27/11/2023	Waterman Group	To be confirmed
Explore using prefabricated risers	27/11/2023	Buro Happold	To be confirmed
Design for waste efficient procurement			
Brick – 6 types	27/11/2023	PRP	
Design for deconstruction and flexibility			
10% adaptable standards with the remaining units be accessibly adapted.	27/11/2023	BHET	To be confirmed
Exploring BIM systems for future operation and maintenance.	27/11/2023	BHET	To be confirmed



Appendix C

Recycled Content Calculations

REUSED AND RECYCLED CONTENT CALCULATIONS

	Material quantity (kg)	Material intensity (kg/m ²)	Recycled content by value
Substructure	27,985,538.37	444.89	32.35%
Superstructure: Frame	11,924,636.38	189.57	40.15%
Superstructure: Upper Floors	34,899,608.42	554.8	34.46%
Superstructure: Roof	7,642,780.96	121.5	40.73%
Superstructure: Stairs and Ramps	9,790,564.5	155.64	0%
Superstructure: External Walls	15,684,260.1	249.33	9.26%
Superstructure: Windows and External Doors	754,790.06	12	0.17%
Superstructure: Internal Walls and Partitions	41,710,774.86	663.08	8.09%
Superstructure: Internal Doors	86,190	1.37	00%
Finishes	1,449,743.45	23.05	2.68%
Fittings, furnishes, and equipment	151,694.4	2.41	0%
Services (MEP)	1,506,799.83	23.95	46.49%

Version: v1

Date: 07 March 2024

Author: R Durrant

Checked by: Z Croft

Approved by Project Manager: K Paxton



The Ropeyards

Berkeley Homes (East Thames) Ltd

External works	12,361,937.07	196.52	0.83%
Total	165,949,318.42	2,638.09	11.3%



Appendix D

Site Waste Management Plan



MARCH 2024

Site Waste Management Plan

Royal Arsenal Riverside, The Ropeyards, Plots D &K

Iceni Projects Limited on behalf of
Berkeley Homes (East Thames) Ltd

March 2024

ICENI PROJECTS LIMITED
ON BEHALF OF BERKELEY
HOMES (EAST THAMES)
LTD

Iceni Projects

London: Da Vinci House, 44 Saffron Hill, London, EC1N 8FH

Birmingham: The Colmore Building, 20 Colmore Circus Queensway, Birmingham, B4 6AT

Edinburgh: 11 Alva Street, Edinburgh, EH2 4PH

Glasgow: 177 West George Street, Glasgow, G2 2LB

Manchester: WeWork, Dalton Place, 29 John Dalton Street, Manchester, M2 6FW

t: 020 3640 8508 | w: [iceniprojects.com](https://www.iceniprojects.com) | e: mail@iceniprojects.com

linkedin: [linkedin.com/company/iceni-projects](https://www.linkedin.com/company/iceni-projects) | twitter: [@iceniprojects](https://twitter.com/iceniprojects)

Site Waste Management Plan
ROYAL ARSENAL RIVERSIDE, THE ROPEYARDS,
PLOTS D &K

CONTENTS

1. INTRODUCTION	3
2. OBJECTIVES	7
3. WASTE MANAGEMENT REGULATIONS AND GUIDANCE	8
4. ROLES AND RESPONSIBILITIES	15
5. WASTE MANAGEMENT PRINCIPLES	19
6. WASTE TYPES, QUANTITIES AND TARGET SETTING	23
7. WASTE MANAGEMENT MEASURES	29
8. MONITORING AND REPORTING	38

APPENDICES

- A1. SITE PLAN
- A2. LOCATIONS OF CENTRALISED WASTE STORAGE AREAS
- A3. CONSTRUCTION PHASE WASTE REDUCTION MEASURES
- A4. RELEVANT LANDFILL/TREATMENT SITES
- A5. GENERAL NOTES

1. INTRODUCTION

1.1 Icen Projects Ltd was commissioned by Berkeley Homes (East Thames) Ltd (the Applicant) to produce a Site Waste Management Plan (SWMP) to support the Reserved Matters Application (RMA) for Royal Arsenal Riverside, The Ropeyards, Plots D & K. The purpose of this SWMP is to set out how construction and excess material waste will be managed by the Applicant in relation to the redevelopment of the site, and has been based on the information available at the time of writing. This document provides a summary of:

- How the Applicant has developed the SWMP during the design stage.
- How waste will be managed on site in line with Duty of Care legislation.
- The Applicant's requirements for training on waste management issues.
- The Applicant's responsibilities for updating monitoring and reporting volumes of waste.

1.2 It is anticipated that this SWMP will be a living document, that is updated with the relevant information as and when it becomes available through each stage of the project.

1.3 Prior to the commencement of construction works, the Applicant is responsible for preparing a SWMP. At the pre-construction stage, the Applicant should enter the following information into the plan, where practicable:

- Project Details and Duty Holders.
- Objectives relevant to the project.
- Inception and Design Decisions taken to eliminate and reduce waste generation.
- Proposed Waste Management Actions to reduce the amount of waste generated.
- Completion of a waste data sheet at the tender stage, describing the type and quantity of waste likely to be generated throughout the project and how that waste will be treated, reused, recycled, etc.

1.4 When the Principal Contractor is appointed, the Applicant will hand the SWMP over to the Contractor. The Contractor must then update the plan to include the following throughout the course of the project:

- The name of the Site Manager; the person responsible for implementation of the SWMP.

- Recording the details of all contractors to work on the project and any specific responsibility they have in relation to the SWMP.
- Details of the waste contractors to be employed.
- Completion of the document register, detailing the records kept in order to prove compliance with environmental legislation.
- Any waste management action taken, in addition to those proposed by the Applicant to reduce the amount of waste generated.
- Production of updated waste data sheets as often as necessary, but at least every 6 months.
- Details regarding how and where waste will be separated and stockpiled on-site and any security measures that will be implemented to prevent illegal disposal.
- Details of any training that will be provided to ensure adherence to the SWMP.
- The type and frequency of any measuring or monitoring that will be carried out.

Project Details

Project Information

- 1.5 Table 1.1 below provides the key project information available at this stage, including the proposed Gross Internal Area (GIA).

Table 1.1 Key Project Information

Applicant	Berkeley Homes (East Thames) Ltd
Employers Agent	<i>Berkeley Homes (East Thames) Ltd to confirm</i>
Principal Contractor	<i>Berkeley Homes (East Thames) Ltd to confirm</i>
Principal Designer	PRP Architects
Site Location	Royal Arsenal Riverside, The Ropeyards, Plots D &K, Land between Duke of Wellington Avenue and Beresford Street, London, SE18 6NP Grid Reference: TQ436791
Proposed GIA (m ²)	72,352.8
Start Date	2026
Completion Date	Plot K 2028, Plot D 2031
Description of Project	Submission of Reserved Matters (Appearance, Landscaping, Layout and Scale) pursuant to Condition 2 of planning permission reference 16/3025/MA, dated 17.03.2017, for residential units and non-residential floorspace within Plots D and K, along with public / private landscaping details, car / cycle parking, refuse / recycling facilities and play provision.
Waste Management Champion	<i>Principal Contractor to confirm</i>
SWMP Owner	<i>Principal Contractor to confirm</i>

Site and Surroundings

- 1.30 The application site (Appendix A1) is located within Woolwich, Royal Borough of Greenwich (RBG).
- 1.31 The Site is located on the western edge of the wider Royal Arsenal Riverside masterplan and is approximately 2.3 ha. The Site currently sits on a temporary park and is bound to the south by the A206, the RAR A & B Blocks to the north (and north east) and RAR Phase 3, the Brass Foundry and The Guard House to the west.
- 1.32 Beyond the immediate site boundaries, to the north of the site is the River Thames and to the south and south east of the site is Woolwich Town Centre including the main shopping area along Powis Street, General Gordon Square, the Woolwich Arsenal Overground Train Station and the Woolwich DLR Station.

The Proposed Development

1.33 The description of the development is as follows:

“Submission of Reserved Matters (Appearance, Landscaping, Layout and Scale) pursuant to Condition 2 of planning permission reference 16/3025/MA, dated 17.03.2017, for residential units and non-residential floorspace within Plots D and K, along with public / private landscaping details, car / cycle parking, refuse / recycling facilities and play provision.”

2. OBJECTIVES

2.1 The objectives of this Site Waste Management Plan are to:

- Identify relevant policy and guidance that needs to be considered and supported by the Proposed Development.
- Identify and implement roles and responsibilities of all parties involved in the management of waste.
- Set the waste management principles and aspirations for the construction and operation of the Proposed Development.
- Identify the waste expected to arise during the demolition, enabling and construction phases.
- Implement good practice waste minimisation and management, outlining how waste will be eliminated, reduced, reused and recycled and, if required, disposed of correctly.
- Monitor and review waste minimisation and waste management.

3. WASTE MANAGEMENT REGULATIONS AND GUIDANCE

- 3.1 The means of sorting, storing and collecting both site and operational waste are incorporated within policy and regulation as set out below.

Legislation and Best Practice Guidance

Definition of Waste

- 3.2 Waste is defined by the Council Directive on Waste (75/442/EEC) as “any substance or object which the producer or person in possession of discards, intends to discard or is required to discard.”

Hazardous Waste

- 3.3 Hazardous Waste is waste with one or more properties that are hazardous to human health or the environment as defined by the Hazardous Waste (England and Wales) Regulations 2005 (HWR).
- 3.4 Under the HWR “it is an offence to produce hazardous waste at premises, or remove that waste from premises, unless those premises are either registered with the Environment Agency or are exempt.”
- 3.5 Where subcontractors produce hazardous waste, it will be removed under the Hazardous Waste Premises Registration for that site. The Hazardous Waste (England and Wales) Regulations 2005 require a Hazardous Waste Consignment Note (HWCN) to be produced for each consignment of hazardous waste removed from site.

Inert Waste

- 3.6 The definition of inert waste (including bricks, tiles and ceramics, concrete, soils and stones and glass), is set out in the Landfill Directive (99/31/EC). It states that: “Waste is considered inert if:
1. It does not undergo any significant physical, chemical or biological transformations;
 2. It does not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health;
 3. Its total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger the quality of any surface water or groundwater.”

Waste Framework Directive

- 3.7 The revised European Union (EU) Waste Framework Directive was adopted and published in the Official Journal of the European Union in November 2008 (L312/3) as Directive 2008/98/EC. The Directive has established a framework for the management of waste across the EU and aims to

encourage reuse and recycling of waste, as well as simplifying current legislation. Since Brexit, the legal requirements remain largely unchanged, save that references to EU institutions, obligations and targets will be removed.

3.8 The key requirements are:

- Give priority to waste prevention and encourage reuse and recovery of waste.
- Ensure that waste is recovered or disposed of without endangering human health and without using processes which could harm the environment.
- Prohibit the uncontrolled disposal of waste, ensure that waste management activities are permitted (unless specifically exempt).
- Establish an integrated and adequate network of disposal installations.
- Prepare waste management plans.
- Ensure that the cost of disposal is borne by the waste holder in accordance with the polluter pays principle.

Materials Management Plan

3.9 The Definition of Waste: Code of Practice (DoWCoP) requires that a Materials Management Plan (MMP) is produced and specifies what information must be gathered and documented. The MMP must demonstrate the material has been deposited in the appropriate manner and will not pose unacceptable risks to human health or the environment. The MMP must be reviewed by a Code of Practice Qualified Person and receive final signoff by the Environment Agency.

Duty of Care

3.10 The Duty of Care is set out in section 34 (1) of the Environmental Protection Act 1990 and imposes a duty on any person who is the holder of controlled waste. Any persons who import, produce, carry, keep, treat or dispose of controlled waste, or as a broker has control of such waste, safe storage, transfer to the right person and requirement for checking up.

Waste Transfer Notes (WTS)

3.11 The Environmental Protection (Duty of Care) Regulations 1991 require a Waste Transfer Note (WTN) to be provided on the transfer of waste between parties. The WTN will contain enough information about the waste to enable anyone encountering it to handle it safely and either dispose of it or allow it to be recovered whilst maintaining compliance with law.

3.12 Copies of WTNs must be retained for 2 years minimum and be available for inspection by the environmental regulator following the transfer of waste.

