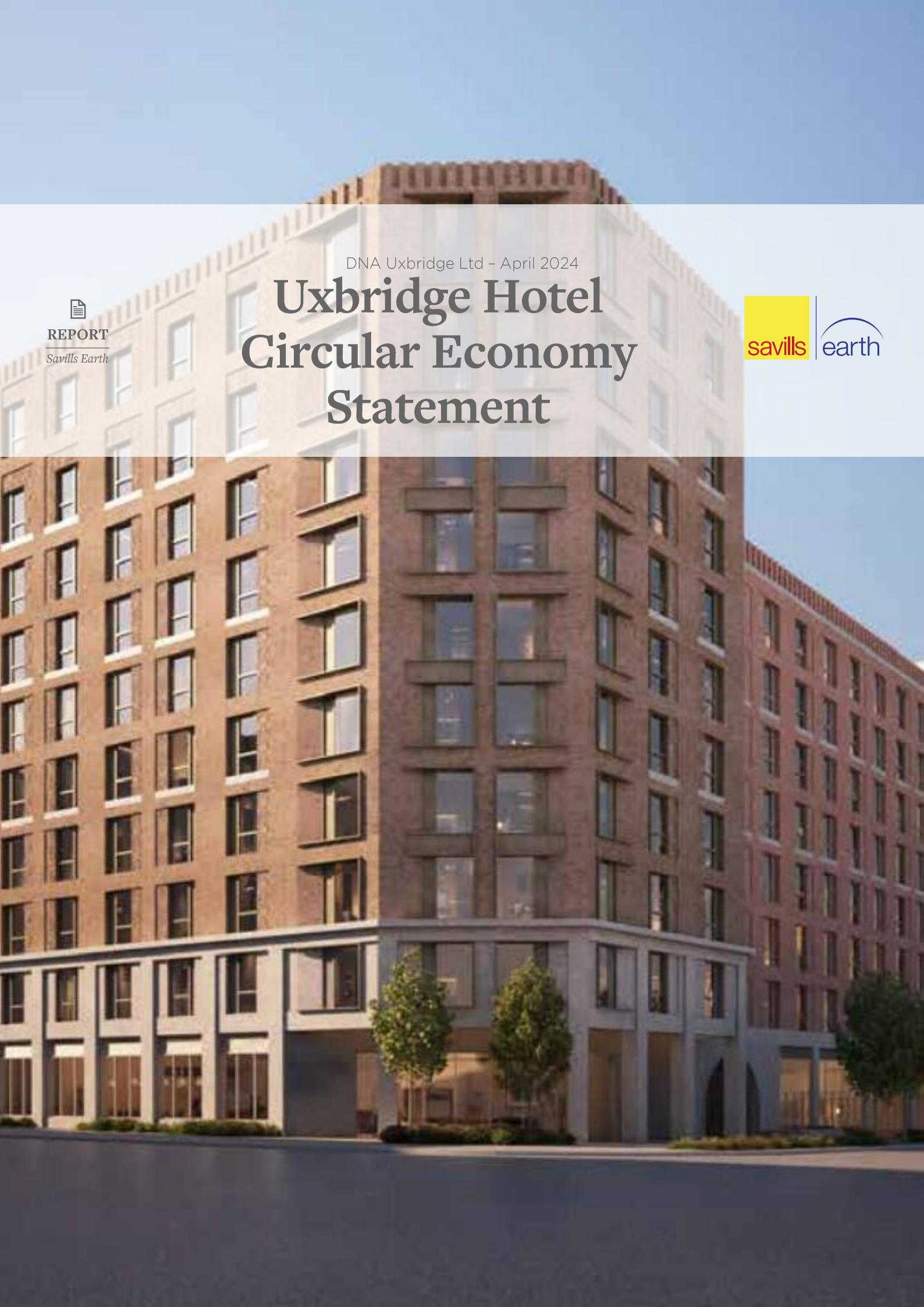

REPORT
Savills Earth

DNA Uxbridge Ltd – April 2024

Uxbridge Hotel Circular Economy Statement

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Contents

01. Executive summary

This Circular Economy Statement has been prepared by Savills Earth to support the Full Planning Application submitted to the London Borough Hillingdon in March 2023 for the development at, 148-154 High Street, Uxbridge, UB8 1JY (hereafter referred to as 'the Site').

The proposed development comprises Hotel (Class C1), Co-Living (Class Sui Generis) and replacement Commercial Floorspace (Class E). Alongside these uses, the proposed development will provide a new publicly accessible pocket park, alongside other public realm improvements, basement car parking and associated infrastructure. The scheme has been developed in line with the six circular economy principles and will focus on designing for disassembly and adaptability, maximising material reuse on-site and/or recycling.

Along with other sustainability aspects like whole life carbon, an early collaborative approach to circularity thinking considered the core circular economy principles applied to design, construction and operation. This is reflected in the Circular Economy Statement (CES) previously submitted as part of the hybrid planning application, which this CES describes in further detail, in line with GLA guidance.

The definition of targets and options for reducing waste and material use is set out in the approach below. Design workshops will be undertaken during the detailed design stages to review, test, refine and integrate these principles. Wherever possible, the team will endeavour to go beyond GLA guidance's minimum circular economy targets.

Minimise material quantities

The proposal adopts a design approach that focuses on material resource efficiency – a leaner concept with less material demand will also reduce the amount of waste produced in the construction process, without compromising the design concept.

For waste reduction, measures to minimise excavation, simplify and standardise materials and components of choice, and dimensional coordination have all been considered.

The massing, scale, urban form and layout of the Uxbridge mixed use development proposal responds to its immediate neighbouring context as well as the broader context along Uxbridge High Street, considering upcoming development. The materiality of the new blocks responds to the existing character of the townscape, with an improved appearance through the creation of views through an active retail high street.

Minimise fuels, land & water

The Uxbridge mixed use development will be designed for energy and water efficiency in operation. Construction processes will prioritise fuel and water conservation, including delivery and storage logistics, for example. The proposed scheme will be built upon a previously developed site which will minimise disruption to the existing landscape and optimise the use of London's limited resources. In addition to that, the scheme will endeavour to

reuse and recycle building materials and components from the existing buildings, mostly off site, as detailed in the Pre-demolition audit (found in Appendix 3).

Specifying & sourcing materials

This involves designers and contractors collaborating for optimum results and includes references to green sourcing guides like Greenspec and Green Guide. Specification priority will be given to locally sourced, high recycled content materials and products with EPDs.

The choice of materials and colour for the Uxbridge mixed use development is arranged in a way that unifies the facades through design and composition, whilst enabling each building to develop its own character and function as a stand-alone piece of architecture. The co-living block facades employ a primarily brick texture with the hotel using composite cladding with textural variation.

Design for longevity, adaptability/flexibility and reusability

The strategic approach GLA decision tree directed attention towards designing for adaptability and longevity for this regeneration development.

Key exposed building elements have been designed to limit degradation from environmental factors such as solar radiation, wind and temperature variations. A disassembly guide will be produced to indicate how the deconstruction and recoverability of materials could be maximised at the end of their life.

Very durable materials have been chosen to optimise the lifespan of the building and mitigate against the need to replace materials. The structural frame will be designed for a design life of 50 years. The design also offers flexibility for future adaptation, such as resizing or reconfiguring apartment layouts and being able to accommodate additional M&E kit, if required.

Non-load bearing internal partitions allow the internal layout to be modified in line with needs changes, as demonstrated within the 'adaptability' section within the Design & Access Statement.

Recoverability

In a circular economy, the value of products, materials and resources is maintained in the economy for as long as possible, while waste generation is minimised. An end-of-life strategy has been included in this report, assessing the percentage of materials that can be recovered or returned.

Design out waste

Implementing the 'building in layers' approach, the design objective for the elements with longer life cycles (more than 25 years) is to design for longevity, adaptability and flexibility. Building layers with shorter life expectancy (less than 25 years) will be designed for ease of maintenance, reuse and recoverability. The plant will be made accessible for replaceability and maintenance.

Manage waste sustainably and at the highest value

Guided by the waste hierarchy and in association with the waste capacity report, the site waste management plan and operational waste management strategy ensure optimum management and auditing of demolition, construction and municipal waste.

The operational waste strategy has been developed in line with the London Plan, the London Borough of Hillingdon requirements and the waste hierarchy to be both efficient and convenient.

Both the co-living waste stores have been designed to minimise the number of collections per week through the rotation of eurobins. Along with this, the management staff will manage, monitor and record the use of recycling, waste and food containers. When poor recycling is noted, information will be circulated to all occupiers to be made aware of what materials can be recycled. Whilst the operator of the hotel is not yet confirmed, it is anticipated that they will have daily servicing as part of their logistics management.

Waste provisions for the various areas of the building will meet the minimum requirement to have at least three waste streams: general waste, dry recycling and food waste/composting. Clear communication with the end user will be key to facilitate recycling during operation. This will be in the form of non-technical building user manuals, as well as enforced by dedicated property

management personnel.

Supporting information, such as the Design & Access Statement and the Planning Statement, note that waste will be collected and managed in accordance with all relevant legislation and guidance. It is anticipated that operational waste will mainly comprise household and recyclable materials. The proposed commercial uses are not considered to give rise to unusual volumes of waste. Further information can be found within the Design and Access Statement prepared by CGL Architects.

Next Steps

The design team will continue to optimise the design and make informed material specification decisions in order to further reduce the whole life carbon emissions and increase circularity within the Uxbridge mixed use development.

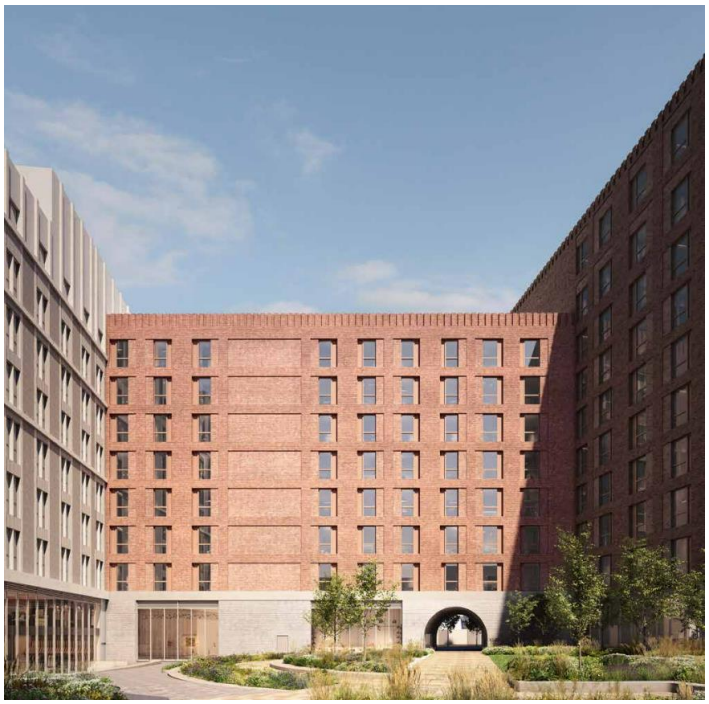
It is also accepted that a Post-Construction Circular Economy Statement will be conditioned, where a Post-Construction Circular Economy Statement is to be submitted to the GLA prior to the occupation of each building/phase.

02. Introduction

This Circular Economy Statement has been prepared by Savills Earth to support the Full Planning Application submitted to the London Borough Hillingdon in March 2023 for the development at, 148-154 High Street, Uxbridge, UB8 1JY (hereafter referred to as 'the Site').

The proposed development comprises Hotel (Class C1), Co-Living (Class Sui Generis) and replacement Commercial Floorspace (Class E). Alongside these uses, the proposed development will provide a new publicly accessible pocket park, alongside other public realm improvements, basement car parking and associated infrastructure. The scheme has been developed in line with the six circular economy principles and will focus on designing for disassembly and adaptability, maximising material reuse on-site and/or recycling.

This CES should be read in conjunction with other supporting documents submitted with the planning application, including the Whole Life-Cycle Carbon Assessment by Ridge, the Planning Statement prepared by Savills and the Design and Access Statement prepared by CGL Architects which explain the proposed development in more detail and relate it to the surrounding context and planning policy framework for the Site.



The Site

The 0.38ha site is located within Uxbridge Town Centre in the London Borough of Hillingdon. It is situated on a prominent corner fronting a pedestrianised section of Uxbridge High Street and is bound by Belmont Road to the north, Bakers Road to the east and Cocks Yard to the south.

The Site currently comprises office floorspace and primarily retail accommodation with an abundance of retail units let to various well-known brands. The site is centred around a ground floor central service yard, which contains a private basement car parking underneath.