3.13 The Regulations give specific requirements for the content of a WTN, which must:

- Contain a written description of the waste and the corresponding 6-digit EWC reference code.
- State the quantity of waste.
- State whether the waste is loose or in a container, and if in a container, the type of container used.
- State the time and place of transfer.
- State the name and address of the transferor and transferee.
- State whether the transferor is the producer of the waste.
- State to which category of person the waste is transferred to, e.g. a registered waste carrier, or a holder of a waste management licence.
- Provide details of any waste carrier's registration or any waste management licence, where used.

Waste Carrier's Registration (WCR)

3.14 The Control of Pollution (Amendment) Act 1989 establishes the requirement for carriers of controlled waste to register with the Environment Agency. There are a number of exceptions to these requirements, including charities, waste collection authorities, and emergency situations.

3.15 Waste will only be removed from site using a subcontractor or supplier holding a valid WCR.

Site Waste Management Plans (SWMPs)

3.16 The legislation¹ mandating the development and implementation of a SWMP on medium and large-scale construction projects was repealed in December 2013. However, many continue to recognise that SWMPs, when correctly implemented, can improve construction waste management with associated environmental and economic benefits.

3.17 A SWMP is an important part of implementing good practice WMM. A SWMP is not just a tool for managing waste on-site, it should also be used as a tool during the early design phase of projects, identifying potential waste streams to minimise and targeting appropriate rates of recovery to inform

¹ Site Waste Management Plans Regulations 2008 (Repealed in December 2013).

the development of the design. Planning and developing the SWMP before construction begins greatly helps realise the benefits of good practice WMM.

- 3.18 SWMPs remain best practice during construction and allow waste credits to be achieved under certification schemes such as BREEAM. It is anticipated that this SWMP will be regularly monitored by the Principal Contractors once appointed.

Construction Environmental Management Plan

- 3.19 Details of measures to protect the environment during the construction of the Proposed Development are set out in a Construction Environmental Management Plan (CEMP).
- 3.20 Measures address hours of working, noise, vibration, dust, light spill, wheel washing, control of runoff, and waste management. It is anticipated that the phased implementation of the CEMP will be a condition of the planning permission and that it will be regularly monitored.
- 3.21 Once finalised and approved by the LBH, the CEMP will be held on-site and all site personnel will be made aware of its existence and adhere to its guidance.

Considerate Constructors Scheme

- 3.22 This is a national initiative, set up by the construction industry. Construction sites that register with the Scheme sign up and are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.
- 3.23 The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three categories: the environment, the workforce and the general public.
- 3.24 It is expected that registered construction sites work in an environmentally conscious, sustainable manner.

Policy Context

The London Plan (March 2021)

- 3.25 **Policy SI7 (Reducing waste and supporting the circular economy)** states that resource conservation, waste reduction, increase in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;

- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of goods;
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030;
- Meet or exceed the targets for each of the following waste and materials streams:
 - Construction and demolition – 95 per cent reuse/recycling/recovery
 - Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems and that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

Royal Borough of Greenwich New Developments: Guidance Notes for the storage and collection of waste and recycling materials

- 3.26 This document sets out the Council's requirements for its waste and recycling collection services and should be used by architects and developers when designing waste storage and collection strategies.
- 3.27 RBG is committed to working towards meeting the Mayor of London's target of 50% of local authority collected waste being recycled or composted by 2020, aspiring to 60% by 2031 as set out in the London Plan (Chapter 5.16). The guidelines in this document aim to maximise the separation of waste for recycling and reuse and minimise the amount of waste sent for energy recovery by incineration or to landfill. For this to be effective, consideration needs to be given at the earliest possible stage in the planning process to the separation and storage of recyclable or reusable waste and compostable materials.
- 3.28 When a planning application is submitted, Royal Greenwich will expect details of the proposed storage facilities for waste and recyclable material to be specified in detail. This requirement is essential for the following types of application:
- New residential, commercial, or mixed developments
 - Residential conversions
 - Extensions or redevelopments to existing buildings which result in a change in the existing number of residential or commercial units
 - Changes of use

Royal Greenwich Local Plan 2014 – 2028 (2014)

3.29 In determining the local context, the RBG Local Plan 2014 to 2028 sets out policy relevant to waste management within the area.

3.30 **Policy IM2 Waste Apportionment:** details waste management cooperations. The Royal Borough will contribute to the sustainable management of waste in Royal Greenwich by working with the other south east London Boroughs, pooling the Boroughs' waste allocations and identifying sites within the sub-region that will meet the combined London Plan waste apportionment figure. All existing waste transfer and management sites will be safeguarded for waste management use, unless appropriate compensatory provision is made in appropriate locations.

3.31 **Policy H5 Housing Design:** New residential development, redevelopment, refurbishment or conversions will be expected to achieve a high quality of housing design and an integrated environment including:

xi. Adequate provision for waste recycling.

3.32 **Policy DH1 Design:** All developments are required to be of a high quality of design and to demonstrate that they positively contribute to the improvement of both the built and natural environments:

x. demonstrate on-site waste management including evidence of waste reduction, use of recycled materials and dedicated recyclable waste storage space.

British Standard 5906:2005

3.33 The Standard provides a code of practice for the storage, collection, segregation for recycling and recovery, and on-site treatment of waste. It applies to new buildings, refurbishments and conversions of residential and non-residential buildings. The Standard also presents typical weekly waste arisings and subsequent storage requirements for a variety of building types, as shown below:

Table 3.1 Waste volume calculations for non-domestic uses

Building Type	Equation for weekly waste arisings (litres)
Office	Volume arising per employee [50 l] x number of employees
Shopping centre	Volume arising per sqm of sales area [10 l] x square meterage
Fast food outlet	Volume per sale [5 l] x number of sales

Department store	Volume per sqm of sales area [10 l] x sales area
Restaurant	Volume per number of covers [75 l]
4/5 star hotel	Volume per bedroom [350 l] x number of bedrooms
2/3 star hotel	Volume per bedroom [250 l] x number of bedrooms
1 star hotel / B&B	Volume per bedroom [150 l] x number of bedrooms
Supermarket (small)	Volume per sqm of sales area [100 l] x sales area
Supermarket (large)	Volume per sqm of sales area [150 l] x sales area
Industrial unit	Volume per sqm of floor area [5 l] x floor area
Entertainment complex / leisure centre	Volume per sqm of floor area [100 l] x floor area

4. ROLES AND RESPONSIBILITIES

Overview

- 4.1 The table below identifies the various parties involved and their responsibilities in relation to the SWMP.

Table 4.1 Roles and Responsibilities

Party	Role and Responsibility
Principal Contractor	<ul style="list-style-type: none"> • Production and distribution of the SWMP • Implementation of the SWMP • Appointment of Waste Contractor for removal of waste and off-site segregation and recycling • Auditing and reporting of site performance against the SWMP • Updating of the SWMP to reflect any changes of responsibilities or personnel • Recording of the quantities of materials being delivered to the site • Recording of the quantities of materials being removed from the site for recycling • Recording of all training held in respect to waste management • Ensuring all records are maintained on-site • Retention of report for 2 years after project completion
Waste Contractor	<ul style="list-style-type: none"> • Provision of waste containers and equipment • Recording of the quantities of waste removed from the site • Collecting, transporting and disposing of waste for re-use, recycling, recovery or disposal • Providing waste transfer notes • Providing monthly waste reports
Subcontractors	<ul style="list-style-type: none"> • Attendance of training as directed by the Principal Contractor • Following arrangements for the collection and segregation of waste on-site as specified in the SWMP • Contacting the Principal Contractor if they are unclear about any aspect of waste or waste management on-site

- 4.7 All persons working on-site are responsible for adhering to the SWMP. This includes attending training as specified and following arrangements for the movement and segregation of waste on-site.

Principal Contractor

- 4.8 The Principal Contractor shall distribute copies of the SWMP to the Principal Designer, Applicant and each Subcontractor. This will be undertaken every time the plan is updated.
- 4.9 They will ensure that an appointment is in place with a registered Waste Management Contractor.
- 4.10 The Principal Contractor will also carry out regular auditing and reporting of how the project is performing against the Site Waste Management Plan.
- 4.11 The Principal Contractor will also be responsible for the implementation of the SWMP.
- 4.12 Their duties will include, but are not limited to:
- Ensuring waste is managed on-site in accordance with the SWMP. This includes ensuring appropriate segregation of waste on-site and arrangements for the removal of waste from the site.
 - Ensuring all employees and contractors understand their duties in relation to the SWMP. This includes arranging appropriate training and toolbox talks.
 - Ensuring that all required records and documents are filed and retained.
 - Ensuring compliance with Duty of Care and other relevant legislation. The Site Manager will be the point of contact for all employees, contractors and waste contractors in relation to the SWMP.
- 4.13 It is recommended that the Principal Contractor nominates a “Waste Champion” on-site to be responsible for the daily management, monitoring and enforcing of waste and also co-ordinating pickup times with the waste management companies. The Waste Champion should also ensure that skips do not become contaminated by incorrect waste being placed in them.
- 4.14 The Principal Contractor’s Procurement Lead is responsible for working with the SWMP Owner to ensure that all waste management requirements and targets are included in subcontract procurement packages. The Procurement Lead is also responsible for ensuring the Waste Management Contractor appointed for use on the project are registered Waste Carriers and have valid and verifiable registration documents.

Waste Management Contractor

- 4.15 The Waste Management Contractor will be responsible for recording the amount of waste taken off-site. They will also provide suitable waste containers, equipment and personnel as necessary to meet the requirements set out in the SWMP as well as produce documents and keep records as required.

- 4.16 They will be responsible for removing waste off-site and transporting to a licensed waste management facility.
- 4.17 The Waste Contractor is responsible for ensuring waste is managed off-site as specified in the SWMP and ensuring the waste treatment facilities have a waste licence and that records are provided to the Principal Contractor.
- 4.18 The Waste Contractor's details are listed below:

Table 4.2 Waste Contractor Details

Contractor	Contact Details	Licence Number and Expiry Date
<i>Principal Contractor to confirm on appointment</i>	<i>Principal Contractor to confirm on appointment</i>	<i>Principal Contractor to confirm on appointment</i>

Subcontractors

- 4.19 Subcontractors are expected to ensure compliance, to adhere to the principals and site practices described in this SWMP, to attend training sessions and to contribute to the achievement of the SWMP targets as necessary.
- 4.20 The subcontractors are yet to be confirmed. This SWMP will be updated and revised as information becomes available. All contractors will be listed in the following table with contact details. All contractors are responsible for adhering to the SWMP.

Table 4.3 Subcontractor Details

Package	Subcontractor	Contact Details
Piling	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Groundworks	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Frame	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Façade	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Roofing	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Brick / Blockwork	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Drylining	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Joinery	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
MEP	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Screed	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Kitchens	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Bathrooms	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Floor Finishes	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>

Metalwork	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Painting and Decorating	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
External Works	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>

Key Personnel Contact Details

4.21 The table below provides the contact information of key personnel in relation to the SWMP.

Table 4.4 Key Personnel Contact Details

Role	Name	Address	Telephone	Email
Applicant	Berkeley Homes (East Thames) Ltd	Royal Arsenal Project Office, Beresford Street, London, SE18 6BG	0208 331 7000	marco.liberace@ Berkeleygroup.c o.uk
Principal Contractor	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Principal Designer	<i>Principal Designer to confirm</i>	<i>Principal Designer to confirm</i>	<i>Principal Designer to confirm</i>	<i>Principal Designer to confirm</i>
Operations Director	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Waste Management Champion	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>
Document Controller	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>	<i>Principal Contractor to confirm</i>

5. WASTE MANAGEMENT PRINCIPLES

5.1 As defined above, waste is “any substance or object which the producer or person in possession of discards, intends to discard or is required to discard”. Construction, demolition and excavation (CD&E) generated around three fifths (62%) of total UK waste in 2018².

5.2 Implementing good practice Waste Minimisation and Management (WMM) on construction projects will help reduce the amount of construction waste sent to landfill. Waste minimisation includes designing out waste from a project and limiting waste arising in the construction phase. Waste management involves identifying potential waste streams, setting target recovery rates and managing the process to ensure these targets are met. Good practice WMM is increasingly being implemented in construction projects to realise key benefits. The following principles are the pillars of WMM.

Circular Economy Principles

5.3 As specified under London Plan Policy SI7, the principles of circular economy should be at the core of the proposed development. The CE can be defined as “...one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste³.” The six circular economy (CE) principles, which should be fundamental throughout both detailed design and construction works, are:

5.4 1. Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

5.5 2. Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.