Across Uxbridge High Street and to the Site's immediate west, there is a large indoor shopping centre known as 'the Pavilions'. This building comprises commercial uses on the ground floor with two 5-storey residential tower blocks, namely Armstrong House and Middlesex House extending above. To the east of the Site, along Belmont Road is Senator Court, modern office accommodation, and to the south-east of the Site exists a 9-storey hotel. These can be seen in the aerial view below.

Description of the proposed development

The Application seeks full planning permission for:

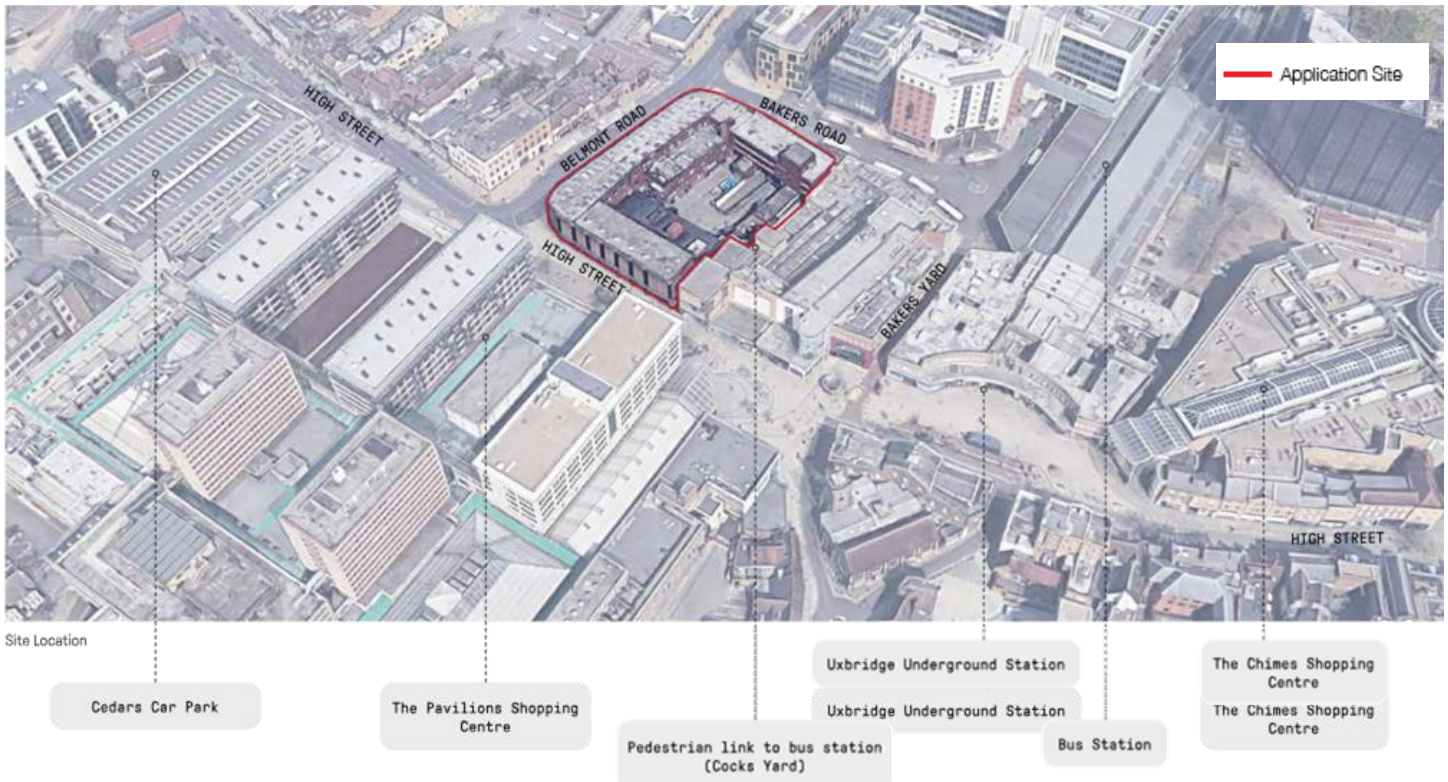
"Demolition of the existing buildings and comprehensive redevelopment of the site to provide a mixed use development comprising hotel (Class C1), co-living (Class Sui Generis) and replacement commercial floorspace (Class E) alongside public realm improvements, including a new pocket park, basement parking and associated infrastructure."

Structure and purpose of this report

This CES has been prepared to detail the circular economy strategic approach adopted by the proposed development and to give an overview of the interventions that will be applied to ensure circular economy principles are embedded within the design of the scheme over its lifetime. The CES report headlines will provide a framework for the project team to operate consistently within circular economy guidelines set out by the GLA and the London Borough of Hillingdon

The following sections of this CES provide the following:

- Strategic Approach
- Key Circular Economy Commitments
- Implementation Strategy
- End of Life Strategy
- Appendices



Policy Framework

The London Plan sets out the spatial development strategy for Greater London. It is the overall strategic plan for London, defining an integrated economic, environmental, transport and social framework for how London will develop over the next 20 - 25 years. The London Plan includes the following policies in relation to the Circular Economy.

SI 7 Reducing waste and supporting the circular economy

Resource conservation, waste reduction, increases 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 products
- 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 material streams:
    i. Construction and demolition – 95 per cent
    ii. Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:

- How all materials arising from demolition and remediation works will be re-used and/or recycled
- How the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life
- Opportunities for managing as much waste as possible on site
- Adequate and easily accessible storage space and collection systems to support recycling and re-use
- How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy
- How performance will be monitored and reported.

Hillingdon Local Plan Part 1 – Strategic Policies (2012)

The Local Plan Part 1 sets out the overall level and broad locations of growth up to 2026. It comprises a spatial vision and strategy, strategic objectives, core policies and a monitoring and implementation framework with clear objectives for achieving delivery. These policies are supported by more detailed policies and allocations set out in the Local Plan Part 2.

- Policy BE1 (Built Environment) - all new developments should maximise the opportunities for all new homes to contribute to tackling and adapting to climate change and reducing emissions of local air quality pollutants.
- Policy EM1 (Climate Change Adaptation and Mitigation) – includes a series of requirements for development, including the promotion of low carbon and renewable technologies.
- Policy EM11 (Sustainable Waste Management) The Council will require all new development to address waste management at all stages of a development's life from design and construction through to the end use and activity on site.

Hillingdon Local Plan Part 2- Development Management Policies (2020)

The Local Plan Part 2 comprises Development Management Policies, Site Allocations and Designations and the Policies Map. It delivers the detail of the strategic policies set out in the Local Plan Part 1.

- Policy DMEI 2 (Reducing Carbon Emissions) – all developments are required to make the fullest contribution to minimising carbon dioxide emissions in accordance with London Plan targets.
- Policy DMIN 4 (Re-use and Recycling of Aggregate) - The Council will promote the recycling of construction, demolition and excavation waste.

Hillingdon encourages all developments to submit a CES, following a 3-step approach: submit a draft CES at pre-application, submit a detailed CES at planning application and submit an updated CES at post-construction, upon commencement of RIBA Stage 6. The GLA circular economy template spreadsheet should accompany each submission to demonstrate and quantify the impact of circularity principles in the design.

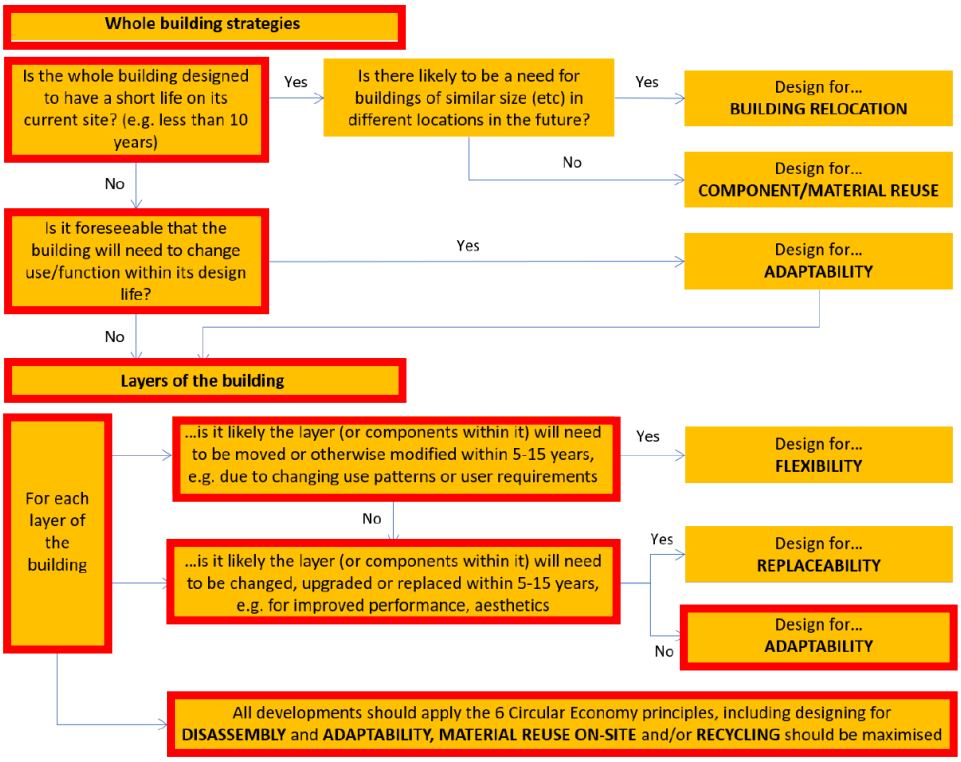
The CES will therefore be based on the GLA's guidance document for Circular Economy Statements issued in March 2022, which interprets the policies set out above and describes what Circular Economy Statements should include.

03. Strategic approach

Along with other sustainability aspects like whole life carbon, a collaborative approach to circularity thinking considered the core circular economy principles applied to design, construction and operation.

The strategic approach GLA decision tree, as shown on the right, directed attention towards designing for adaptability and longevity for this mixed-use development. The design will facilitate adaptability to extend the proposed building's life, whilst also allowing for eventual deconstruction and reconstruction to allow components and materials to be salvaged for reuse or recycling.

As it is not technically feasible to retain the existing building on site, some residual value of the building elements and materials will be recovered – a detailed pre-demolition audit has been carried out to determine the principal demolition materials and the recommended waste management routes of these demolition products.



Strategic approach decision tree for new buildings

Existing site opportunities

The existing building on the plot will be demolished to allow for the construction of a new mixed use development, since it was found unsuitable to reuse. The floor to ceiling heights are low for the intended use, the basement would require significant refurbishment (including leakages repair), the facades are approaching their end-of-life and internal levels are poor from the tinted glazing and decorative precast cladding units blocking daylight and views out.

Wherever possible, building elements, original materials and components will be reused to maximise their lifespan. Existing concrete from the hardscapes can be crushed and reused as piling mat/hardcore for the proposed development.

A pre-demolition audit has been carried out to audit the waste streams arising from the strip out and demolition works and identify a waste hierarchy of prevention, reuse, recycle, recover and dispose. Waste routes will be defined when demolition contractors are awarded the contract for site works. After this, routes will be determined from an approved list of waste carriers.