5.6 3. Designing for longevity.

5.7 4. Designing for adaptability or flexibility.

² Gov.uk. (2022). Statistics on waste. Available at <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste>

³ Mayor of London. (2022). London Plan Guidance: Circular Economy Statements.

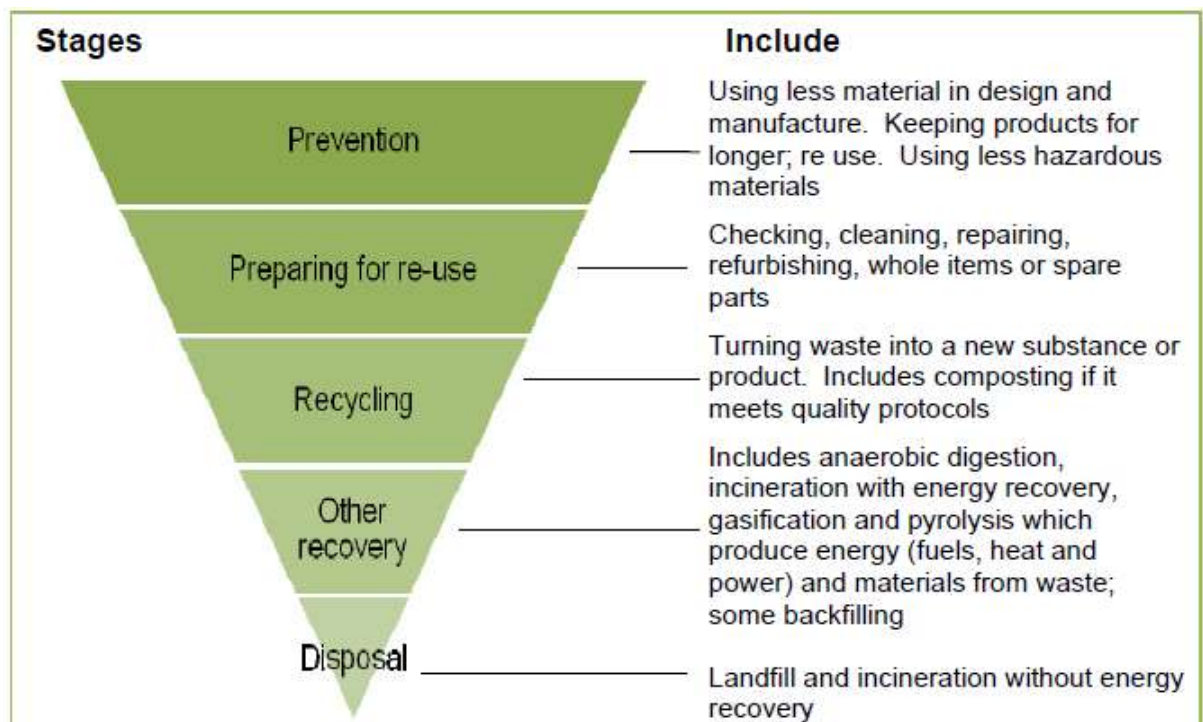
5.8 5. Designing for disassembly.

5.9 6. Using systems, elements or materials that can be reused and recycled.

Waste Hierarchy

5.10 The waste hierarchy is displayed in Figure 5.1 below. The hierarchy orders waste management options according to what is best for the environment. Consideration of how to manage waste should be carried out in this order.

Figure 5.1 The Waste Hierarchy



5.11

5.12 Waste management needs to consist of a holistic approach during the design, contractual and construction phases. This should involve the Applicant, designers, contractors and any other relevant parties. Each party can take actions to reduce the amount of waste arising at different stages of a site development.

Prevent / Reduce Waste

5.13 The following items are to be taken into account by the Applicant / Designers in relation to the design or the construction method in order to minimise the quantity of waste produced on-site:

- Design the project to suit component sizes.
- Reduce the need for temporary or false works.
- Structural solutions which minimise materials and simplify the structure.

- Set the level of the building to minimise export of spoil.
- Plan for the re-use of spoils to form landscape features.

5.14 The following actions will be taken by the Principal Contractor in order to reduce the amount of waste generated throughout the project:

- Order the correct materials, as specified.
- Order the correct quantity of materials.
- Deliver materials at the appropriate time (just in time delivery).
- Encourage suppliers to use less packaging.
- Store and handle materials correctly.
- Ensure protection of finished works.
- Follow the suppliers' storage instructions.
- Keep harmful chemicals in secure bunded areas.
- Protect lightweight materials from wind.

Re-Use Materials

5.15 Where possible, surplus materials should be re-used on the site. Where materials are surplus to requirements on-site (such as soils), there may be a requirement for them to be recovered off-site at other projects. Materials can be sold on by the Principal Contractor, or donated.

Recycling Waste

5.16 Wherever possible, waste will be segregated before being removed from site, with skips and bins clearly labelled. This prevents specific waste streams from becoming contaminated and ensuring they are ready for recycling. However, due to the limited storage area on typical construction sites, a general waste skip may be used for all waste generated (other than Gypsum products) and separation will be carried out off-site at a Waste Transfer Station. Waste will either be diverted for reuse or recycling or disposed of at landfill.

5.17 It is critical that waste separation is relayed to the Site Manager by the operators of the Waste Transfer Station in order to ensure that accurate data is recorded in the SWMP. Where possible, smaller waste materials, such as that from the canteen and the office, should be segregated and recycled separately at the nearest Local Civic Amenity point or other recycling centre. This is to include the recycling of plastic, paper, cardboard, cans and other waste.

Waste to Landfill

- 5.18 This is a last resort option. Landfill disposal is expensive, and it is accompanied by high disposal costs in the Landfill Tax.

6. WASTE TYPES, QUANTITIES AND TARGET SETTING

Construction Stage Waste Targets

- 6.1 Overall construction and operational waste targets will be set, as well as specific targets developed for each waste stream. These are specified in the section below. Waste related targets for the Site are outlined in line with the Applicant's policy on resource efficiency, defined in the most recent Sustainability Performance Report⁴.
- 6.2 The following targets will be set:
- Reuse or recycle 98% of the total waste (excluding hazardous waste).
 - Operate at zero avoidable waste by following the principles of circular economy.
 - Incorporate an effective incident reporting system to reduce near misses with a target of zero environmental incidents.
- 6.3 The use of recycled content and secondary aggregates must be encouraged and given priority, reducing the demand for virgin material and optimising material efficiency in construction. Recommended at:
- Concrete (up to 10% recycled aggregate content, and/or 10% cement replacement with Ground Granulated Blast-furnace Slag (GGBS). The latter figure can be increased to above 40% for all mixes providing longer curing time can be accommodated in the construction process).
 - Blockwork (at least 50% recycled content).
 - Insulation (at least 50% recycled content).
 - Plasterboard (at least 95% recycled content).

⁴ Berkeley Group. Sustainability Performance Report 2022-2023. Sustainable Futures. Available at [Berkeley Group Sustainability Performance Report 2022-2023](#)

Demolition Waste Segregation and Diversion Targets

- 6.4 The project involves the construction of 2 new residential plots with commercial units across the ground floors (Buildings D1, D2, D3, D4, D4 and K3 K4, K5). Plots D and K will be constructed on land currently in use as a temporary park.
- 6.5 Therefore, demolition waste produced during construction of the development is expected to be minimal and consist exclusively of excess excavated materials created during landscaping works. As a priority, clean excavated material will be reused on-site within the proposed landscaping works and if this is not practical, then material should be repurposed at nearby construction sites. Non-hazardous excavated materials should target a landfill diversion rate of 98% of the total volume (m³).
- 6.6 Further review is required once the Principal Contractor is appointed.

Construction Waste Segregation and Diversion Targets

- 6.7 The Building Research Establishment (BRE) has developed indicators to aid in the calculation of construction waste arisings at the design of a new development. The Environmental Performance Indicator (EPI) measures tonnes of waste / 100m² of gross floor area. Table 6.1 shows the EPIs from the BRE.

Table 6.1 Construction waste benchmarks

Project Type	Tonnes / 100m ² gross floor area
Residential	15.3
Commercial Retail	15.7
Commercial Offices	12.4
Education	14.9
Leisure	14.8
Industrial Buildings	12.4
Healthcare	13.0

Notes: Data taken from BRE Waste Benchmark Data (issued October 2017)

- 6.8 Tables 6.2 below shows the estimated construction waste arisings for the Proposed Development, based on the indicative Gross Internal Area (GIA) and the applicable BRE benchmarks.

Table 6.2 Estimated Construction waste

Total GIA (m ²)	BRE project type	Tonnes / 100m ² gross floor area (BRE)	Estimated construction waste (tonnes)
72,352.8	Residential	15.3	11,070
Total	-	-	11,070

6.9 It is estimated that approximately 11,070 tonnes of waste may arise from the construction of the Proposed Development. Over the duration of the construction works (expected to commence in 2026 with Plot K expected to be completed by 2028 and Plot D by 2031), waste generation is likely to vary significantly according to the programme and phasing.

6.10 It should be noted that the estimated total figure also does not include waste from infrastructure development, such as utilities, car parks, pavements and landscaping that will add to the total construction waste volume. This is due to the fact that infrastructure development cannot be easily calculated using benchmarking data; and the BRE have no applicable information for this area of construction.

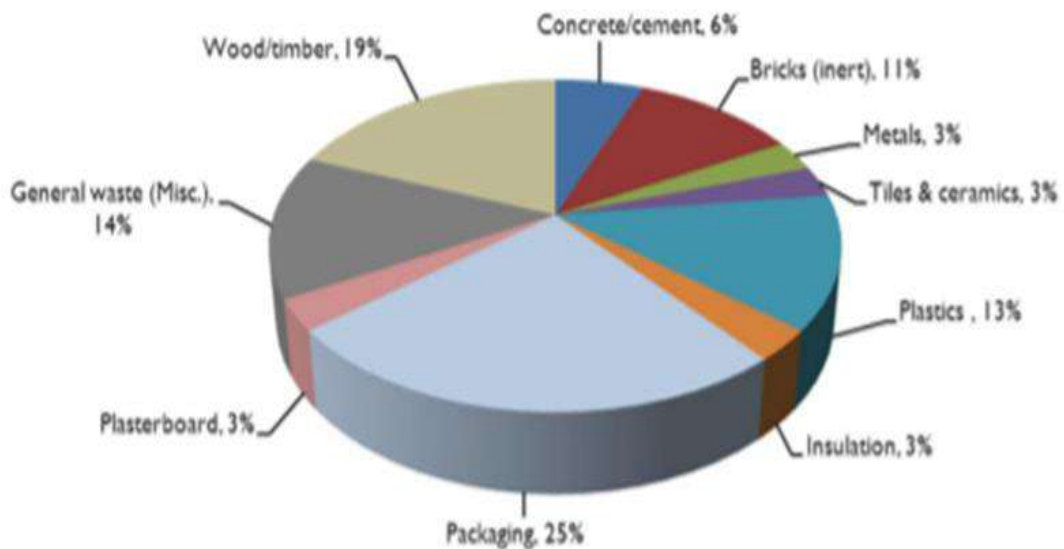
Identification and Classification of Waste

6.11 Prior to the start of works and/or upon the introduction of a new waste stream, the SWMP Owner will identify and classify waste materials leaving site by reference to a six-digit European Waste Catalogue (EWC) code and associated description as required by the List of Wastes (England) Regulations 2005 (LoWR). Waste can be solid, liquid or sludge.

Predicted Waste Streams

6.12 Figure 6.1 below illustrates the estimated composition of construction waste arisings for the Proposed Development, based on data from UK construction projects of a similar nature.

Table A0.1 Figure 6.1 - Estimated Construction Waste Composition (Source: SmartWaste)



6.13 Table 6.3 below shows the standard, good and best practice recovery rates for typical construction materials.

Table 6.3 Recovery rates for typical construction materials

Material	Standard recovery* %	Good practice recovery* (quick win) %	Best practice recovery* %
Timber	57	90	95
Metals	95	100	100
Plasterboard	30	90	95
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**	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***	Limited information***
* Proposed waste management actions			
'Reuse' and 'recycling' are forms of waste recovery			
** This is a required recovery target for the type of Waste Electrical and Electronic Equipment (WEEE)			

6.14 It should be noted that typical hazardous materials from construction sites that fall within the HWR include:

- Treated wood, glass, plastic (alone or in mixture) containing dangerous substances;
- Bituminous mixture containing coal tar and other dangerous substances;
- Metals containing oil, coal tar and other dangerous substances;
- Cables containing oil, coal tar and other dangerous substances;
- Rubble or hardcore containing dangerous substances;
- Soil, stones and dredging spoil containing dangerous substances;
- Gypsum materials such as plasterboard containing hazardous materials;

- Unused or unset cement;
 - Paints and varnishes containing organic solvents or other dangerous substances;
 - Paint or varnish remover;
 - Adhesives and sealants containing organic solvent or other dangerous substances; and
 - Empty packaging contaminated with residues of dangerous substances e.g. paint cans.
- 6.15 Hazardous waste materials will be stored in secure bunded compounds in appropriate containers which are clearly labelled to identify their hazardous properties and are accompanied by the appropriate assessment sheets.
- 6.16 Any fuels, oils and chemicals that are used will be stored in appropriate containers within secure bunded compounds in accordance with good site practice and regulatory guidelines and located away from sensitive receptors.
- 6.17 This section will be reviewed and amended as required once the Principal Contractor is appointed.

Operational Waste Targets

- 6.18 RBG is committed to working towards meeting the Mayor of London's target of 50% of local authority collected waste being recycled or composted by 2020, aspiring to 60% by 2031 as set out in the London Plan⁵.
- 6.19 In line with the Mayor of London's target, the amount of waste to be diverted for recycling during operation of the proposed development has been set at 50% of the total volume (m³). The waste hierarchy should be followed and landfill diversion (i.e., energy from waste) should be prioritised for the remaining volume. The following actions have been identified to achieve this:
- Provision of adequate 50:50 segregated residual waste and recycling material bins in each residential unit, plus bins for organic waste streams.
 - Centralised and easily accessible refuse areas located on the basement or ground floor level of each building.

⁵ Royal Borough of Greenwich (2018). New Developments. Guidance Notes for the storage and collection of waste and recycling materials.

- Adequate signage to reduce the likelihood of waste contamination.

7. WASTE MANAGEMENT MEASURES

Construction Phase Waste Reduction Measures

7.1 This section presents a number of measures that may be implemented during the construction of the Proposed Development in order to minimise the amount of waste arising. Appendix A3 identifies additional measures for reducing waste during specific elements of the construction phase. This document will be further developed once the Principal Contractor has been appointed.

7.2 The waste hierarchy identified above will be followed throughout the construction phase. Good practice actions to reduce waste and subsequent actions identified during construction will be recorded within A2. This will seek to minimise the production of waste throughout the project.

Storage and Segregation

7.3 Where space allows, an area for the storage of off-cuts and surplus materials will be created with appropriate packaging and weatherproofing to keep them in usable order so that these materials can be reused on site or stored for reuse on another project.

7.4 All waste will be stored securely on site and during transportation to prevent pollution, contamination, fly tipping and nuisance complaints. A waste management compound will be established within the site perimeter taking into account the sensitivity of the surrounding area and characteristics of the waste types produced on site. This will be accessible to on-site staff and waste removal to facilitate re-use, recycling and recovery of waste. Signs will be placed throughout the relevant areas of the site directing individuals to the location of waste storage areas.

7.5 The Applicant will also adhere to the following requirements:

- Waste will be segregated into hazardous, non-hazardous and inert waste. Waste materials will be classified in accordance with the LoWR and segregated onsite according to European Waste Classification (EWC) codes.
- There will be an adequate number of containers of an appropriate size and type for the collection and segregation of waste. Suitable containers may include: Wheelie bins: 240ltr, 360ltr, 660ltr; Skips: 8YD, 12YD, 16YD.
- Waste containers will be covered with netting, sheeting or lids to prevent the escape of waste and the contents from getting wet e.g., from rain and on-site water use.
- Storage areas for raw materials and assembly areas for construction components will be located away from sensitive receptors.

- All waste containers will be clearly labelled with appropriate segregation stickers as per the Institution of Civil Engineers (ICE) colour coding. Each will be labelled with the relevant waste segregation sign to help reduce mixed waste skips.
- During the internal strip out and fit out phases, wheelie bins or a practical alternative will be provided on each floor and labelled with segregation signs for each relevant waste stream being produced. Once full, these bins are to be transported to the designated waste consolidation area.
- Regular checks on site will be conducted for litter and damage to waste containers, such as leaks.
- Temporary offices and work compounds on-site will retain all details relating to the waste strategy for the site, health and safety and monitoring and reporting details.

7.6 In addition, the provision of effective and secure storage areas for construction materials is important to ensure that potential loss of material from damage, vandalism or theft is avoided. These measures will be supported by ensuring well-timed deliveries to the site, providing on-site security and installing temporary site security fencing.

7.7 Implementation of good practice measures in terms of on-site storage and security practices will assist in reducing unnecessary wastage of material and ensure that high standards are maintained throughout the development process.

Earthworks

7.8 Where excavations required for landscaping works encounter both Made Ground and the underlying natural soils, the soils should be segregated prior to subsequent testing for either disposal off-site or reuse on site (under The Definition of Waste: Development Industry Code of Practice).

7.9 If off-site disposal is required, classification of surplus arisings should be carried out in line with the requirements of Technical Guidance WM3, including analysis of the total concentrations of polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, metals and pH and waste acceptance criteria (WAC) analysis. If asbestos is identified in the sample, asbestos quantification testing should be undertaken.

7.10 Where practicable, clean excavated material will be reused on-site within the proposed landscaping works.

7.11 Any material that cannot be reused on-site will be removed by licensed waste carriers and sent for treatment or disposal (as appropriate) at appropriately licensed facilities.

Gypsum Waste

7.12 Any waste containing any amount of Gypsum that is sent to landfill must go to a separate cell for high sulphate waste. Therefore, it is imperative that Gypsum waste is separated from other waste.

7.13 The following measures will be implemented to address this:

- A dry storage area will be set aside for bagged plaster mix. This will reduce wastage and may save money.
- Mixed or dry plaster should not be washed into drains or surface waters as this can cause water pollution.
- Clean, uncontaminated plasterboard will be recycled.
- Wet, mixed plaster should be left to go off before disposal. Liquid waste cannot be disposed of at landfill sites.
- Plaster, plasterboard and other Gypsum products will be separated from general waste, as they contain high levels of sulphates.

Landfill

7.14 Indicative lists of landfill sites and transfer / treatment facilities that have the potential to receive waste from the Proposed Development can be found at Appendix A4. It should be noted that the specific waste facilities that will be used during construction phases will not be known until the Principal Contractors had been appointed.

Sustainable Selection of Construction Materials

7.15 A sustainable materials selection strategy should be prepared prior to construction. Measures should be taken, such as face-to-face 'toolbox talks' and provision of clear operational instructions, to ensure that contractors are committed to the operation of good practice measures on-site with emphasis on continual improvement and identifying appropriate opportunities to reduce waste, promote recycling and use recyclable materials. The ordering of appropriate, minimum amounts of building materials should be part of the materials selection strategy.

Promotion of Best Practice

7.16 As part of the encouragement of on-site best practice, there will also be a need to ensure that suppliers of raw materials to the Proposed Development are committed to reducing any surplus packaging associated with the supply of any raw materials. This includes the reduction of plastics (i.e. shrink wrap and bubble wrap), cardboard and wooden pallets. This may involve improved procurement and consultation with selected suppliers regarding commitments to waste minimisation,

recycling and the emphasis on continual improvement in environmental performance. Where practical, site waste targets and incentives will be set and incorporated into the contracts of supply chain suppliers.

- 7.17 Table 7.4 summarises the most important mitigation measures to minimise the potential waste of on-site materials during construction. It is important to note, however, that not all construction materials will be provided by local suppliers.

Table 7.1 Measures to reduce the wastage of on-site construction materials

Task	Action
Ordering	Avoid: Over-ordering (order 'just in time') Ordering standard lengths rather than lengths required Ordering for delivery at the wrong time (update programme regularly)
Delivery	Avoid: Damage during unloading Delivery to inappropriate areas of the site Accepting incorrect deliveries, specification or quantity
Storage	Avoid: Damage to materials from incorrect storage Loss, theft or vandalism through secure storage and on-site security
Handling	Avoid: Damage or spillage through incorrect or repetitive handling

- 7.18 Where practicable, waste types that have the potential to be reused on-site or transported off-site for recycling will need to be segregated. Although every effort will be made to retain all suitable materials on-site, it is possible that some of these materials cannot be reused or recycled during the construction process. In these situations, the Site Managers will work to identify a nearby Transfer Station or suitably licensed facility in order for material to be redistributed as fill on other suitable sites. This represents the most sustainable alternative to landfill disposal.

Construction Logistics and Traffic Impacts

- 7.19 The logistics associated with construction waste are affected by a wide range of factors. The quantity and types of waste materials generated will fluctuate during the construction phases and the resulting number of waste collections will be dictated by a range of variables, including the amount of storage space for waste, the capacity of waste containers used, the materials segregated for recycling and whether any on-site processes are used for reducing the volume of waste (e.g. compactors / balers / shredders etc.).
- 7.20 The Principal Contractors will be expected to provide construction waste logistics forecasts, that will be discussed with waste contractors and the relevant local authority following appointment of relevant parties.
- 7.21 The impact of traffic associated with the movement of construction and waste materials on surrounding neighbourhoods and the local road network will be minimised by a combination of factors. These include reducing the need to import / export materials; and minimising off-site removal

of waste to landfill. Dedicated haulage routes will be agreed with RBG to minimise disturbance to local communities.

Pre-Construction Phase Waste Reduction Measures

7.22 During the pre-construction phase, the following measures and actions have been identified for review by the design team.

Table 7.2 Pre-Construction Phase Waste Reduction Measures

Action	Responsibility	Agreed Outcome
Minimise lift pit depths	Design Team	<i>Principal Designer to confirm</i>
Structural solutions that minimise and simplify the structure as much as possible, e.g. use of pre-cast concrete	Design Team	<i>Principal Designer to confirm</i>
Use of cement alternatives	Design Team	<i>Principal Designer to confirm</i>
Re-use of excavated material	Design Team	<i>Principal Designer to confirm</i>
Using materials with high recycled content (RC)	Design Team	<i>Principal Designer to confirm</i>
Prioritise durable products and materials	Design Team	<i>Principal Designer to confirm</i>
Prioritise products with EPDs, ISO14001, BES6001, or accredited EMS certification	Design Team	<i>Principal Designer to confirm</i>
Use of low embodied carbon façade cladding	Design Team	<i>Principal Designer to confirm</i>
Materials procurement from manufacturers adopting cleaner manufacturing processes	Design Team / Applicant	<i>Principal Designer / Applicant to confirm</i>

Action	Responsibility	Agreed Outcome
Paints and finishes with low VOC content and formaldehyde levels will be specified	Design Team	<i>Principal Designer to confirm</i>
Minimise composite materials	Design Team	<i>Principal Designer to confirm</i>
Aim to specify standard sized components	Design Team	<i>Principal Designer to confirm</i>
Maximise non-structural internal partitions	Design Team	<i>Principal Designer to confirm</i>
Consider flexible floor plates or grids	Design Team	<i>Principal Designer to confirm</i>
Waste management to be integral to the procurement process and appointment of contractors	Design Team / Applicant	<i>Principal Designer / Applicant to confirm</i>

Setting Targets

- 7.23 In addition to those presented within this document, appropriate targets and objectives will be set in relation to the minimisation and recycling of any waste materials during earth works and construction. This will ensure that a clear action plan is generated for the management of specified types and quantities of materials identified for each of the construction stages. These targets will be agreed at the inaugural meeting between the Principal Contractors, the contractors and the RBG.
- 7.24 To ensure that the system of waste prevention, minimisation, reuse and recycling is effective, consideration will be given to the setting of on-site waste targets and a suitable programme of monitoring at regular intervals to focus upon:
- Quantifying raw material wastage;
 - Quantifying the generation of each waste type;
 - Any improvements in current working practices;
 - Methods by which the waste types are being handled and stored; and
 - The available waste disposal routes used, e.g. landfills, waste transfer stations.

7.25 The Principal Contractors will be responsible for the setting and review of waste targets from the outset of the development process to ensure that high standards are maintained with the emphasis being on continual improvement. Specific waste quantification and monitoring will assist in determining the success of waste management initiatives employed on each construction site and progress against these targets should be relayed back to the appropriate stakeholders.