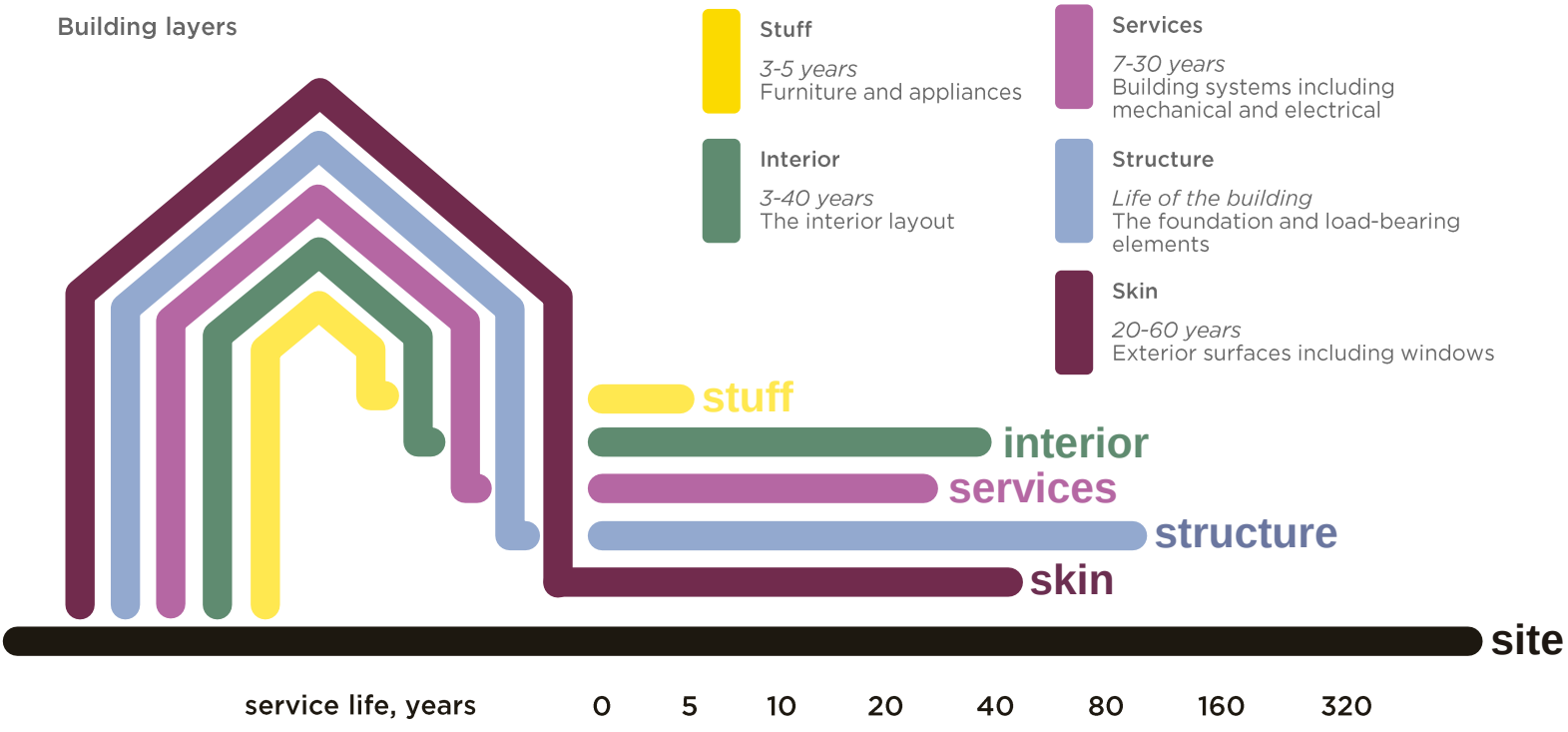
Proposed design considerations

Building in Layers

The proposed scheme design has been broken down into building layers to design out waste, optimise material use and keeping building elements/materials in use after the end of their life cycle. Please refer to the summary of strategies in Table 2.

The design objective for the elements with longer life cycle (more than 25 years) is to design for longevity, adaptability and flexibility. The concrete frame ensures longevity and can be adapted for any future uses. Building layers with shorter life expectancy (less than 25 years) are being designed for ease of maintenance, reuse and recoverability. The plant will be made accessible for replaceability and maintenance.

Subject to the new use of the site it may be possible to retain some elements of the car park walls, however complete re-use is unlikely. The nature of the construction eliminates large scale re-use of any components. The majority of the material forming the structures will be recycled with the two largest waste streams being identified as concrete and brick and steel.



Other waste types can be carried on site or off site at transfer stations which allow a greater proportion of recovered materials than on site sorting. In addition, it is proposed that sending single mixed loads rather than several smaller loads of different waste streams can reduced the carbon footprint of associated transportation.

The project team is supportive of the transition from a linear approach to a circular one, led by the GLA's core principles. The Applicant's aspirations is for a scheme characterised by an efficient and economical design, with emphasis on the integration of engineering and architectural principles to deliver a simple, elegant, and budget-compliant solution. The aim is to create efficiencies at every level from the foundations, through the structure, cladding, services, internal layouts and finishes.

The applicant's strategic principles and objectives include a sustainable legacy to future occupiers and to build on lessons learnt from earlier projects to improve environmental credentials.

Design Optimisation

Passive design studies have been undertaken to identify the most suitable passive and energy-efficient design approach for the scheme. Superstructure design has been optimised, through the selection of post-tensioned concrete for elements, such as the upper floors slabs, walls and columns. These result in a considerable reduction in the building weight and translates to a significant carbon saving when compared to reinforced concrete. Recycled content has been maximised where practically possible. GGBS content is proposed as a cement replacement to reduce the use of virgin cement. Further interventions for the reduction of embodied carbon are being investigated by the architects and the main contractor. With some of the interventions, there are supply chain limitations, for example, recycled aluminium. These challenges and opportunities will be explored further at the time of procurement.

Demolition and Construction waste

Construction waste arising from the proposed development will be minimised in line with the relevant planning requirements.

A pre-demolition audit has been undertaken for the site quantifies the estimated volume of waste generation and identifies opportunities for maximising reuse and the recovery of materials in alignment with the waste hierarchy. The current building is unsuitable for reuse, however, there is potential to minimise waste through the recovery of materials.

The Resource Management Plan, to be produced in the next design stage, will outline the strategy to maximise opportunities for reusing and recycling construction waste, while monthly monitoring will ensure that subcontractors are engaged in the process. The following opportunities for reducing construction waste have been identified:

- Waste will be segregated on-site to assist with the recycling rate;
- Just in time material deliveries to avoid stockpiling on site and reduce the risk of damage; and
- Supplier take-back schemes will be utilised.

Operational Waste

The refuse strategy has been developed with consideration to the Hillingdon Local Plan 2012-2026 and West London Waste Plan as well as the West London Boroughs goal to meet the London Plan and the GLAs guidance.

Both the co-living waste stores have been designed to minimise the number of collections per week through the rotation of eurobins. Along with this, the management staff will manage, monitor and record the use of recycling, waste and food containers. When poor recycling is noted, information will be circulated to all occupiers to be made aware of what materials can be recycled. Whilst the operator of the hotel is not yet confirmed, it is anticipated that they will have daily servicing as part of their logistics management.

Waste provisions for the various areas of the building will meet the minimum requirement to have at least three waste streams: general waste, dry recycling and food waste/composting. Clear communication with the end user will be key to facilitate recycling during operation. This will be in the form of non-technical building user manuals, as well as enforced by dedicated property management personnel refuse pick-up points are located on Belmont Road as well as on Bakers Road, with a managed system for corralling refuse containers to the pick-up locations.

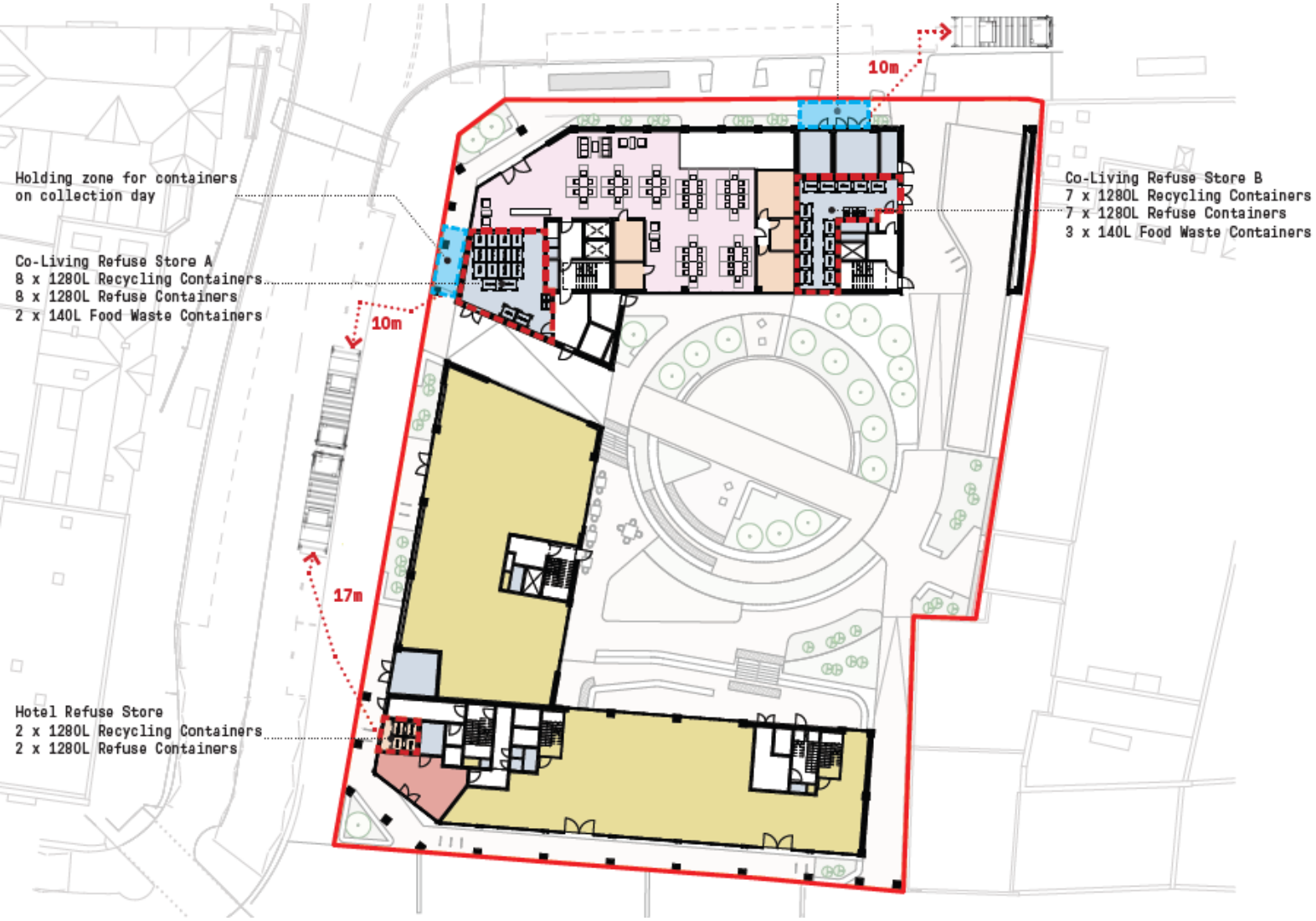


Table 1: Circular economy strategic approach – existing buildings

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Retain and Retrofit	Existing buildings	The current site usage is mixed use and generally comprises, commercial carparking at basement level, retail at ground floor, commercial at first floor and a mixture of residential and commercial at second floor. The general conditions have been described as having low floor to ceiling heights for the intended use, the basement would require significant refurbishment (including leakages repair), the facades are approaching their end-of-life and internal levels are poor from the tinted glazing and decorative precast cladding units blocking daylight and views out. The new development aims to transform the street-scape through the new mixed-use proposal, including active retail and co-living frontages as well greatly improving and increasing the retail provision.
Partial Retention and Refurbishment	Existing buildings	As the existing building is not being maintained, there will be no proposed repurpose or reconstruction. As explained above, individual materials or building elements may be reused off-site, pending further investigative work in the next design stage.
Disassemble and Reuse	Existing buildings	Wherever possible, disassembly will be prioritised over demolition so that building elements, original materials and components can be reused to maximise their lifespan. The Pre-Demolition audit has identified a minimal possibility of re-use of materials.
Demolish and Recycle	Existing buildings	The Pre-Demolition audit has assessed the waste type and quantities that can be recycled and identified that 100% of concrete can be crushed into Recycled Concrete Aggregate (RCA) on/off site. 100% of Steel and Mixed metals to be placed in the scrap metal re-processing industry. 100% of glass can be melted and created into new windows or other glass products and for this, would be sent off site for recycling. For other waste types streaming and sorting will be carried on-site and off-site transfer stations. Modern technologies allow transfer stations to recover a greater proportion of materials than simple sorting.

Table 2: Circular economy strategic approach – new buildings

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Building relocation	Existing buildings Proposed buildings	The existing buildings on site would require extensive refurbishment works to fulfil occupant's expectations and provide comfortable and energy efficient living conditions. The existing buildings have little architectural value and are likely approaching their end of life. Therefore, relocation is not being considered. The proposed buildings are not being considered for relocation through its lifecycle.
Component or material reuse	Existing buildings	The Pre-Demolition audit has quantified all materials that can be reused, as well as identified reuse/recycling routes. Some building components are also identified for reuse, such as intact windows that could be listed up on Globechain or the Excess Materials Exchange platform for use on their sites.
Adaptability	Proposed buildings	The proposed grid structure will allow for spaces to easily reconfigured to accommodate different layouts, ensuring a possible change to apartment sizes and unit mixes in the future. The internal partitions in the residential levels not load-bearing, allowing for more flexible arrangements of interior spaces. The proposed HVAC systems should be easily expanded or modified to meet changing occupancy or usage requirements.
Flexibility	Proposed buildings	As detailed above, proposed spaces can be reconfigured to suit different purposes or adapt to changing needs, and non-load-bearing internal partitions can be altered to create flexible rooms and spaces that can be easily expanded or reduced as needed. The proposed amenity, offices and retail spaces are also flexible and adaptable to evolve with changing use requirements.
Replaceability	Proposed buildings	Widely available, standardised building components and materials will be prioritised to ensure that replacements can be easily sourced from various suppliers. HVAC systems will be easily accessible and rooftop plant can be removable by cranes. Utility infrastructure will be designed with flexibility in mind, allowing for the easy replacement or upgrade, including potential future connection to a local district heating network.
Disassembly	Proposed buildings	The design is likely to feature prefabricated components that are manufactured off-site and assembled on-site, enabling easier disassembly during future renovations or demolitions. The scheme will use bolted connections instead of welded or adhesive fixed connections where possible, as bolts can be easily removed, allowing for disassembly without damage to materials. A labelling system could be investigated to mark components, connections, and materials with information about their specifications and assembly/disassembly instructions. Materials that are recyclable will be prioritised, and these can be separated easily during the eventual disassembly process.