Training

7.26 Waste training will be provided by the Principal Contractors or external trainers and include a combination of the following:

- Induction covering general waste management on site including segregation and storage.
- Toolbox Talks and briefings covering specific waste topics such as the legal requirements for the management of waste; the environmental effects of waste; and management of soil movements.
- Specialist Waste Training for individuals such as how to complete WTNs/HWCNs for those who have responsibility for completing and signing off WTNs/HWCNs.

Operational Phase Waste Reduction Measures

7.27 This section details the strategy that will be adopted to manage the waste arising from the Proposed Development once operational.

Operational Waste Management Strategy

Management and Storage of Waste

7.28 In order to facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.

7.29 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their building on the ground floor. In accordance with the Council's waste collection requirements.

7.30 The waste storage areas will have dedicated containers for, at a minimum, refuse, dry recycling and compostable which will be segregated in line with the relevant guidance, standards and legislation.

- 7.31 The RBG also provides Waste Electrical and Electronic Equipment (WEEE) and Textiles recycling and Bulky Waste collections⁶ and these should be incorporated into the development where practicable.
- 7.32 The RGB collects standard residential waste and recycling streams on a weekly basis only. Therefore, provision needs to be made for at least 8 days' output for residual, recycling and organic waste to allow for one week's storage plus extra to cover service disruption from statutory holidays, adverse winter weather or other occurrences out of the Council's control.
- 7.33 A total of nine waste storage locations will be provided, with weekly waste arisings to be collected by the Council's waste operatives from all nine of these locations on a weekly basis, accounting for a weekly transfer of waste from buildings A1 to A6 to the central waste storage area provided between buildings D2 and D3 (Central Waste Store) by the estate management team. The locations of the refuse storage areas for both residential and commercial units are shown in Appendix A2.
- 7.34 Commercial waste will be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.
- 7.35 The waste storage area will be designed to the standards within BS5906:2005 Waste management in buildings – Code of practice and in accordance with BS 8300:2009. In summary, the facilities should include the following:
- A suitable water point in close proximity to allow washing down to mitigate against odours;
 - All surfaces sealed with a suitable wash proof finish (vinyl, tiles etc.);
 - A suitable floor drain;
 - All surfaces easy to clean; and
 - Suitable lighting and ventilation (the latter to help mitigate against any odours).
- 7.36 All waste storage areas will be designed to ensure the appropriate segregation of non-hazardous and hazardous waste, as required by the relevant guidance, standards and legislation. They will have

⁶ Royal Borough of Greenwich (2018). New Developments. Guidance Notes for the storage and collection of waste and recycling materials.

clear signage to ensure cross contamination of refuse, recycling and other waste streams is minimised.

- 7.37 Doors will have a minimum clearance opening of 1.5m. Floor surfaces will be of a smooth, continuous finish and free from steps or other obstacles. Any steps will incorporate a drop-kerb.

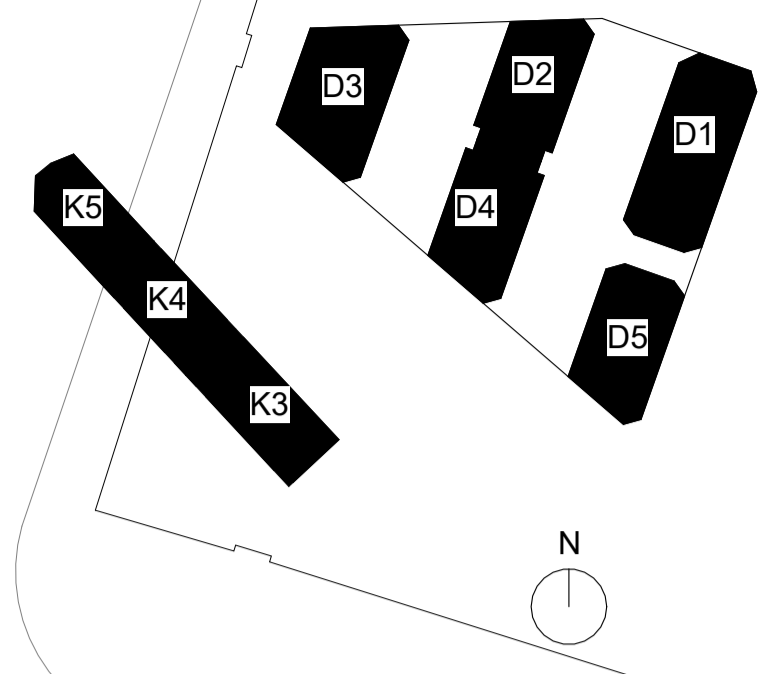
Collection of Waste

- 7.38 Typically, the collection of residential waste will be undertaken through the RGB council's standard collections. Residents will be responsible for depositing waste in the correct refuse storage areas. Commercial refuse will be collected through private collections, to be decided by each tenant.
- 7.39 Surfaces that waste containers need to be moved over will be of a smooth, continuous finish and free from obstacles. Any steps will incorporate a drop-kerb. Measures will be taken by the tenants to ensure that access to the agreed collection points will not be restricted on collection days.
- 7.40 The RGB collects standard residential waste and recycling streams on a weekly basis only. Commercial waste collection frequency will be dependent upon the schedule of the appointed waste contractor and the volume of waste generated during the tenant's operation.

8. MONITORING AND REPORTING

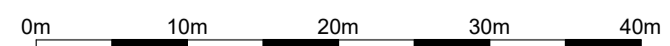
- 8.1 All movements of waste from site will be recorded and evidenced through WTNs or HWCNs.
- 8.2 The site will be monitored on a monthly basis during the construction phase to confirm whether the requirements of the SWMP are being managed effectively. This will ensure:
- That the plan is up-to-date and that it is the correct version
 - That skip returns and waste data are being faxed or emailed back to the Applicant
 - That subcontractors are complying with the SWMP
 - That Waste Carrier returns are being received and filed
- 8.3 Waste Records have to be accurate so that the SWMP's progress is monitored correctly. A database will be used to record all waste leaving the site. Records will be taken directly from relevant forms, waste tickets and monthly waste reports provided by the Waste Contractor.
- 8.4 Waste Data Collections forms to be recorded and collected on a monthly basis. The electronic SWMP will be kept up-to-date following receipt of the completed forms, and at a period of not less than every three months, to ensure that the plan accurately reflects the progress of the project.
- 8.5 A review of the data will be carried out every three months, to ensure the compliance targets are being met, and any exceedances in waste type and percentages are reasoned, and actions implemented.
- 8.6 Once construction works are complete, a report will be completed, containing the following:
- Confirmation that the SWMP has been monitored on a regular basis
 - Comparison of the estimated quantities and percentages of each waste type against the actual quantities of each waste type
 - A short analysis and discussion
 - Recommendations and conclusions

A1. SITE PLAN



— Site Boundary

- - - Waterfront Masterplan Boundary



CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Site levels, topography and setting out based on surveys, information and reports listed:
 Ordnance survey dated 2022 Licence no. 100022432
 Plowman Craven survey No. 47440-PCL-TO-XX-DR-Y-00002 REV P02 dated July 2022

Lines shown within plots are indicative only.
 Lift motor rooms, plant, plan acoustics surrounds and flue extracts will not exceed three meters in height above indicated AOD.
 Top parapet levels will not exceed 2m above indicated AOD with a construction tolerance of +/- one meter

Rev	Date	Description
P00	2024-03	Issued for Planning

Dwn	Ckd	Drawn	AV
GG	CF	Checked	CF
		Date	2023-09-29
		Scale @ A1	1 : 500

BA10030 RAR D&K Blocks
 Proposed Site Plan

Z429- PRP01- STW- ZZ- DR- A-880-003
 REV P00
 FOR PLANNING



A2. LOCATIONS OF CENTRALISED WASTE STORAGE AREAS

A3. CONSTRUCTION PHASE WASTE REDUCTION MEASURES

Table A3.1 Construction Phase Waste Reduction Measures

Element	Waste Type	Estimated Quantity	Is this Hazardous Waste? (Y / N)	Waste Reduction Measures	Recycling Measures
Superstructure					
Frame	Metalwork	TBC			Recycle using segregated skips or bins
Envelope Roofing	Timber	TBC		Re-use timber frames and formwork	Recycle using segregated skips or bins
	Concrete	TBC		Care taken to order correct quantity	Discuss return policy with supplier
	Bricks and Mortar	TBC			Recycle using segregated skips or bins
	Pallets and Packaging	TBC		Minimise packaging	Agree return or recycling policy with suppliers
Finishes					
Drylining and Partitions Joinery	Metals	TBC		Order in optimised lengths to minimise on-site cottage and wastage	Recycle using segregated skips or bins

Painting and Decorating	Timber	TBC		Order in optimised lengths to minimise on-site cottage and wastage	Recycle using segregated skips or bins
	Plasterboard	TBC		Order in optimised lengths to minimise on-site cottage and wastage	Discuss return policy with supplier
	Pallets and Packaging	TBC		Minimise packaging	Recycle using segregated skips or bins
	Plastics	TBC			
Building Services					
M&E Plumbing Security IT and Comms Cabling	Metals	TBC		Order in optimised lengths to minimise on-site cottage and wastage	Recycle using segregated skips or bins
	Cables	TBC			Recycle using segregated skips or bins
	Plasterboard	TBC		Order in optimised lengths to minimise on-site cottage and wastage	Discuss return policy with supplier
	Pallets and Packaging	TBC		Minimise packaging	Agree return or recycling policy with suppliers
	Plastics	TBC		Avoid over-ordering and return excess material	
Site Facilities					
Cleaning Service	Canteen Waste	TBC			Recycle using segregated skips or bins

Canteen Provision Office Management	Office Paper and Drawings	TBC		Print double-sided where possible	Recycle using segregated skips or bins
	Site Hoarding	TBC			Re-use on other sites. Recycle using segregated skips or bins
	Plastic, Foam Cups and Cutlery	TBC		Use of re-usable mugs, plates and cutlery instead of disposable	

A4. RELEVANT LANDFILL/TREATMENT SITES

Table 8.1 Selected landfills in Kent and South London

Environmental Permitting Reference	Operator	Site name	Site Address and Postcode	Site Type	District	EA Area
FP3098HA	Biffa Waste Services Ltd	Shakespeare Farm Landfill Extension	St Mary Hoo Rochester Kent ME3 8RN	A1 : Co-Disposal Landfill Site	Medway	Kent and South London
HP3298VN	London And Continental Railways Ltd	Marley Landfill Facility	Marley Landfill Facility Sandway Road Harrietsham Kent ME17 1HT	A2 : Other Landfill Site taking Special Waste	Maidstone	Kent and South London
BP3694HA	Bexley Sand & Ballast Company	Manor Farm	Manor Cottage Manor Road Bexley Kent DA5 3LX	A5 : Landfill taking Non-Biodegradable Wastes	Bexley	Kent and South London
WP3898HL	R Marchant & Sons Limited	St Julians Quarry	Land/Premises At Riverhill Sevenoaks Kent TN15 0RS	A6 : Landfill taking other wastes	Sevenoaks	Kent and South London
LP3335UG	Bournemouth Sand And Gravel Ltd	Bournemouth Inert Landfill Site	Off A20 By Pass Swanley Kent BR8 7DP	L05 : Inert LF	Bromley	Kent and South London

Notes: Source: EPR Landfill Sites - Quarterly Summary - End September 2023

Table 8.2 Selected transfer and treatment facilities in London

Permit / Installation reference	Waste Management Licence No.	Operator	Site type	Waste types permitted	Site address
HP3098EW/V	100373	Biffa G S Environmental Ltd	A11 Household, Commercial & Industrial Waste T Stn	Wide Variety	Unit 2, Aztec 406, 12, Ardra Road, Enfield, London, N9 0BD
FB3609LQ/A 001	404398	GBN Services Ltd	A11 Household, Commercial & Industrial Waste T Stn	Wide Variety	Montagu Industrial Estate, Gibbs Road, Edmonton, London, N18 3PU
PP3093EE/V 007	80723	Powerday Plc	A15 Material Recycling Treatment Facility	Wide Variety	Old Oak Sidings, Off Scrubs Lane, Willesden, London, NW10 6RJ
FB3600TZ/A0 01 4	404338	Premier Material Supplies	A16 Physical Treatment Facility	Enfield Bund Soil Management Area	Holly Hill Farm, The Ridgeway, Enfield, Middlesex, EN2 8AN
JP3795EL/V0 03	100204	J O'Doherty Haulage Ltd	A11 Household, Commercial & Industrial Waste T Stn	Wide Variety	Pegamoid Site, Nobel Road, Edmonton, London, N18 3BH
DP3891NP/V 002	80355	Camden Plant Ltd	A16 Physical Treatment Facility	Wide Variety	Lower Hall Lane, Chingford, London, E4 8JG

Notes: Source: EPR Landfill Sites – Quarterly Summary – End June 2022

A5. GENERAL NOTES

- A5.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Icen Projects Ltd for inaccuracies in the data supplied by any other party.
- A5.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.
- A5.3 No site visits have been carried out, unless otherwise specified.
- A5.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.
- A5.5 The copyright in the written materials shall remain the property of Icen Projects Ltd but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to Icen Projects Ltd by the client of the outstanding amounts.
- A5.6 The report is provided for sole use by the Client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.
- A5.7 These terms apply in addition to the Icen Projects Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail). In the absence of such a written contract the Standard Terms of Business will apply.