Table 2: Circular economy strategic approach – new buildings

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Longevity	Proposed buildings	Focus on high-quality, durable materials that can withstand environmental conditions, wear and tear, and aging over an extended period. Use finishes and coatings that protect materials from weathering, corrosion, and other environmental factors. A regular and proactive maintenance program should be implemented to address potential issues before they become major problems. Flexible and adaptable design features will be incorporated to allow for future changes in use or renovations, supporting adaptive reuse rather than complete redevelopment.

04. Circular economy commitments

Circular economy design principles by building layer

Designing out waste	Module A – Product sourcing and construction stage
Site	Prioritise disassembly of existing buildings where possible. The Pre-Demolition audit quantifies and identifies the materials that can be reused/recycled, as well as their routes. For the construction of the proposed buildings, the Site Waste Management Plan (SWMP) that accompanies the CES states that waste on site will be minimised through the adoption of the waste hierarchy wherever possible to re-use, recycle waste generated on site other than final disposal. A ground level processing area will be created where we separate all waste streams. Further segregation of the waste streams on site will reduce lorry movements and allow potential for further re-cycling. The following waste minimisation practices will be adopted: • Decrease the need for temporary work • Crushing inert waste onsite and using for backfill • Just in time delivery of materials to prevent spoilage • Ordering the correct materials and correct quantities - in bulk if appropriate • Recording material delivered onsite and dispatched • Where possible packaging would be kept on until the last moment, material suppliers will be asked to collect packaging for reuses
Substructure	Minimise new excavation as the basement level is planned to be partially retained. Excavation waste will be used on site where possible. Standard foundation methodologies have been designed to minimise material waste. Quantities of required materials have been accurately calculated to avoid over-ordering and waste materials. Salvage and reuse materials from the demolition of existing substructures in new construction projects, as detailed in the Pre-Demolition audit, recycling materials like concrete or steel will be used for use as aggregates or for scrap metal re-processes.

Circular economy design principles by building layer

Designing out waste	Module A – Product sourcing and construction stage
Superstructure	The proposed design includes for efficient floorplans throughout the scheme to optimise material usage. The proposal will investigate and prioritise the offsite manufacture of the external and internal component parts, thus reducing waste and time to construct. Salvage and reuse materials, such as lumber, bricks, or metal framing, for other construction projects.
Shell/Skin	Off-site construction/ modular components will be investigated to reduce waste on site, including balustrades, windows and doors. Recycle exterior cladding materials, such as bricks, stones, or metal panels, in other projects. GRC cladding panels are specified for the façade and these require minimal maintenance, reducing the need for frequent cleaning, repainting, and repairs. This not only saves time and money but also reduces the amount of energy and resources required to maintain the building's facade. Furthermore, GRC cladding panels are resistant to moisture, fire, and UV radiation, making them a durable and long-lasting option for sustainable building design. Recycle materials like glass, insulation, or metal for use in new products. Supplier take back schemes will be used where possible.
Services	A high thermal performing, and airtight facade will reduce energy demand, eliminates unnecessary components and processes in MEP systems. Design MEP systems with modular components to reduce the need for custom fabrication and enable efficient disassembly and reassembly, minimising waste generation during installation and future modifications. The material specification for the pipes, ducts and chambers have undergone a carbon impact assessment to determine the most appropriate specification to reduce embodied carbon on the design. Salvage and reuse mechanical, electrical, and plumbing equipment, such as pipes, fixtures, or HVAC systems, in other projects. Recycle metals and electronic components for resource recovery.
Space	Spaces have been designed to maximise their utility and reduce the need for excess square footage. Riser space has been coordinated to minimise spatial wastage and disruption to internal layouts.
Stuff	Just in time deliveries will be used to reduce waste created by improper storage and weather damage. Salvage and reuse interior fixtures, furniture, or finishes in other projects. Provide adequate and organised recycling within the building to encourage responsible disposal of unwanted items. Circular economy principles will be encouraged with incoming residents and occupiers.

Designing out waste	Module A – Product sourcing and construction stage
Construction stuff	As detailed within the SWMP, all waste will be segregated into different waste streams using skips or containers for both hazardous and non-hazardous use. It is encouraged that suppliers and sub-contractors offer a take-back and collection services for material and packaging. Suppliers and sub-contractors will make sure all packaging is in accordance with Packaging Waste Regulations. If any non-compliancy is found or there is an unnecessary amount of packaging, supplier and sub-contractors will take back the packaging at their own expense.
Summary	The design team will endeavour to minimise waste generation, optimise resource usage, and promote sustainable practices throughout the lifecycle of the project.
Challenges	All opportunities for reducing materials may not have been fully explored at this or future stages. Supplier takeback schemes still an immature market for certain materials in the UK. Access to appropriate recycling facilities and waste disposal sites, especially for specialised materials, may be limited in certain areas. Managing the logistics and transportation of construction waste to recycling facilities can be challenging due to the volume and weight of materials.
Who and when	Structural engineer, demolition contractor and main contractor during design and construction stages
Plan to prove and quantify	The implementation of standard impact avoidance measures will reduce waste from construction activities, which can be secured through the DCEMP. In line with practices, targets and monitoring procedures described within the SWMP, the main contractor will be required to develop a Resource Management Plan to estimate anticipated construction waste and identify opportunities for minimising waste generation. The Resource Management Plan will also identify opportunities for maximising material recover in line with the waste hierarchy. Contractor will keep waste records to ensure targets are achieved. Regular monitoring and evaluation can help track progress and identify areas for improvement.

Designing out waste	Module B – In-use stage
Site	The landscape design will prioritise planting that require minimal maintenance and water usage. The scheme has also considered co-ordinated sustainable urban drainage measures, as well as specification of efficient fittings, to significantly reduce water consumption. The scheme will target 65% recycling of municipal waste by 2030 and a business waste recycling target of 75% by 2030
Substructure	N/A
Superstructure	The design proposal has considered adaptability and flexibility to accommodate future changes in occupancy or use without the need for major renovations or demolition.
Shell/Skin	High insulation levels and air tightness will ensure energy efficiency and reduce heating and cooling waste. Passive design strategies have been/will be explored to maximise natural light and ventilation, reducing the need for artificial lighting and air conditioning.
Services	Highly energy efficient services to aim to provide a 59% reduction over Part L. It is estimated that a 25% reduction in existing water usage can be achieved through the specification of efficient fittings. The co-ordinated surface water strategy for the detailed application has been developed in response to the Draft London Plan SUDs hierarchy and includes extensive water recycling and storage features to achieve greenfield runoff rates.
Space	The building uses are predominantly grouped into their relevant blocks to provide efficient spaces for occupation. Multifunctional spaces have been incorporated into the design. Co-living offers a more extensive array of spaces and facilities to residents. Smart meters will be installed so residents can monitor their energy and water usage.
Stuff	Refuse stores provide separation for general waste, recycling and organic materials collection. The communal kitchens will have separate bins for waste, recycling and food waste. This will be regularly collected by building management and transported to the communal storage areas.
Construction stuff	Contractor will segregate and monitor waste generated during construction.

Designing out waste	Module B – In-use stage
Summary	Minimising the quantities of other resources used (energy, water, land) Supporting information notes that waste will be collected and managed in accordance with all relevant legislation and guidance, and it is anticipated that operational waste will mainly comprise household and recyclable materials. The proposed commercial uses are not considered to give rise to unusual volumes of waste.
Challenges	Successful waste management relies on collaboration among multiple stakeholders, including building managers, waste management providers, businesses, and residents.
Who and when	Waste consultant as well as contractor
Plan to prove and quantify	The application is supported by a Site Waste Management Plan and an Operational Waste Strategy is detailed within the DAS. Non-technical building user manuals will be developed and will include incentives for encouraging dedicated property management personnel to track and manage waste management to meet the above targets. Waste provisions for the various areas of the building will have at least three waste streams: general waste, dry recycling and food waste/composting.

Designing out waste	Module C – End-of-life stage
Site	The waste hierarchy will be followed for all aspects : Reuse in-situ> Reuse on site> Reuse off-site> Recycling> Other recovery (with energy recovery)> Disposal Implement deconstruction and demolition plans that prioritise salvageable materials.
Substructure	The concrete frame substructure specified for the scheme can be recyclable in the future and repurposed. Design foundations and footings for easy disassembly and reuse. A Whole Life Carbon Assessment has been undertaken by Ridge, detailing a holistic view to reducing embodied and operational carbon emissions.
Superstructure	The concrete frame superstructure specified for the scheme can be recyclable in the future and repurposed. Design of a flexible structural elements that is adaptable for changes and future need. A Whole Life Carbon Assessment has been undertaken by Ridge, detailing a holistic view to reducing embodied and operational carbon emissions, including the percentage recycled materials specified for the scheme.
Shell/Skin	Façade elements should be able to be reused, such as brickwork, GRC panels and window frames. The façade finishes have been designed for durability and longevity to reduce the need for replacement.
Services	Mechanical, electrical, and plumbing systems have been designed with components that can be easily removed and recycled. Equipment and fixtures were specified with a focus on longevity and recyclability.
Space	Interior spaces have been designed with flexibility in mind to accommodate future changes in use or occupancy. Interior finishes will prioritise materials that are easy to remove and recycle.
Stuff	Encourage residents to donate or recycle unwanted belongings during move-out. Provide resources and facilities for residents to properly dispose of electronic waste, furniture, and other large items. Collaborate with local organisations or charities to facilitate the reuse of household items.

Designing out waste	Module C – End-of-life stage
Construction stuff	Partner with waste management companies to ensure proper sorting and disposal of construction waste. Prioritise the reuse of surplus materials in future projects or donate them to community organisations. Implement deconstruction techniques that preserve the integrity of materials for potential reuse.
Summary	An end-of-life strategy should be carried out at Post-Construction to detail measures for maximum disassembly, reuse and recycling.
Challenges	Lack on continuity of strategies planned at post-construction and measures taken at the end of life.
Who and when	Demolition contractor and Sustainability Consultant during proposed development's end of life
Plan to prove and quantify	Post-Construction Circular Economy to further detail the end-of-life strategy, which will be submitted no later than 3 months post-construction.

Designing out waste	Module D – Benefits and Loads Beyond the System Boundary
Site	The scheme is located on previously developed land with no impact on virgin land. The site is well located, in close proximity to amenities, including major transport infra-structure hubs, reducing the site's transportation-related emissions. The proposed green infrastructure and SuDS, will assist in managing stormwater effectively.
Substructure	Pile foundations will minimise excavation need and material use. The existing basement will be partially retained minimising excavation required.
Superstructure	A Whole Life Carbon Assessment has been undertaken using a holistic view to reducing embodied and operational carbon emissions, whilst maximising the circularity. The design has incorporated flexibility to allow for future modifications or additions without significant demolition or waste generation.
Shell/Skin	High performing fabric and material specifications, such as insulation and glazing, will minimise heating and cooling loads. Façade materials have been chosen for their durability and ease of maintenance to extend the lifespan of the building envelope.
Services	Highly energy-efficient HVAC systems and lighting will minimise operational energy use.
Space	Flexible and adaptable interior spaces have been proposed to accommodate changing needs over time. Spaces have been designed to maximise their utility and reduce the need for excess square footage to eliminate excess material.
Stuff	Durable and long-lasting materials shall be specified for interior finishes and furnishings to reduce the need for frequent replacements. Design for disassembly to facilitate easier recycling or reuse of building components at the end of their lifespan. Encourage residents to prioritise experiences over material possessions to reduce overall consumption.
Construction stuff	As mentioned earlier and detailed withing the SWMP, construction waste will be minimised by optimising material use and recycling or repurposing surplus materials. Construction methods that minimise disruption to the surrounding environment and reduce energy consumption during construction will be prioritised.
Summary	Circularity strategy to communicate all the potential impacts and benefits from the reuse, recycling and recovery of materials at the end of their lifetime
Challenges	Lack on continuity of strategies planned at post-construction and measures taken at the end of life
Who and when	Demolition contractor and Sustainability Consultant during proposed development's end of life
Plan to prove and quantify	Post-Construction Circular Economy to further detail circularity strategy

Designing for longevity	
Site	The proposed scheme has been designed to serve its purpose successfully way beyond the 60-year life cycle
Substructure	The concrete structural design will be difficult to design for disassembly, so will prioritise designing for longevity, efficient design and maximising the use of cement replacement. Proper drainage systems will be implemented to prevent water damage, prolonging the lifespan of the substructure.
Superstructure	Materials specified for durability and longevity, such as the proposed concrete frame structure. Ensure proper insulation and moisture control measures to prevent deterioration and mould growth. Design for flexibility and adaptability to accommodate future changes or renovations without compromising structural integrity.
Shell/Skin	Materials will be specified to ensure they are durable and weather-resistant and low-maintenance to protect the building envelope from the elements. Regularly inspect and maintain the exterior to address any signs of deterioration promptly.
Services	Install high-quality MEP systems to minimise the risk of leaks, failures, and costly repairs. Incorporate smart technology and energy management systems, such as BMS, to optimise resource usage and prolong the lifespan of service components. Plan for easy access and maintenance of service infrastructure to facilitate repairs and upgrades as needed.
Space	Design flexible and adaptable interior spaces that can accommodate changing needs and preferences over time. Consider universal design principles to ensure accessibility for residents of all ages and abilities.
Stuff	Circular economy principles will be encouraged with incoming residents and occupiers. Specify high-quality furniture and appliances that are built to last and can withstand regular use.
Construction stuff	Highly skilled contractors and tradespeople who adhere to high-quality construction standards and practices will be employed. Appropriate construction techniques and quality control measures will be implemented to ensure the longevity of the building structure and components.
Summary	The design has been developed keeping in mind long term use of the building and how it can adapt to the changing needs in the future

Designing for longevity	
Challenges	Regular maintenance, periodic inspections, and proactive management practices are essential for ensuring the continued longevity and performance of the building over time.
Who and when	All parties during concept design and technical design stages
Plan to prove and quantify	Implement a proactive maintenance program to monitor building performance and address issues before they escalate. Track key performance indicators such as energy efficiency, indoor air quality, and structural stability over time. Document maintenance activities, repairs, and replacements to assess the effectiveness of design decisions and inform future improvements.

Designing for adaptability or flexibility	
Site	Glazing ratios and massing have been designed to optimise energy efficiency and occupant comfort over time. Landscaping and outdoors spaces have been designed with future flexibility in mind, as these can be reconfigured or repurposed as needs change.
Substructure	Flexible utility connections and access points to accommodate future changes to MEP systems have been incorporated, such as the possibility of connection to a local district heating network in the future.
Superstructure	Structural systems can allow for easy reconfiguration of interior spaces without compromising structural integrity. Specified building materials can be easily modified or adapted to accommodate future renovations or expansions.
Shell/Skin	Selected exterior cladding materials and systems can be easily replaced or upgraded without significant structural modifications. Waterproofing detailing, profiling, drainage details, fixings and general geometry will be thoroughly assessed.
Services	Install flexible piping and conduit systems that allow for easy rerouting or expansion of plumbing, electrical, and HVAC systems. Specify modular or plug-and-play components for mechanical and electrical equipment to facilitate future upgrades or replacements.
Space	Design multi-functional spaces and flexible living areas that can serve multiple functions and adapt to changing lifestyle needs. Provide ample storage space and built-in cabinetry that can be customised as storage needs change over time.
Stuff	Encourage residents to prioritise quality over quantity when furnishing and decorating their homes. Specify durable and timeless finishes and furnishings that can easily be integrated into different design schemes or room configurations. Circular economy principles will be encouraged with incoming residents and occupiers.
Construction stuff	Temporary structures, such as construction site offices or worker accommodations, to be designed with modular components to enable easy disassembly and reassembly, promoting reusability in future projects. Utilise reusable formwork systems, such as metal or plastic formwork, reducing waste generated during the concrete casting process. Opt for rental equipment instead of purchasing new machinery or tools to provide flexibility and reduce the need for long-term storage.

Designing for adaptability or flexibility	
Summary	The scheme's design has considered adaptability and flexibility at each level of design and construction, to create a scheme that can evolve and grow with the changing needs and preferences of its occupants over time.
Challenges	Incorporating adaptability features during the initial design and construction phases may require additional upfront costs. Some adaptable design features may have environmental implications or require additional resources, offsetting their sustainability benefits.
Who and when	All parties during concept design and technical design stages
Plan to prove and quantify	Post Occupancy Evaluation surveys could collect feedback from building occupants regarding their satisfaction with the adaptability and flexibility of the space, assessing how well the building design meets their evolving needs and preferences. Use occupant feedback to identify areas for improvement and inform future design decisions.

Designing for disassembly	
Site	The site's location and connectivity allows for easy access and egress of construction equipment and materials, facilitating both assembly and disassembly processes.
Substructure	The concrete structural design will be difficult to design for disassembly, so will prioritise designing for longevity, efficient design and maximising the use of cement replacement.
Superstructure	The concrete structural design will be difficult to design for disassembly, so will prioritise designing for longevity, efficient design and maximising the use of cement replacement.
Shell/Skin	Investigate the viability of using lime-based mortar to allow brickwork to be disassembled. Cladding elements such as composite cladding panels allow for easier disassembly Avoid adhesives or irreversible attachment methods that can make disassembly more challenging.
Services	Servicing design allows for disassembly of part or the whole M&E system, with modular components that can be easily disconnected and removed.
Space	Investigate the use of demountable partitions instead of fixed walls to allow for flexibility in space allocation. Prioritise the specification of modular components to allow for easy disassembly and reassembly, promoting reusability and adaptability, and also to enable future expansions or modifications without major disruptions.
Stuff	Provide storage solutions for storing disassembled components or materials for future use or recycling. Circular economy principles will be encouraged with incoming residents.
Construction stuff	Document construction details and material specifications to aid in future disassembly and salvage efforts. Circular economy principles will be a fundamental criteria in the contractor's tender
Summary	By considering disassembly at all building layers, the scheme can be more easily adapted, relocated, or recycled at the end of their lifespan, reducing environmental impact and promoting resource efficiency.
Challenges	Lack on continuity of strategies planned at post-construction and measures taken at the end of life
Who and when	All parties during concept design and technical design stages
Plan to prove and quantify	Calculate the potential environmental impact and cost savings associated with on-site disassembly versus off-site demolition. Assess the potential salvage value of materials and building components for reuse or recycling.

Using systems, elements or materials that can be re-used and recycled	
Site	A target benchmark for resource efficiency will be specified and adhered to by the Site Project manager, as detailed within the SWMP. Construction practices that protect natural habitats during site preparation will be implemented.
Substructure	Use of 50% GGBS cement replacement for substructure elements, such as the piles, pile caps and capping beam. The concrete design can be recycled for future use.
Superstructure	Use of 30% GGBS in the upper floor slabs and 50% GGBS in the walls and columns. The concrete design can be recycled for future use. Use recycled steel or aluminium for beams, columns, and other load-bearing components.
Shell/Skin	Brickwork and window frames can be reused. Investigate the viability of insulation materials made from recycled or renewable sources, such as recycled glass, denim, or cellulose.
Services	MEP equipment to be sent for disassembly for recycling parts and components. Plumbing fixtures and piping to be made from recycled metals or plastic composites.
Space	Investigate flooring materials made from recycled content, such as carpet tiles with recyclable backing or reclaimed wood. Use low-VOC paints and finishes to improve indoor air quality and facilitate future renovations without harmful off-gassing.
Stuff	Recycling and reuse strategies will form part of the Home User Guide. Encourage residents to adopt sustainable consumption habits and provide resources for recycling and repurposing unwanted belongings.
Construction stuff	Source construction materials and products from manufacturers with established recycling programs or take-back initiatives. Circular economy principles will be a fundamental criteria in the contractor's tender.
Summary	The potential for reuse and recycling will be considered on all material choices and specifications.
Challenges	Lack on continuity of strategies planned at post-construction and measures taken at the end of life.
Who and when	All parties during concept design and technical design stages.
Plan to prove and quantify	A Sustainable Procurement Plan will be developed and will be reviewed with contractor during pre- construction supply chain engagement. Keep detailed records of all materials used in the construction, including their recycled content, certifications (such as FSC for wood products), and sustainability attributes. Use tools such as Environmental Product Declarations (EPDs) or Material Safety Data Sheets (MSDS) to provide quantitative data on the environmental impacts and recyclability of materials.

Reporting forms

A Bill of Materials is located in Appendix 1, and an estimated circularity by material can be found in the table below.

In addition to this, a Site Waste Management Plan and an Operational Waste Management Plan will be produced to inform the recycling and waste management processes. A Waste & Recycling Reporting Form (as per GLA's guidance for Circular Economy Statements) could not be completed at this stage, as the demolition or main contractors have not yet been appointed.

A Whole Life Carbon (WLC) Assessment has been carried out in line with the new London Plan Policy SI2 for the proposed development (please refer to separate report). The OneClick LCA tool was used for the assessment and the values below were also obtained from the analysis.

The below circularity figures are based on the preliminary assessment carried out using OneClick LCA, which will continue to be monitored and refined in the next design stages.

Estimated circularity by key material type – output from OneClick LCA

Result category	Total kg	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials returned %	Circularity %
Concrete	30,178,606.34	94.59	5.41		100.0		50.0	27.71
Metal	1,756,097.79	16.54	83.46			100.0	100.0	91.73
Bricks and ceramics	968,296.6	100.0	0		100.0		50.0	25.0
Gypsum-based	862,634.8	86.93	13.07	16.49	12.4	71.11	77.31	45.19
Insulation	321,660.85	68.81	31.19	53.76	46.24		23.12	27.16
Glass	175,000	100	0			100	100	50
Wood and biogenic	745,835.04	0	108.88		100.0		50.0	79.43
Earth masses and asphalt	6,731,033.06	99.91	0.09	93.78	5.78	0.44	3.33	1.71
Other materials	764,172.78	93.25	6.75	59.55	12.44	28.01	34.23	20.49

Circular economy narrative

Minimise material quantities

The proposal adopts a design approach that focuses on material resource efficiency – a leaner concept with less material demand will also reduce the amount of waste produced in the construction process, without compromising the design concept.

For waste reduction, measures to minimise of excavation, simplify and standardise materials and components of choice, and dimensional coordination have all been considered.

The massing, scale, urban form and layout of the Uxbridge mixed use development proposal responds to its immediate neighbouring context as well as broader context along Uxbridge High Street, considering upcoming development. The materiality of the new blocks respond to the existing character of the townscape, with an improved appearance through the creation of views through an active retail high street.

Minimise fuels, land & water

The Uxbridge mixed use development will be designed for energy and water efficiency in operation. Construction processes will prioritise fuel and water conservation, including delivery and storage logistics, for example. The proposed scheme will be built upon a previously developed site which will minimise disruption to the existing landscape and optimise use of London's limited resources. In addition to that, the scheme will endeavour to reuse and recycle building materials and components from the existing buildings, mostly off site, as detailed in the Pre-demolition audit (found in Appendix 3).

Specifying & sourcing materials

This involves designers and contractors collaborating for optimum results and includes reference to green sourcing guides like Greenspec and Green Guide. Specification priority will be given to locally sourced, high recycled content materials and products with EPDs.

The choice of materials and colour for the Uxbridge mixed use development is arranged in a way that unified the facades through design and composition, whilst enabling each building to develop its own character and function as a stand-alone piece of architecture. The co-living block facades employ a primarily brick texture with the hotel using composite cladding with textural variation.

Design for longevity, adaptability / flexibility and reusability

The strategic approach GLA decision tree directed attention towards designing for adaptability and longevity for this regeneration development.

Key exposed building elements have been designed to limit degradation from environmental factors such as solar radiation, wind and temperature variations. A disassembly guide will be produced to indicate how deconstruction and recoverability of materials could be maximised at the end of their life.

Very durable materials have been chosen to optimise the lifespan of the building and mitigate against the need to replace materials. The structural frame will be designed for a design life of 50 years. The design also offers flexibility for future adaptation, such as resizing or reconfiguring apartment layouts and being able to accommodate additional M&E kit, if required.

Non-load bearing internal partitions allow the internal layout to be modified in line with needs changes, as demonstrated within the 'adaptability' section within the Design & Access Statement.

Recoverability

In a circular economy, the value of products, materials and resources is maintained in the economy for as long as possible, while waste generation is minimised. An end-of-life strategy has been included in this report, assessing the percentage of materials that can be recovered or returned.

Design out waste

Implementing the 'building in layers' approach, the design objective for the elements with longer life cycles (more than 25 years) is to design for longevity, adaptability and flexibility. Building layers with shorter life expectancy (less than 25 years) will be designed for ease of maintenance, reuse and recoverability. The plant will be made accessible for replaceability and maintenance.