Appendix E

Operational Waste Strategy



Operational Waste Management Strategy

Royal Arsenal Riverside, The Ropeyards, Plots D &K

Iceni Projects Limited on behalf of
Berkeley Homes (East Thames) Ltd

March 2024

ICENI PROJECTS LIMITED
ON BEHALF OF BERKELEY
HOMES (EAST THAMES)
LTD

Iceni Projects

London: Da Vinci House, 44 Saffron Hill, London, EC1N 8FH
Birmingham: The Colmore Building, 20 Colmore Circus Queensway, Birmingham, B4 6AT
Edinburgh: 11 Alva Street, Edinburgh, EH2 4PH
Glasgow: 177 West George Street, Glasgow, G2 2LB
Manchester: WeWork, Dalton Place, 29 John Dalton Street, Manchester, M2 6FW

t: 020 3640 8508 | w: [iceniprojects.com](https://www.iceniprojects.com) | e: mail@iceniprojects.com
linkedin: [linkedin.com/company/iceni-projects](https://www.linkedin.com/company/iceni-projects) | twitter: @iceniprojects

Operational Waste Management
Strategy
ROYAL ARSENAL RIVERSIDE, THE ROPEYARDS,
PLOTS D &K

CONTENTS

1. EXECUTIVE SUMMARY.....	1
2. INTRODUCTION.....	2
3. PLANNING AND REGULATORY CONTEXT	4
4. OPERATIONAL WASTE MANAGEMENT	8
5. SUMMARY	15

APPENDICES

- A1. SITE PLAN
- A2. GROUND FLOOR PLAN
- A3. REFUSE COLLECTION VEHICLE SPECIFICATIONS
- A4. NON-DOMESTIC WASTE CALCULATIONS
- A5. GENERAL NOTES

1. EXECUTIVE SUMMARY

- 1.1 Icen Projects Ltd was commissioned by Berkeley Homes (East Thames) Ltd to produce an Operational Waste Management Strategy to support the Reserved Matters Application (RMA) for Royal Arsenal Riverside, The Ropeyards, Plots D &K.
- 1.2 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, anticipated arisings have been determined on the basis of relevant data and the Proposed Development mix. Waste storage areas and locations are subsequently set out in order to demonstrate compliance with local authority policy requirements and relevant standards.
- 1.3 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 190,500 litres of waste from residential uses per week.
- 1.4 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 500 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential buildings at ground level to ensure easy access for both residents and waste collection operatives.
- 1.5 The Proposed Development will include flexible commercial/community space. These spaces are anticipated to produce approximately 11,466 litres of refuse and recycling per week. Waste storage for these commercial spaces will consist of 1,100 litre Eurobins and 500 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.
- 1.6 This Strategy therefore demonstrates that the Proposed Development has been designed to be compliant with the relevant waste management policies that are set out within this report, and will manage and dispose of waste in a sustainable manner.

2. INTRODUCTION

2.1 Icen Projects Ltd was commissioned by Berkeley Homes (East Thames) Ltd to produce an Operational Waste Management Strategy to support the Reserved Matters Application (RMA) for Royal Arsenal Riverside, The Ropeyards, Plots D &K.

Report Objective

2.2 This document details the operational waste management measures adopted by the proposed development of The Ropeyards, Royal Arsenal Riverside and gives an overview of the design proposals that will ensure that operational waste will be stored, collected and disposed of effectively over the lifespan of the scheme, within guidelines set out by the Royal Borough of Greenwich Council.

2.3 The report is structured to meet these guidelines as follows:

- Section 3 discusses the planning context and policies which are relevant to operational waste management;
- Section 4 discusses the development response to the policy drivers for operational waste management; and
- Section 5 summarises the development's design response.

Site and Surroundings

2.4 The Site is located on the western edge of the wider Royal Arsenal Riverside masterplan and is approximately 2.3 ha. The Site currently sits on a temporary park and is bound to the south by the A206, the RAR A & B Blocks to the north (and north east) and RAR Phase 3, the Brass Foundry and The Guard House to the west.

2.5 Beyond the immediate site boundaries, to the north of the site is the River Thames and to the south and south east of the site is Woolwich Town Centre including the main shopping area along Powis Street, General Gordon Square, the Woolwich Arsenal Overground Train Station and the Woolwich DLR Station.

The Proposed Development

2.6 The description of development is as follows:

“Submission of Reserved Matters (Appearance, Landscaping, Layout and Scale) pursuant to Condition 2 of planning permission reference 16/3025/MA, dated

17.03.2017, for residential units and non-residential floorspace within Plots D and K, along with public / private landscaping details, car / cycle parking, refuse / recycling facilities and play provision."

2.7 The following mix of residential dwellings and commercial space will be delivered:

- 35 no. studio apartments;
- 253 no. 1-bedroom 2-person apartments;
- 125 no. 2-bedroom 3-person apartments;
- 180 no. 2-bedroom 4-person apartments;
- 70 no. 3-bedroom 5-person apartments; and
- Up to 983.1 sqm of flexible commercial and community uses.

3. PLANNING AND REGULATORY CONTEXT

3.1 The means of sorting, storing and collecting operational waste are incorporated within policy and regulation as set out below:

Regional

The London Plan (Adopted March 2021)

3.2 The London Plan outlines the Mayor's commitment to creating a low carbon circular economy, in which the greatest possible value is extracted from resources before they become waste, as this is not only socially and environmentally responsible, but will save money and limit the likelihood of environmental threats affecting London's future. The following London Plan policies are relevant to waste:

3.3 **Policy SI7 (Reducing waste and supporting the circular economy)** states that resource conservation, waste reduction, increase in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of goods;
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030;
- Meet or exceed the targets for each of the following waste and materials streams:
 - Construction and demolition – 95 per cent reuse/recycling/recovery
 - Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems and that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

- 3.4 **Policy D6 (Housing quality and standards)** states that housing should be designed with adequate and easily accessible storage space that that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food waste, as well as residual waste.

Local

- 3.5 The Royal Arsenal Masterplan development is located in the Royal Borough of Greenwich (RBG) and key RBG guidance and policy requirements are detailed below.

Royal Borough of Greenwich Recycling and Waste Collection

- 3.6 RBG currently collects residual, recycling and food waste from residential developments on a weekly basis. Services for the collection of Waste Electrical and Electronic Equipment (WEEE) and textiles are also available for flatted developments.
- 3.7 Waste from commercial properties can be collected by RBG, with a range of container options and collection frequencies to suit all types of premises. Collections can be arranged with RBG via email (business-recycling@royalgreenwich.gov.uk) or telephone (020 8921 4661). Commercial properties may also arrange collections via an alternative fully licensed private waste collection firm, as long as they are licensed by the Environment Agency.

Royal Greenwich Local Plan 2014 – 2028 (2014)

- 3.8 **Policy IM2 Waste Apportionment:** details waste management cooperations. The Royal Borough will contribute to the sustainable management of waste in Royal Greenwich by working with the other south east London Boroughs, pooling the Boroughs' waste allocations and identifying sites within the sub-region that will meet the combined London Plan waste apportionment figure. All existing waste transfer and management sites will be safeguarded for waste management use, unless appropriate compensatory provision is made in appropriate locations.
- 3.9 **Policy H5 Housing Design:** New residential development, redevelopment, refurbishment or conversions will be expected to achieve a high quality of housing design and an integrated environment including:
- xi. Adequate provision for waste recycling.
- 3.10 **Policy DH1 Design:** All developments are required to be of a high quality of design and to demonstrate that they positively contribute to the improvement of both the built and natural environments:
- x. demonstrate on-site waste management including evidence of waste reduction, use of recycled materials and dedicated recyclable waste storage space.

Royal Borough of Greenwich New Developments: Guidance Notes for the storage and collection of waste and recycling materials

3.11 The Royal Borough of Greenwich New Developments: Guidance Notes for the storage and collection of waste and recycling materials document provides guidelines for architects and developers of new residential, commercial and mixed-use units in the Royal Borough of Greenwich, to ensure that the arrangements for storing, collecting and managing waste are appropriate.

3.12 The guidance states that the following waste storage capacity should be provided per dwelling for residual, recycling, and organic waste:

Table 3.1 Royal Borough of Greenwich Waste Storage Requirements

Number of properties using bin store	1,100 litre Recycling Bins	1,100 litre Residual Bins	500 litre Organic Bins
Up to 8	1	1	1
9 – 16	2	2	1
17 – 24	3	3	1
25 – 32	4	4	1
33 – 40	5	5	1
41 – 48	6	6	1
49 – 56	7	7	1
57 – 64	8	8	1
65 – 72	9	9	1
73 – 80	10	10	1
81 – 88	11	11	1
89 – 96	12	12	1
97 – 104	13	13	1

3.13 Communal bin storage areas must be accessible and convenient to all households, so that waste disposal and recycling does not become an effort for residents. They should be within close walking distance to each residential building (no more than 30m horizontal travel from flat to bin), which should be accessed enroute to or from the development’s car park or main pedestrian exit. If the chamber is attached to the building, then developers should ensure that an internal door is provided for residents to access the bin store from within the building, without having to go outside.

3.14 The guidance also outlines the following design features that should be integrated within the communal bin storage areas:

- Storage space should be designed with sufficient space to accommodate euro bins “side by side” and not “end to end”, facilitating access to the front edge of the lid for easy opening and access to the recycling aperture. The ceiling height of any enclosure should take into account

opening of the full opening of the lid. Residents should be able to access all containers within a store without having to move them.

- Any doors through which bins are manoeuvred need to be of a durable and hard-wearing construction as they may potentially be knocked during collection activities. Doors will need to double, and open outwards rather than into the chamber to allow maximum access and manoeuvring space. The storage chamber should have a water supply for cleaning, drainage, impermeable floor and adequate lighting for use at nighttime by residents. Ventilation should be provided where possible.
- When moving containers from the bin store to the collection vehicle, operatives should not be required to manoeuvre bins through more than one set of double doors.
- The Council supports bin store design which shows consideration to future flexibility in waste collection across the expected life of the building. Changes in the use and function of the waste storage areas may occur throughout the lifespan of the building due to changing waste disposal trends, changes in legislation or changes in the council collection regime.

3.15 With respect to the collection of waste, the following guidance is provided:

- Waste storage areas accessible from the street must be fitted with a lockable door with either a key, fob or entry code pad to reduce the risk of antisocial behaviour and maintain security of the building.
- Access for waste collection should be maintained between the hours of 06:00 and 21:00.

Other Considerations

British Standard 5906:2005

3.16 The Standard provides a code of practice for the storage, collection, segregation for recycling and recovery, and on-site treatment of waste. It applies to new buildings, refurbishments and conversions of residential and non-residential buildings. The Standard also presents typical weekly waste airings and subsequent storage requirements for a variety of building types, as shown below:

Table 3.2 Waste volume calculations for relevant non-domestic uses proposed for the Site

Building Type	Equation for weekly waste arisings (litres)
Industrial	Volume per m ² of floor area [5 l] x floor area
Retail	Volume per m ² of sales area [10 l] x sales area
Leisure	Volume per m ² of floor area [5 l] x floor area
Restaurant	Volume per number of covers [75 l]

4. OPERATIONAL WASTE MANAGEMENT

- 4.1 The operational waste management strategy for the Proposed Development has been assessed using the waste hierarchy methodology. This approach is consistent with that required by the Council, requiring new development to demonstrate how the scheme addresses waste separation, storage and collection.
- 4.2 For the Proposed Development, it is intended that a strategy utilising traditional wheeled bins will be adopted. The adoption of this waste management strategy will aid in maximising the area of landscaped open space provided as part of the Proposed Development, whilst also maximising pedestrian and cycle permeability through the Site.
- 4.3 The waste management strategy for the Proposed Development is outlined below, with residential and non-domestic uses addressed separately.