Manage waste sustainably and at the highest value

Guided by the waste hierarchy and in association with the waste capacity report, the site waste management plan and operational waste management strategy ensure optimum management and auditing of demolition, construction and municipal waste.

The operational waste strategy has been developed in line with the London Plan, the London Borough of Hillingdon requirements and the waste hierarchy to be both efficient and convenient.

Both the co-living waste stores have been designed to minimise the number of collections per week through rotation of eurobins. Along with this, the management staff will manage, monitor and record the use of recycling, waste and food containers. When poor recycling is noted, information will be circulated to all occupiers to be made aware of what materials can be recycled. Whilst the operator of the hotel is not yet confirmed, it is anticipated that they will have daily servicing as part of their logistics management.

Waste provisions for the various areas of the building will meet the minimum requirement to have at least three waste streams: general waste, dry recycling and food waste/composting. Clear communication with the end user will be key to facilitate recycling during operation. This will be in the form of non-technical building user manuals, as well as enforced by dedicated property management personnel.

Supporting information, such as the Design & Access Statement and the Planning Statement, note that waste will be collected and managed in accordance with all relevant legislation and guidance, and it is anticipated that operational waste will mainly comprise household and recyclable materials. The proposed commercial uses are not considered to give rise to unusual volumes of waste. Further information can be found within the Design and Access Statement prepared by CGL Architects.

05. Circular economy targets

Circular economy targets for existing and new development	Policy Requirement	Target Aiming For (%)	Policy Met?	Explanation (How will performance against this metric be secured through design, implementation and monitoring?)
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	100%	Exceeds Policy	As described within the SWMP, the segregation of different waste streams for recycling will be carried out during demolition, focussing on circular economy principles to reduce, reuse and recycle wherever possible. Latest estimates by the demolition contractor is that 100% will be diverted from landfill.
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.	95%	Yes	The scheme will aim for zero avoidable waste. At this moment, as a construction contractors is not yet appointed, we cannot estimate the total sum of excavation waste, but can ensure that at least 95% will be diverted from landfill.
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%	Yes	At this moment, as a construction contractor is not yet appointed, we cannot accurately estimate the amount of waste generated, but can confirm that at least 95% of construction waste will be diverted. The amount of construction waste listed on the Recycling and Waste Reporting table was estimated based on the targeted BREEAM credits under Wst 01, in line with the pre-assessment carried out by Ridge.
Municipal waste	Minimum 65% recycling rate by 2030.	65%	Yes	Waste calculations within the refuse strategy section in the DAS predict that the current recycling rate for the co-living is 49% and the scheme will aim to increase this to 65% by 2030. The Hotel recycling rate is estimated at 50%, and will aim to increase this to 75% by 2030.
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.	21%	Yes	The Whole Life-cycle Carbon Assessment prepared by Ridge estimated that 21.25% of building materials will be comprised of recycled/reused content.
Additional requirements	**Policy Requirement**	**Please acknowledge acceptance for a planning condition**		**Please set out an indicative timescale and responsible party for the provision of this information**
Post-Construction Report	A CE Statement is required at post-construction (i.e. upon commencement of RIBA Stage 6 and prior to the building being handed over, if applicable. Generally, it would be expected that the assessment would be received no more than three months post-construction)	It is accepted that the Post Construction Reporting will be conditioned		The Sustainability Consultants will submit the Post-Construction CES no later than 3 months post-construction.

06. Implementation strategy

Post-planning at detailed stage design

A Site Waste and Resource Management Plan (SWMP/RMP) has been prepared and will be implemented by the contractor including procedures and commitments to sort and divert waste from landfill, through either;

- Reusing the material on site (in-situ or for new applications)
- Reusing the material on other sites
- Salvaging or reclaiming the material for reuse
- Returning material to the supplier via a 'take-back' scheme
- Recovery of the material from site by an approved waste management contractor and recycled or sent for energy recovery.

Waste materials will be sorted into separate key waste groups, such as bricks, concrete, insulation, packaging, timber, electricals, plastics, glass, etc., according to the waste streams generated by the scope of the works either onsite or offsite through a licensed contractor for recovery.

Further details to the SWMP will be produced by the construction contractors and will include the target benchmark for resource efficiency. It should also cover the following:

- Procedures and commitments for minimising non-hazardous waste in line with the benchmark
- Procedures for minimising hazardous waste
- Procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste
- Procedures for sorting, reusing and recycling construction waste into defined waste groups, either on site or through a licensed external contractor
- The name or job title of the individual responsible for implementing the above

The plan should be in line with guidance provided by DEFRA, Building Research Establishment (BRE) and Waste & Resources Action Programme (WRAP). Where materials cannot be reused or recycled on-site, the contractor will identify opportunities for potential reuse off-site. Material and waste generated through construction will be stored safely and efficiently, either for reuse on site or removal. Any materials to be reclaimed / reused will be done so in accordance with the WRAP protocol.

The waste reports and records will be reviewed and audited periodically by an appointed Sustainability Champion on site.

Construction

The appointed Construction Contractor will take appropriate measures on site to further reduce the environmental impact of the construction. They will adopt the following:

- The contractor will register with the Considerate Constructors Scheme and aim to attain a high score in all categories
- Energy-efficient equipment, services and construction methods will be adopted to reduce energy consumption.
- Water use will be minimised during operation, installation and construction processes
- Energy including fuel and water use will be recorded on site during the construction process
- Measures will be put in place to mitigate the potential for pollution from the Site to land, air or water including noise and dust
- The main contractor will operate as per the guidelines set by ISO 14001 Environmental Management System (or an equivalent standard) and encourage the same throughout the supply chain
- Strategic planning will be done in advance to minimise transport to and from the Site to reduce greenhouse gas emissions
- The carbon footprint of material transportation should be recorded through Key Performance Indicator (KPI) sheet provided by the Sustainability Consultant.

In line with the BREEAM targeted credits under Wst 01, the construction Contractor will also be required to:

- Provide a compliant Resource Management Plan, targeting non-hazardous waste to be less than 13.3 m3 or 11.1 tonnes per 100m^2 GIFA; and
- Ensure that at least 70% (by volume) of non-hazardous waste generated by the project is diverted from landfill and that 80% (by tonnage) on non-hazardous waste demolition waste generated by the project is diverted from landfill.

A sustainable procurement plan will be produced to ensure the sustainability requirements are captured within the material specification.

Within the inclusion of performance requirements, any deviation from the design that will impact material quantities will need to be approved by the relevant design consultant.

Post-completion

Following project completion, an update to the Detailed Circular Economy Statement will be prepared by the sustainability consultant. This updated statement will detail progress against the targets and commitments, reporting on the outcomes and lessons learned.

Targets will be set during detailed design stages and the Post Completion report will be collated from data obtained during demolition and construction works with the final reporting occurring within three months of handover of the development. The report will be submitted to ce&wastestratement@london.gov.uk as well as the London Borough of Hillingdon within 3 months of completion.

Next Steps

The design team will continue to optimise the design and make informed material specifications decisions in order to further reduce the whole life carbon emissions and increase circularity within the Uxbridge Hotel development.

07. End of life strategy

The final circular economy principle is focusing on the end of the development's lifetime. Using systems, elements or materials that can be reused and recycled will ultimately help in ensuring that waste is avoided, or at least reduced.

The concrete frame ensures longevity and can be adapted for any future uses as the grid sizes have been optimised for flexibility of use in the future.

There is limited opportunity for high-value reuse from the proposed construction type. However, the majority of the building materials, components and products can be recycled at the end of their useful life, and this is summarised below.

Substructure and superstructure

The proposal's flexible design will allow for future changes in use to accommodate different apartment typologies and potential change of use from the hotel to student accommodation, for example. Materials such as concrete and steel can be recovered at end-of-life for reuse and/or recycling.

Unlike the existing structural form, the new structure is robust and will permit future interventions to be considered without the need for demolition.

Façade

Materials such as bricks, glass, steel and other metals can be recovered, reused and/or recycled.

Standardised design and mechanical fixings will be preferred where possible to enable disassembly.

Interior fit-out

The specification of durable and demountable interior fit-out will allow for components and materials to be recovered and reused. Alternatively, the option to share reusable materials with other buildings through web-based material/building components platforms can also be explored.

Building services

The proposed building services will be designed and maintained to prolong their expected service life. The risers have been designed to allow for prefabrication off site and therefore support disassembly. Ease of access will allow building services to be replaced without major disruptions to the buildings.

Building circularity score

One Click LCA Building Circularity tool was used to estimate opportunities for the materials at end of life. The results are based on inputs used for the whole life carbon analysis (see separate WLC Assessment). The material quantities and specification inputs are in alignment with the those prepared by the cost consultant.

It is impossible to predict construction processes, reusable, and recycled value in 60(+) years, however, based on current practices and industry benchmarks applied by the OneClick tool, an estimation is produced by the tool and can be seen in the diagram on the following page.

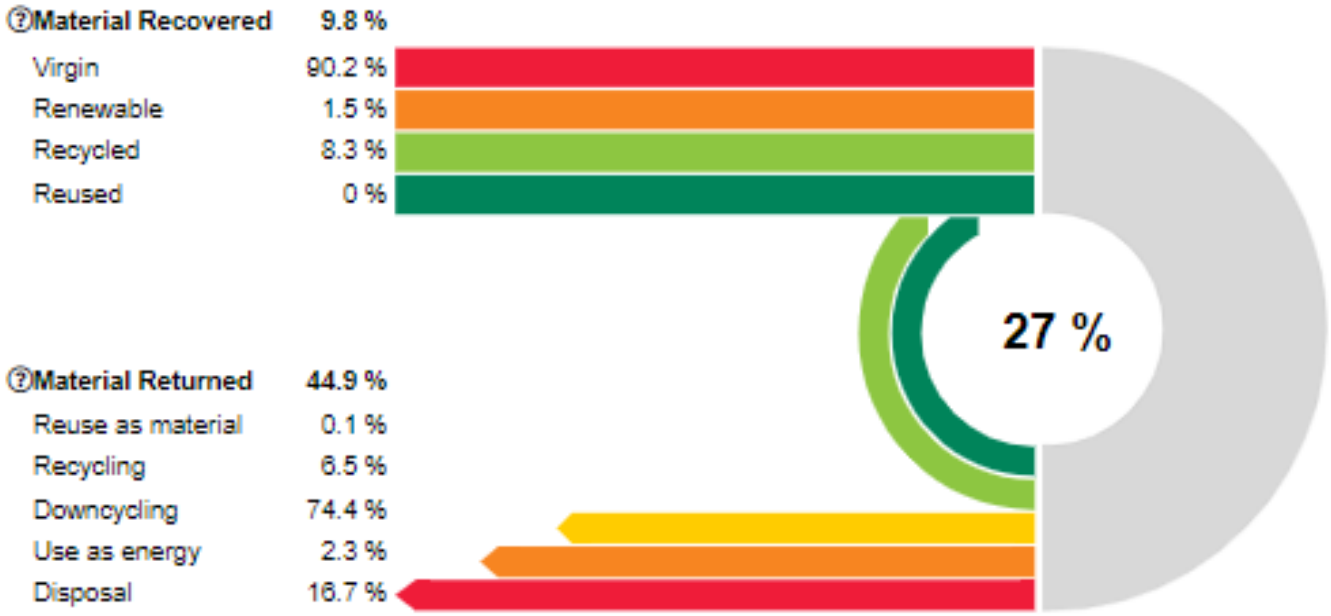
This building's circularity is evaluated in terms of the mass of the recovered building material as compared to virgin material likely

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.

Materials recovered (9.8%) represent 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.

Materials returned (44.9%) 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 products) incineration.

The Building Circularity score, (in this case the 27%) which is shown in the middle, is the average from the materials recovered added up to the materials returned (i.e. (9.8%+44.9%)/2).