Residential Operational Waste Management Strategy

- 4.4 In order to facilitate easy sorting of waste streams for residents, each dwelling will be fitted with a three-compartment waste bin, with each compartment corresponding to the relevant waste stream to be collected by the Council. This will maximise the potential for residents to correctly sort waste within their home. Guidance for waste stream sorting and collection will be provided in the home user manual.
- 4.5 The anticipated arisings from the residential component of the Proposed Development are shown in the table below, based on the Council's waste capacity guidelines detailed in Section 3.

Table 4.1 Domestic weekly waste arisings

Building	Number of homes	Weekly arisings (litres)		
		Refuse	Dry recyclables	Compostable (without garden waste)
D1	83	12,100	12,100	500
D2	48	6,600	6,600	500
D3	136	18,700	18,700	500
D4	120	16,500	16,500	500
D5	101	14,300	14,300	500
K3 K4	90	13,200	13,200	500
K5	85	12,100	12,100	500
Total	663	93,500	93,500	3,500

4.6 When internal bins are full, residents will transfer their waste to a dedicated storage area, located within the curtilage of their building on the ground floor. In accordance with the Council’s waste collection requirements, waste storage bins are defined by the waste stream as follows:

- Refuse: 1,100 litre Eurobins
- Dry recyclables: 1,100 litre Eurobins
- Compostable (without garden waste): 500 litre wheeled bins

4.7 Table 4.2 below details the dimensions of the bin type proposed for use in the residential element of the scheme.

Table 4.2 Domestic waste storage dimensions

	1,100 litre Eurobin	500 litre wheeled bin
Height (mm)	1,410	1,090
Width (mm)	1,265	1,270
Depth (mm)	1,000	720

4.8 The table below shows the number of Eurobins required in each location, and the associated minimum area required for the bin store, excluding circulation space. The below assumes both residual and recycling waste streams will be collected by the Council on a weekly basis.

Table 4.3 Domestic waste storage requirements

Location	Storing refuse for buildings	No. of dwellings	No. of 1,100 litre residual Eurobins	No. of 1,100 litre recycling Eurobins	No. of 500 litre wheeled bins	Min. area of store (m ² ; excluding circulation space)
Building D1	Building D1	83	11	11	1	37.03
Building D2	Building D2	48	6	6	1	20.76
Building D3	Building D3	136	18	18	1	59.82
Building D4	Building D4	120	14	14	1	46.80
Building D5	Building D5	101	13	13	1	43.54
Central Waste Store	Buildings A1 to A6	768	105	105	10	236.3
Building K3 K4	Building K3 K4	90	12	12	1	40.29
Building K5	Building K5	85	11	11	1	37.03

4.9 Locations of the bin storage areas, where all bins will be stored, are shown in Appendix A2. A total of nine waste storage locations will be provided, with weekly waste arisings to be collected by the

Council’s waste operatives from all nine of these locations on a weekly basis, accounting for a weekly transfer of waste from Buildings A1 to A6 to the central waste storage area provided between Buildings D2 and D3 (Central Waste Store) by the estate management team, in line with the strategy set out under the original planning permission (ref. 16/3025/MA, with further details provided under planning application ref. 21/0720/SD). It should be noted that the number of waste containers located within the Central Waste Store is equal to approximately half the total number of waste containers to be provided for Buildings A1 to A6, as the waste containers located within Buildings A1 to A6 will be transferred to the Central Waste Store once per week to enable the collection of the waste by the Council. The bins containing the separate waste streams will be transferred in line with the nominated collections days, such that only half of the number of bins required to serve Buildings A1 to A6 will need to be located within the Central Waste Store at any one time.

- 4.10 As required by the Council, the bin storage areas are within 30m walking distance of the front door of the buildings. Collection vehicles will have clear access to any bin. Waste operatives will not be required to manoeuvre the bins more than 10m from the external door of the storage areas to the refuse collection vehicle. As noted above, in order to ensure the Council’s waste operatives are not required to manoeuvre Eurobins in excess of 10m, it is intended that waste collected in Buildings A1 to A6 will be transferred to a Central Waste Store between Buildings D2 and D3 on a weekly basis by the estate management team where it will be collected by the Council’s waste operatives on a weekly basis.
- 4.11 The turning circle for the vehicle is quoted as 16.1 metres and in-roads are able to accommodate this. The area where the vehicle will be stationed for collections will be appropriately surfaced to withstand the weight of the collection vehicle. Details of the collection vehicle are provided in Appendix A3. It is highlighted that all refuse collections for the proposed development will be made within the site, away from public highways.
- 4.12 Bulky waste will be accommodated within the dedicated bulky waste storage areas on the ground floor. These spaces are to be communal, and co-located with a waste storage area, and will also house waste receptacles for the collection of Waste Electrical and Electronic Equipment (WEEE) and textiles, in line with the guidance set out by the Royal Borough of Greenwich. The locations of the bulky waste storage areas are shown in the drawings provided in Appendix A2, and the areas to be provided for each building are summarised below.

Table 4.4 Bulky waste storage provision

Building	Number of dwellings	Min. area of bulky waste store (m ²)
D1	83	16.30
D2	48	
D3	136	
D4	120	

Building	Number of dwellings	Min. area of bulky waste store (m ²)
D5	101	
K3 K4	90	17.00
K5	85	

- 4.13 It is expected that, through the provision of spaces for the dedicated storage of bulky waste items, the potential for the fly tipping of waste within the proposed development will be mitigated. The provision of bulky waste storage areas will enable the storage of large items, such as tables and chairs, prior to their collection for disposal by the Council.

Non-Domestic Operational Waste Management Strategy

- 4.14 Approximately 983.1 sqm of flexible space for commercial uses (Class E) is to be delivered as part of the Proposed Development. At this stage, the end users of the proposed flexible spaces are not known. Based on the information provided in BS 5906:2005 and through the application of indicative uses, the waste arisings from the non-residential elements are provided in the table below. Full details of the calculations are provided in Appendix A4.

Table 4.5 Non-domestic weekly waste arising

Location	Use	GIA (m ²)	Type	Weekly waste volume (litres)	Proportion of waste stream		
					Residual	Recycling	Food
Building D3	Flexible	305	Gym / Café*	7,625	20%	50%	30%
Building D5	Flexible	408	Industrial**	2,040	50%	50%	
Building K3	Flexible	158.8	Retail***	1,059	50%	50%	
Building K5	Flexible	111.3	Retail***	742	50%	50%	

* For the purposes of this Operational Waste Management Strategy, it has been assumed that the total space provided within the flexible commercial space will be occupied by café uses, to demonstrate the worst-case scenario. It is understood that this flexible commercial space will be occupied by a gym with a café, therefore whilst the actual volume of waste arising from this combination of uses is likely to be less than that reported in the table above, the waste management principles set out here will continue to be applicable.

** It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.2 above, where "industrial" uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

*** The flexible commercial spaces within Buildings K3 and K5 are envisaged to be occupied by either office or retail uses. For the purposes of this Operational Waste Management Strategy, it has been assumed that these spaces will be occupied by retail uses, as this demonstrates the worst-case scenario. Whilst the actual volume of waste arising were the spaces to be occupied by office uses instead would likely to be less than that reported in the table above, the waste management principles set out here will continue to be applicable.

4.15 It should be noted that, whilst the nature and end users of the flexible spaces to be provided as part of the proposed development have not yet been confirmed, the waste arisings are expected to include refuse and recycling waste, with food waste also potentially arising. The strategy outlined here will ensure that the waste arisings will be stored in bins proportionate to the volume of waste produced, and will be applicable to any use falling with the flexible commercial/community uses class that may come forward. The proposed provision of 1,100 litre Eurobins and 500 litre wheeled bins as part of the non-domestic waste strategy will ensure all potential uses within these spaces will be catered for with respect to operational waste management.

4.16 The bins will be located within specific stores within the curtilage of the flexible commercial/community spaces, as shown in the proposed ground floor plan included at Appendix A2, and will be accessible to waste collection operatives. The dimensions of 1,100 litre Eurobins bins are provided below:

Table 4.6 Non-domestic waste storage dimensions

	1,100 litre Eurobin	500 litre wheeled bin
Height (mm)	1,410	1,090
Width (mm)	1,265	1,270
Depth (mm)	1,000	720

4.17 The resulting non-domestic waste storage requirements are provided below. For the purposes of this waste management strategy, a weekly collection rate has been assumed. The exception to this is the commercial space to be delivered within Building D3, which for the purposes of this waste management strategy has been assumed to be in use as a café, and a twice-per-week collection rate has therefore been assumed.

Table 4.7 Non-domestic waste storage requirements

Location	Uses Served	Number of			Min. area of store (m ²)
		1,100 litre Eurobins	1,100 litre Recycling	500 litre Food	
Building D3	Flexible	2	1	3	8.59
Building D5	Flexible	1	1		3.25
Building K3	Flexible	1	1		3.25
Building K5	Flexible	1	1		3.25

4.18 In accordance with BS 5906:2005, all waste containers will need to be stored under cover in a specially designed waste storage room, or store. The walls and roofs of this store will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour when tested in accordance with BS 476-21 – Fire tests on building materials and structures: Part 21 (Ref. 40), whilst the door of the store will be made of steel, or have a fire resistance of 30 minutes when tested in accordance with BS 476-22 – Fire tests on buildings materials and structure: Part 22 (Ref 41).

4.19 Further to these requirements, BS 5906:2005 outlines the measures which have been included in the design of the waste stores. Compliance with these requirements, the most applicable of which are outlined below, will help maintain a compliant waste strategy for the operation of the Proposed Development.

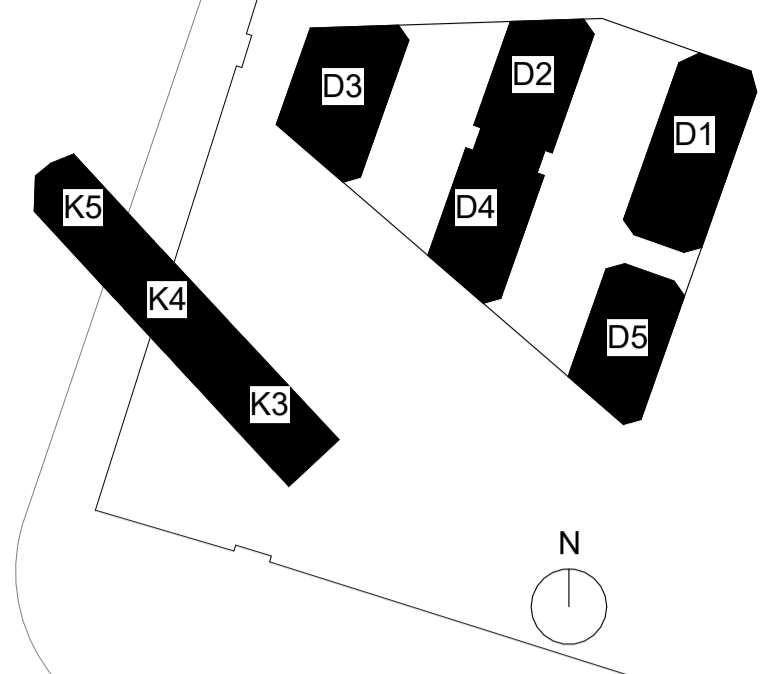
- All containers for waste, including recyclable material, are easily accessible to both the occupier and waste collector;
- Collectors will not have to manoeuvre waste storage containers from the storage areas to the collecting vehicles for a distance of more than 10m (four wheeled bins) or 15m (two wheeled bins);
- Paths between storage areas and collecting vehicles are free from steps, kerbs or inclines with a gradient of more than 1:12, be non-slip and a minimum of 2m wide. They will have foundations and a hardwearing surface that will withstand the loading imposed by wheeled containers;
- Waste stores have been designed and located in such a way as to limit potential noise disturbance to residents;
- Storage areas for waste and recycling will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings;
- Waste storage sites will include areas for instructional signage detailing correct use of the facilities;
- The entrance of the waste storage room will be free from steps and projections;
- Adequate ventilation will be provided, with permanent ventilators giving a total ventilation area of no less than 0.2m²;
- Electrical lighting will include sealed bulkhead fittings (housings rated to IP65 in BS EN 60529:1992 (Ref. 43)) for the purpose of cleaning down with hoses and inevitable splashing. Luminaires will be low energy light fittings or low energy lamp bulbs, controlled by proximity detection or a time delay button to prevent lights being left on; and

- Gullies for wash down facilities will be positioned so as not to be in the track of container trolley wheels.