OneClick LCA Building Circularity tool results

08. Appendix 1

Bill of materials

Result category	Material quantity kg	Material intensity kg/m² GIA	Recycled content by value %	Reused content by value %	Estimated reusable materials kg/m²	Estimated recyclable materials kg/m²
1 Substructure	22,121,050	1,055	42.9	0		782
2.1 Superstructure: Frame	2,181,729	104	48.4	0		104
2.2 Superstructure: Upper Floors	10,965,206	523	5.09	0		496
2.3 Superstructure: Roof	3,561,590	170	1.65	0		141
2.4 Superstructure: Stairs and Ramps	324,615	15	5	0		15
2.5 Superstructure: External Walls	1,607,553	77	18.45	0		69
2.6 Superstructure: Windows and External doors	299,487	14	0	0		12
2.7 Superstructure: Internal Walls and Partitions	814,951	39	22.68	0		30
2.8 Superstructure: Internal doors	22,990	1	0	0		0
3 Finishes	331,557	16	52.72	0		9.44
4 Fittings, furnishings & equipments	237,651	11	40.47	0		0
5 Services (MEP)	337,538	16	28.72	0		10.89
6 Prefabricated buildings and building units						
7 Work to existing building						
8 External works	1,359,807	65	0.12	0	1.41	39
0 Unclassified / Other						
Total	44,165,725	2,107	21.15	0	1.41	1,710

09. Appendix 2

Recycling and Waste Reporting table

	Total Estimates of Waste			Waste Management Routes						Summary			
				Reuse		Recycle		Other disposal					
Type of Waste	Overall Waste (tonnes)	Overall Waste (tonnes /m2 GIA)	Performance Indicator (Planning Stage Estimate)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Onsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
PRODUCT AND CONSTRUCTION STAGE (MODULE A)													
Demolition Waste	12,351	0.640	3rd Quartile	0%	0%	0%	100%	0%	0%	0%	100%	100%	100%
Excavation Waste	3,600	0.187	2nd Quartile	0%	95%	0%	0%	5%	0%	95%	0%	95%	100%
Construction Waste	2,566	0.133	4th Quartile	0%	0%	0%	95%	5%	0%	0%	95%	95%	100%
USE STAGE (MODULE B)													
Demolition / Strip-out Waste	3,745	0.194	-				100%			0%	100%	0%	100%
Construction Waste	296	0.015	-				100%			0%	100%	0%	100%
	Overall Waste (tonnes /annum)	Overall Waste (tonnes /annum /m2)	Performance Indicator (LPG Appendix 1)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
Municipal Waste	41,660	2.159	4th Quartile	0%	0%	0%	51%	0%	49%	0%	51%	51%	100%
Industrial Waste (if applicable)	-	-	-							0%	0%	0%	0%
MODULE A - MODULE C													
	Overall Materials (tonnes)	Overall Materials (Modules A-C) (tonnes /m2)	-	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
Total Materials	48,199	2,498	-							0%	0%	0%	0%

10. Appendix 3

Pre-Demolition Audit & Site Waste Management Plan

C13131 High Street, Uxbridge

Version: 1

Issue Date: 21st March 2024

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decommission / demolish / decontaminate

CONTENTS

1 Document Status

1.1 Document Authorisation

	Author	Approved
Name	Rob Cooke	Kieran Johnston
Position	Quality & Environmental Manager	Compliance Advisor
Signature		

- This document is classified as a design document for the works described. Before issue and use it must be signed by the author, and after formal review, by a technically competent reviewer.
- Further reviews of this document by other designated persons are also carried out and recorded before this document is issued.
- Note: Electronic versions of this document contain electronic signatures.

1.2 Document History

Review Date	Version No.	Section	Comment / Amendments	Initials
22/03/2024	1		Initial Issue	RJC

- This table records changes to the actual document excluding:
- Training records (section 6.1)
- SWMP routine reviews (section 6.2)
- Close out review (section 6.3)
- Document reviews of the document or updates to the waste management plans.
- Actual waste plans (section 8.1)

1.3 Document Format

- This document has been written to meet the requirements of the Institute of Civil Engineers Demolition Protocol (2008) and BREEAM Wst 01 Construction waste management scheme document 2011.
- It also includes the requirements of The London Plan Guidance – Circular Economy Statements - March 2022.

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1.4 Sign Up

- This section is only used once a contract has been awarded for the actual site works.
- The following table records the site manager signing up to the requirements of this plan.
- Signing the table indicates that the manager understands:
- The way the works are to be done, and why
- The potential environmental issues and how they are being addressed

Date	Name (Print)	Signature

2 General Information

2.1 Contract Name and Number

DSM Contract Number	C13131
DSM Contract Name	High Street, Uxbridge

2.2 Contract Directory

Client	TBD (To Be Determined)
Client's Agent	Savills
Principal Contractor	TBD
Contract Value (approximate)	£ TBD

2.3 Contract Work Details

Contract Address High Street, Uxbridge UB8 1JY.

Scope of Works The scope of the works to date was to carry out a pre-demolition audit of the site. This was to determine if the existing buildings on site could be re-purposed, and if not, the waste quantities that would be produced. This identification of the wastes also included possible disposal routes as high up the waste hierarchy as possible.

Site Description The site is bounded by Belmont Road, Baker's Road, Cock's Walk and High Street. Under the whole of the site is an underground car park that extends under Cock's Walk.

The main buildings form a U shape fronting Belmont Road, Baker's Road and High Street. Retail units are at ground level, and on first floor level, although only W H Smith uses the first floor as a retail area.

Office space fronts Baker's Road as is also situated to the rear of the retail units on Belmont Road. Access to the central service yard and underground car park is via roadways under the office buildings fronting Baker's Road.

Five small flats above the retail units are present on the High Street side of the site. These are accessed from the roof of the retail units via external steel staircases. The entrance to each flat leads to a small hall and a staircase to the floor above.

The central service yard area is the concrete roof of the public car park.

Total Site Area	Approximately 3,600 square metres
Contract Start Date	TBD
Contract End Date	TBD

2.4 Outline Site View

Identified Areas

- Green Outline Second floor flats above ground floor retail units facing High Street.
- Yellow Outline Ground floor rear of retail units facing High Street
- Yellow Outline Ground and first floor retail units facing Belmont Road.
- Red Outline Second floor office space above Ground and first floor retail units facing Belmont Road.

- Blue Outline First and second floor office space above entrance to service yard, underground car park and Cock's Walk.

- Purple Outline Ground floor small retail unit areas and site service area.

3 Audit & Plan General

3.1 Aims

- The aims of this pre-demolition & site waste management plan are to:
- Determine if the existing buildings, or parts of them could be re-purposed.
- Minimise the amount of actual waste sent to landfill.
- Maximise the amount of re-used, recycled and recovered materials.
- Produce waste as high up the waste triangle as possible.
- Maximise the amount of waste re-used on site to eliminate transport impacts.
- Allow the actual performance levels against these planned levels to drive improvement.
- Core to DSM's management is the "Plan – Do – Check – Act" principle that this document forms part of.

3.2 Roles and Responsibilities

Person Responsible for Producing this Document

Rob Cooke

DSM Demolition Ltd

Quality & Environmental Manager

07795 267 961

The author has qualifications and experience in construction and building as well as demolition. Other relevant qualifications held include lead auditor to ISO9001, asbestos surveyor and manger, Diploma in Environmental Management, Practitioner Member of IEMA and a number of WAMITAB waste qualifications.

Similar audits carried out recently include sites at Great Ormand Street Hospital, Coventry University, GKN Kings Norton, Wing Yip, Birmingham.

The following sections are only used once a contract has been awarded for the actual site works.

Person Responsible for Implementing the SWMP

TBD

Site Waste Champion

TBD

Site Manager

TBD

3.3 Records

- This section is only used once a contract has been awarded for the actual site works.
- A paper copy of this document will be held on site by DSM.
- An electronic copy of this document will be held at Arden House by DSM.
- Actual waste tickets will be held on site for a short period of time, before being sent Arden House for verification and the details entering onto DSM's systems. Waste tickets are retained at Arden Road for periods in excess of the legal required period in accordance with DSM's General data Protection Records mapping. Actual tonnages of waste are only known once loads reach their destination and this information is issued sometime later to Arden Road and not site.
- Summary record sheets of all tickets will be kept on site, see section 7.

3.4 Declaration

- This section is only used once a contract has been awarded for the actual site works.
- DSM undertakes to take all reasonable steps to ensure our duty of care obligations regarding all waste matters are taken.
- DSM has KIPs and objectives to maximise waste recovery and minimise any associated impacts, such as the carbon footprint from our works. These principles apply to this and all of our works.

Name

Signature (hard copy)

Date

4 Pre-Demolition Audit

4.1 Procedure

- During the pre-site works stage of the contract the nature and quantity of the various component parts of the structures was determined. This determination is carried out to both quantify the various material types and to identify the optimum recycling routes to minimise the amount of actual waste going to landfill. The reported quantities were calculated by measuring the area of the component parts and estimating the thicknesses and densities of the item, based on experience.

- The audit was carried out by the author of this report and DSM's Compliance Advisor on the 18th and 19th March 2024.

- Due to being in use some areas of the site were not fully investigated.

4.2 Waste Hierarchy

- The waste operations on this site have been designed in accordance with the waste hierarchy.

Most Favoured Option **Prevent** Project design removes structure and changes site use	Survey has determined re-use of structures not viable.
Reduce Lowering the amount of waste produced	By legal definition all materials handled are waste
Reuse Using materials repeatedly	Minimal possible re-use of materials identified
Recycle Use waste to make new products	Largest end use of the wastes produced
Recovery Recovering energy from the waste	None planned, but transfer stations used may dispose of some sorted residue this way.
Landfill Safe disposal of waste to landfill **Least favoured Option**	A small proportion of waste may go to landfill if no other viable option exists

Prevention

- This option is not applicable to the scheme overall as the existing buildings are of a style and condition that are no longer viable.

- Subject to the new use of the site it may be possible to retain some elements of the underground car park's walls. However, the number and position of columns and beams together with the low soffit height of 2.4 metres makes complete re-use unlikely.

Re-Use

- The nature of the construction eliminates large scale re-use of any components. Most internal decorative finishes such as carpets, fibreboard suspended ceiling panels and in poor condition not suitable for re-use commercially.

- Whilst some materials, such as plasterboard and fibrous ceiling tiles have manufacturers' take back schemes they only accept new materials from construction sites not used materials from demolition sites. Taken back materials are not re-used but recycled.

Recycling

- The majority of the material forming the structures will be recycled. The two largest waste streams undergoing this processing have been identified as:

- Concrete and Brick — Recycled into secondary aggregates
- Steel – predominantly reinforcement — Placed in the scrap metal re-processing industry

- The crushing of the concrete and brick may be carried out on site or off site at a suitably permitted facility.

- For other waste types, streaming and sorting will be carried out both on site and off site at transfer stations. Modern technologies allow transfer stations to recover a greater proportion of materials than simple sorting on site can achieve. In addition, sending single mixed loads rather than several small loads of different waste streams can reduce the carbon footprint of the associated transportation.

Recovery

- None of the waste removed from site will be directly recovered for use as an energy source. A proportion of the residual waste materials sorted at the selected waste transfer station may be disposed of by this route. Such materials would include poor quality timber, fibrous tiles etc.

Disposal

- A proportion of waste may be disposed to landfill as no viable other option exists. Falling into this category will be any identified asbestos containing materials.

4.3 Identified Site Waste Quantities

- The quantities of the various wastes which will be produced from this site are contained in this section and also in the overall table, given in section 8 of this document.

Underground Car Park (and building ground floor slabs)

- Some or all of this element may be able to be re-purposed.
- Figures based on assumptions and site measurements:
- Base slab area approximately 3,600 square metres.
- Yard and building slab area approximately 3,450 square metres.
- Perimeter approximately 250 metres.
- Car park slab to soffit 2.4 metres

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
Concrete							
Base Slab			0.25	3,600	900	2,400	2,160
Columns etc	10%				90	2,400	216
Total					990		2,376
Re-bar	120 (kg/m^3 of concrete)						119
Yard Slab			0.35	3,450	1,208	2,400	2,898
Beams etc	15%				181	2,400	435
Total					1,389		3,333
Re-bar	200 (kg/m^3 of concrete)						278
Perimeter Wall	250	2.4	0.6		360	2,400	864
Re-bar	200 (kg/m^3 of concrete)						72
WEEE							
Lights etc							1
Total Concrete	100% recycled into secondary aggregates						6,573
Total Steel	100% open loop recycled.						469
Total WEEE	100% open loop recycled.						1

	
Dropped area for escalator motor	Smoke outlets into Cock's Walk
	
General view	Ramp into and out of car park

- The car park is little used with a difficult layout of columns and parking spaces. Pedestrian access from the High Street is via a narrow staircase that is clearly used as a public convenience.

Building Roofs

- All the roofs are flat and appear to have a mastic asphalt finish.
- The structural element of all the roofs able to be inspected was a concrete slab with no down stand beams.
- It appears the roofs are "warm roofs" and therefore between the surfacing and concrete slab there would be a layer of insulation and a separation membrane.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
Concrete							
Belmont C.				835			
Baker House				691			
Flats				258			
Ground Floor							
Rear of Shops							
High Street				450			
Baker's Road				240			
Cock's Walk				85			
Total			0.20	2,559	512	2,400	1,228
Re-bar	120 (kg/m^3 of concrete)						61
Mastic Asphalt			0.02	2,559	51	2,350	120
Board Insulation			0.05	2,559	128	120	15
Total Concrete	100% recycled into secondary aggregates						1,228
Total Steel	100% open loop recycled.						61
Total Surfacing	50% open loop recycled.						136

	
General view of a roof	General view of a roof

	
Signs of water damage from roof leak	Signs of water damage from roof leak

- It is probable that the roofs do not meet current insulation standards and they are clearly in need of some maintenance in places.
- From experience we have assumed only 50% of the waterproofing and insulation material will be recycled as in practice separating the component layers can prove difficult.
- No allowance has been made for water saturation in the insulation layer.