5. SUMMARY

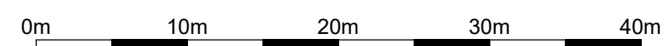
- 5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive Operational Waste Management Strategy has been defined for the Proposed Development.
- 5.2 The Proposed Development has been designed with high standards of waste management performance. This strategy describes the consideration that has been given to waste generated by the Proposed Development during its operation, including how it will be sorted, stored and collected, therefore contributing towards the Council's targets for waste minimisation, recycling and reuse. This strategy demonstrates that circular economy principles have been embedded in the design of the Proposed Development with respect to the management of operational waste. The proposed collection of separate waste streams will encourage future residents to prioritise the recycling of materials over their disposal, in line with the waste hierarchy and the principles of circular economy, which aims to minimise the disposal of materials by maintaining their highest value where practicable.
- 5.3 The strategy has been prepared to demonstrate that tenants and occupiers of the Proposed Development will be provided with convenient and effective waste management systems that will promote high levels of recycling and ease of collection by the Council.
- 5.4 An Operational Waste Management Strategy utilising traditional wheeled bins is proposed. The Proposed Development is anticipated to produce approximately 190,500 litres of waste from residential uses per week.
- 5.5 Residential waste storage will consist of separate 1,110 litre Eurobins for refuse and dry recyclables, and 500 litre wheeled bins for compostable waste, in accordance with local authority guidance. Waste stores have been located within the curtilage of the residential buildings at ground level to ensure easy access for both residents and waste collection operatives.
- 5.6 The Proposed Development will include flexible commercial/community space. These spaces are anticipated to produce approximately 11,466 litres of refuse and recycling per week. Waste storage for these commercial spaces will consist of 1,100 litre Eurobins and 500 litre wheeled bins to be collected by a contractual arrangement. The waste storage areas will be located within the curtilage of the buildings for ease of use and to ensure accessibility for commercial waste collection operatives.
- 5.7 This Strategy therefore demonstrates that the Proposed Development has also been designed to be compliant with all relevant waste management policy, and will manage and dispose of waste in a sustainable manner.

A1. SITE PLAN



— Site Boundary

- - - Waterfront Masterplan Boundary



CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Site levels, topography and setting out based on surveys, information and reports listed:
 Ordnance survey dated 2022 Licence no. 100022432
 Plowman Craven survey No. 47440-PCL-TO-XX-DR-Y-00002 REV P02 dated July 2022

Lines shown within plots are indicative only.
 Lift motor rooms, plant, plan acoustics surrounds and flue extracts will not exceed three meters in height above indicated AOD.
 Top parapet levels will not exceed 2m above indicated AOD with a construction tolerance of +/- one meter

Rev	Date	Description
P00	2024-03	Issued for Planning

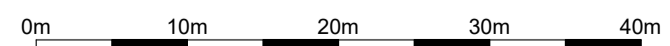
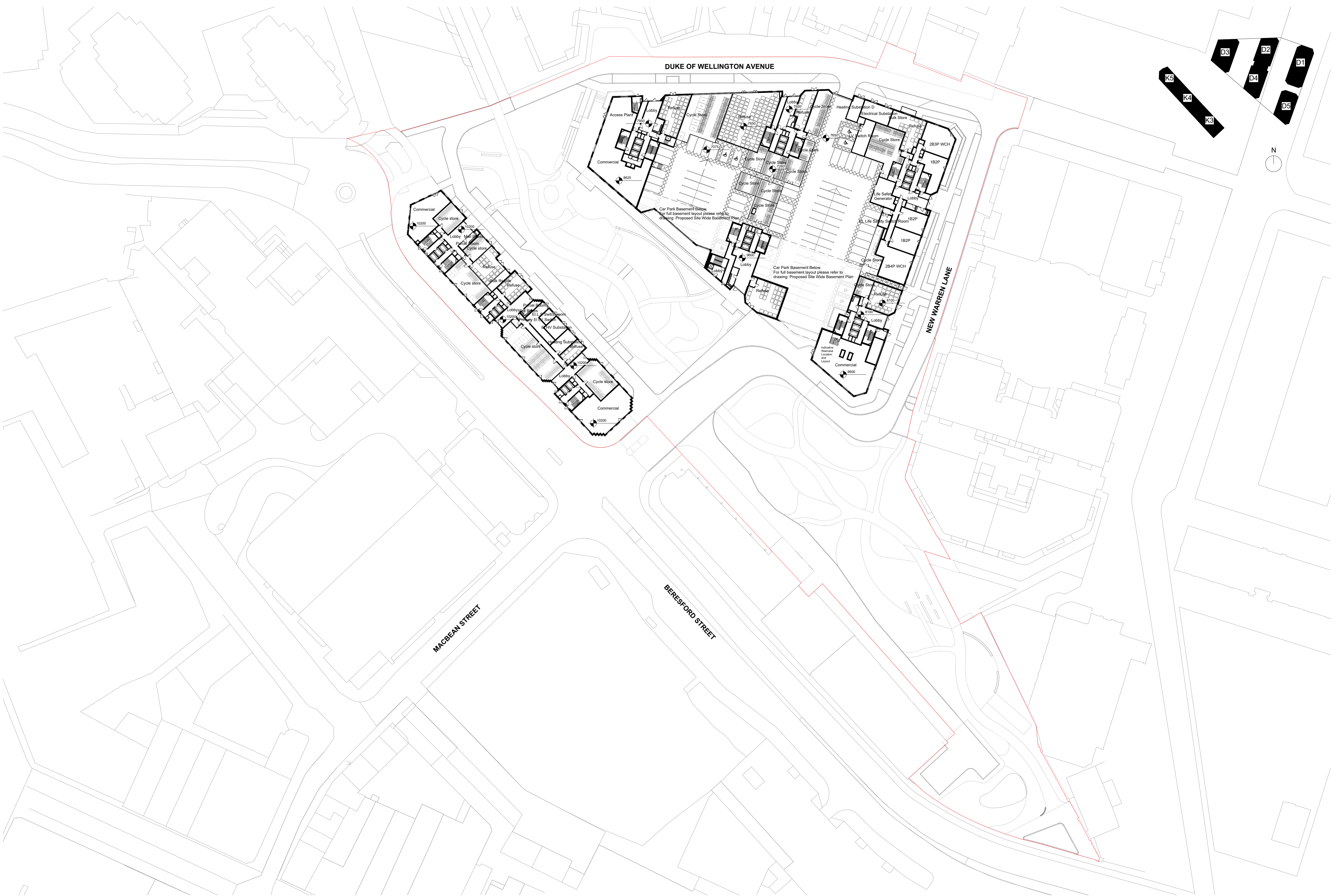
Dwn	Ckd	Drawn	AV
GG	CF	Checked	CF
		Date	2023-09-29
		Scale @ A1	1 : 500

BA10030 RAR D&K Blocks
 Proposed Site Plan

Z429- PRP01- STW- ZZ- DR- A-880-003
 REV P00
 FOR PLANNING



A2. GROUND FLOOR PLAN



CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Site levels, topography and setting out based on surveys, information and reports listed:
 Ordnance survey dated 2022 Licence no. 100022432
 Plowman Craven survey No. 47440-PCL-TO-XX-DR-Y-00002 REV P02 dated July 2022

Lines shown within plots are indicative only.
 Lift motor rooms, plant, plan acoustics surrounds and flue extracts will not exceed three meters in height above indicated AOD.
 Top parapet levels will not exceed 2m above indicated AOD with a construction tolerance of +/- one meter

Rev	Date	Description
P00	2024-03	Issued for Planning

Dwn	Ckd	Drawn	AV
GG	CF	Checked	CF
		Date	2023-09-29
		Scale @ A1	1 : 500

BA10030 RAR D&K Blocks
 Proposed Site Wide Ground Floor Plan

Z429- PRP01- STW- 00- DR- A-880-020
 REV P00
 FOR PLANNING



A3. REFUSE COLLECTION VEHICLE SPECIFICATIONS

The Council requires that the walking distance for refuse operatives from the container storage area to the refuse collection vehicle is no more than 15 metres. The vehicle stopping point should be clearly indicated on submitted drawings.

A safe collection area for operatives, such as a lay-by, is required if access to the chambers is on a dual carriageway, main fast flowing or busy road.

Dropped kerbs or crossovers are required to move the containers from the chamber to the refuse collection vehicle.

Access to the storage chambers must be at ground floor level and they should be sited in locations which do not require refuse operatives to wheel containers up/down steps or an incline greater than 1:12.

If access to the chambers is within a car park area or via internal estate roads, the size of the refuse collection vehicles and their manoeuvrability and turning characteristics need to be taken into account.

Refuse collection vehicle dimensions:

- Height: 3.80 metres
- Length: 10.50 metres
- Width: 2.90 metres
- Wall-to-wall turning circle: 16.10 metres

Vehicle tracking or swept path analysis drawings will be required to be submitted with the planning application if the vehicle is required to manoeuvre around a development to ensure safe manoeuvring of refuse vehicles.

Surfaces must be designed to withstand use by a 26 tonne gross vehicle weight vehicle.

Roads should be laid out to ensure reasonable convenience for the collection vehicle and should be a minimum of 5.5m wide. The collection vehicle should be able to proceed in a forward direction around the development, developers must not plan for refuse vehicles to reverse in a public area and the vehicle should not be expected to reverse for more than two vehicle lengths (20m). Adequate space for turning **must** be provided and demonstrated in vehicle tracking drawings.

In all instances, the road should be designed so that vehicles do not encroach onto the footway when manoeuvring.

Where roads are likely to be parked with cars, the developer must ensure that access for the collection vehicle is still maintained.

A4. NON-DOMESTIC WASTE CALCULATIONS

Location	Use	Area (GIA; sqm)	Class	BS5906 metric	Equation	Volume (l)	Residual proportion	Recycling proportion	Food proportion	Residual 1,100 litre Eurobins	Recycling 1,100 litre Eurobins	Food 500 litre wheeled bins	Footprint (m ²)
Building D3	Flexible	305	Café*	Floor area	Volume per number of covers [75 l]	7,625	20%	50%	30%	2	1	3	8.59
Building D5	Flexible	408	Industrial**	No. covers	Volume per m ² of floor area [5 l] × floor area	2,040	20%	50%	30%	1	1		3.25
Building K3	Flexible	158.8	Retail***	Floor area	Volume per m ² of sales area [10 l] × sales area	1,059	50%	50%		1	1		3.25
Building K5	Flexible	111.3	Retail***	Floor area	Volume per m ² of sales area [10 l] × sales area	742	50%	50%		1	1		3.25

* For the purposes of this Operational Waste Management Strategy, this space has been modelled as being in use as a café, and a twice-per-week collection rate has been assumed.

** It is noted that no traditional industrial spaces will be provided as part of the development, but that flexible commercial / community spaces will be delivered. The volumes of waste noted above have been calculated in line with those presented in Table 3.1 above, where “industrial” uses are considered to most appropriately represent the flexible uses to be brought forward as part of the development.

*** For the purposes of this Operational Waste Management Strategy, these spaces have been modelled as being in retail use.

A5. GENERAL NOTES

- A5.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Icen Projects Ltd for inaccuracies in the data supplied by any other party.
- A5.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.
- A5.3 No site visits have been carried out, unless otherwise specified.
- A5.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.
- A5.5 The copyright in the written materials shall remain the property of Icen Projects Ltd but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to Icen Projects Ltd by the client of the outstanding amounts.
- A5.6 The report is provided for sole use by the Client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.
- A5.7 These terms apply in addition to the Icen Projects Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail). In the absence of such a written contract the Standard Terms of Business will apply.