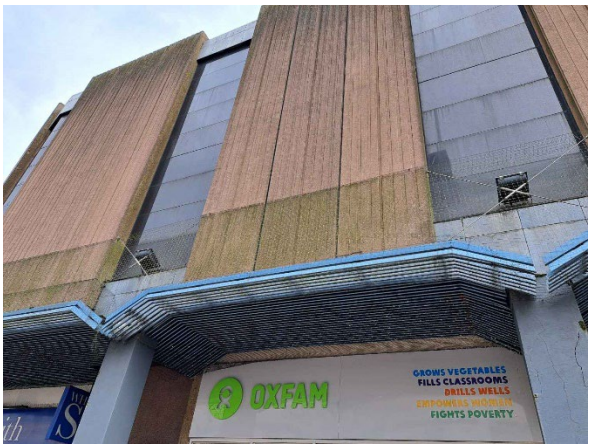
Main Facade

- Along the elevations with the retail units the upper storeys overhang the shop fronts. The depth of overhang is larger on The High Street than on Baker's Road.
- The shop fronts are all of aluminium and glass curtain walling.
- Above the shop fronts the façade is a mixture of large decorative concrete panels. These are all approximately 6 metres high and either 1.1 or 2.2 metres wide. The mean thickness of 0.1 metres was estimated from the visible edges.
- No access to the connection details could be accessed but it is almost certain they are fixed to the top of edge beams.
- Between the concrete panels recessed tinted glass panels are present, which has been assumed to be double glazed.

Element	Dimensions						
	Width (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
Single Panels	1.1	6.0	0.1	6.6	0.66	2400	1.6
53 Number					35	2,400	84
Double Panels	2.2	6.0	0.1	13.2	1.32	2400	3.2
18 Number					24	2,400	57
Total					59		141
Re-bar	120 (kg/m^3 of concrete)						7
Glass 2 Panes	40	6.0	0.008	240	1.92	2,500	4.8
Total Concrete	100% recycled into secondary aggregates						141
Total Steel	100% open loop recycled.						7
Total Glass	100% recycled into glass / secondary aggregates						5

Corner of Bakers Road and Belmont Road

High Street

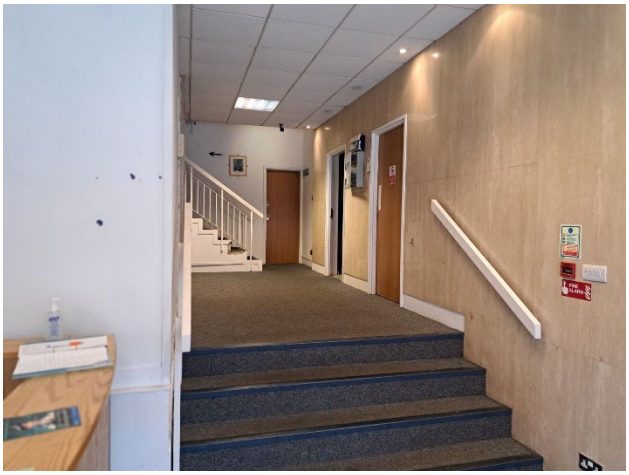
	
High Street	High Street

- No evidence of deterioration of the concrete was noted during the survey.
- The detail at the base of the panels and recessed glass has obviously caused issues due to pigeon roosting as shown by the bird netting.

Bakers House

- A two-storey office block accessed from a small ground floor lobby containing a reception desk, storeroom, small office, stairs and a non-working lift to the upper floors. The lift is accessed up a short flight of steps.
- The first floor over sails the entrance to the service yard and Cock's Walk. The top two floors share a party wall to another building bordering Cock's Walk.
- A small plant room is situated on the roof containing a gas fired central heating system and a lift motor room.
- The second floor is used by a church group for their services. We understand they initially used Belmont Chambers but relocated here due to problems of heating their meeting room.
- The soffits over Cock's Walk and the entrance to the car park / service yard have a decorative textured finish. It does not appear to be thick enough to contain a layer of thermal insulation.
- The concrete slabs are all cast in-situ concrete with no down stand beams.
- Concrete columns are on approximate six by five metre grid.
- Soft strip estimated visually
- Mixed metals includes items such as window frames, heating systems, lift equipment, ceiling grids etc.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
1st Floor Slab			0.3	345	104	2,400	248
2nd Floor Slab			0.3	341	102	2,400	246
Plant Room Slab			0.3	30	9	2,400	22
Columns etc	10%				21		
Total					236		516
Re-bar	200	(kg/m^3 of concrete)					47
Brickwork							
Ext. Walls	66	5		330			
Less Windows	35%			116			
Cavity Wall			0.205	215	44	1,850	81
Internal walls	15.0%		0.103	32	3	1,850	6
Total					47	1,850	87
Glass							
Single Pane			0.004	116	0.5	2,500	1
Mixed Metals							2
Soft Strip							3
WEEE							1
Total Concrete	100% recycled into secondary aggregates						516
Total Brickwork	100% recycled into secondary aggregates						87
Total Steel	100% open loop recycled.						47
Mixed Metals	100% open loop recycled.						2
Total Glass	100% recycled into glass / secondary aggregates						1
Total Soft Strip	185% open loop recycled.						3
Total WEEE	100% open loop recycled.						1

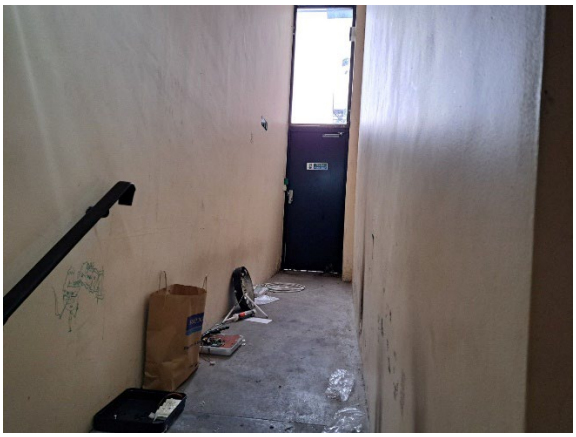
	
External rear of building	Oversailing soffit
	
Ground floor lobby	Second floor landing
	
Church meeting area on second floor	Lift motor in roof top plant room

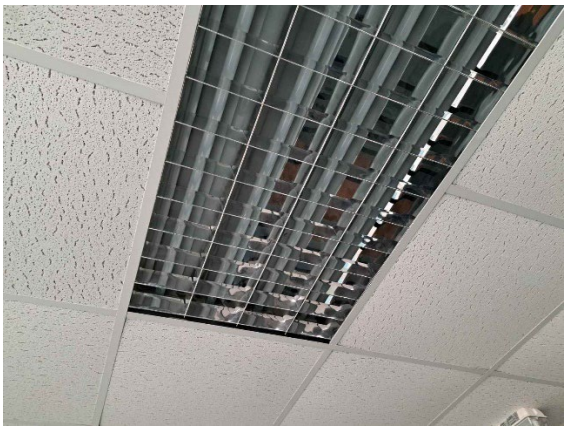
- Dated office accommodation. First floor open Plan, second floor part divided into offices with mixture of brick walls and stud walls.
- Disabled access is poor.

Belmont Chambers (Gazette House)

- A single storey office block above the retail units on Belmont Road. Access from a very narrow lobby on Bakers Road.
- The lobby leads by stairs to a pedestrian doorway (sealed) into the below ground car park and up to the offices at second floor level.
- The stairwell can also be accessed from Bakers House forming a shared fire escape.
- No lift serves the office area.
- The office area is “L” shaped with the small base of the “L” containing toilets and kitchen. The office itself is predominantly open plan with a few smaller offices formed with stud walls.
- The only windows in the walls are in the elevation overlooking the service yard. The roof contains a number of skylights.
- The office area is used by a church group and their equipment, and chairs are present.
- The concrete slabs are all cast in-situ concrete with no down stand beams.
- Soft strip estimated visually
- Mixed metals includes items such as window frames, heating systems, lift equipment, ceiling grids etc.
- The office block is completely empty.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
2nd Floor Slab			0.3	833	250	2,400	600
Lobby Area	5%				12	2,400	30
Total					262	2,400	630
Re-bar	200	(kg/m^3 of concrete)					52
Brickwork							
Ext. Walls	47	5		235			
Less Windows	10%			24			
Cavity Wall			0.205	212	43	1,850	80
Glass							
Single Pane			0.004	116	0.5	2,500	1
Mixed Metals							4
Soft Strip							4
WEEE							1
Total Concrete	100% recycled into secondary aggregates						630
Total Brickwork	100% recycled into secondary aggregates						80
Total Steel	100% open loop recycled.						52
Mixed Metals	100% open loop recycled.						4
Total Glass	100% recycled into glass / secondary aggregates						1
Total Soft Strip	185% open loop recycled.						4
Total WEEE	100% open loop recycled.						1

	
Main entrance to Belmont Chambers	View to Bakers Road from entrance area
	
Exit to underground car park	Exit to service yard
	
End nearest entrance	End nearest flats

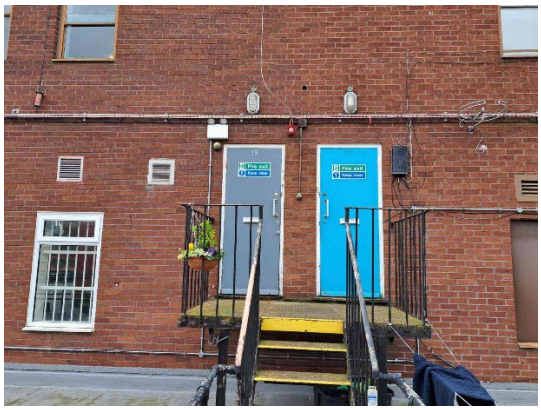
	
Exposed fluorescent tube lighting throughout	Skylight

- Dated office accommodation. Poor access via narrow stairs on shared fire escape with Bakers House.

Flats

- There are five flats at second floor level above the shops facing The High Street.
- The flats all appear occupied and therefore no access internally was able to be made.
- Access to the flats is via an external steel staircase from the service yard onto the ground floor rear section of the shops. The flats then have sets of short external steel stairs to the front doors. Behind each door an individual set of stairs leads to the second floor flat. The stairs are isolated from the retail units first floor spaces.
- Each flat has a single skylight towards the High Street end.
- The area at the Cock's Walk end of the flats, and at first floor level, appears to be communal areas, possibly with a linked fire escape route to all of the shops. An allowance for this area has been made in the calculation of arisings.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
2nd Floor Slab	Concrete		0.3	258	77	2,400	186
Re-bar	200	(kg/m^3 of concrete)					15
Brickwork							
Ext. Walls	36	5		180			
Less Windows	5%			9			
Internal Walls	42	5		210			
Cavity Walls		4.875	0.205	381	78	1,850	144
Internal Walls	78	5	0.103	390	40	1,850	74
Total							218
Glass							
Single Pane			0.004	116	0.5	2,500	1
Mixed Metals							1
Soft Strip							3
WEEE							1
Total Concrete	100% recycled into secondary aggregates						186
Total Brickwork	100% recycled into secondary aggregates						218
Total Steel	100% open loop recycled.						15
Mixed Metals	100% open loop recycled.						1
Total Glass	100% recycled into glass / secondary aggregates						1
Total Soft Strip	185% open loop recycled.						3
Total WEEE	100% open loop recycled.						1

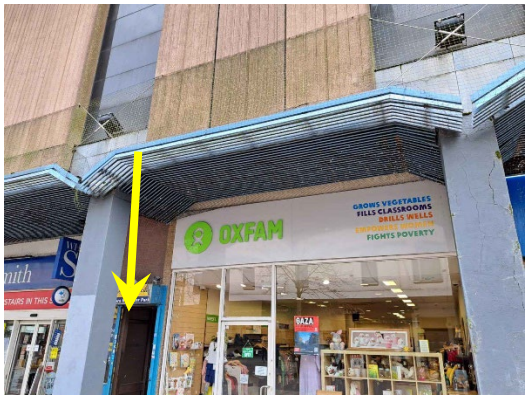
	
Stair from service yard to shop rear roof	Steps to flats from shop roof
	
Communal area for shops	

- No information is available on the interior of the flats.

High Street Shops

- There are five shops facing onto The High Street. Apart from unit 1, Greggs, all of the shops have a first-floor area, but only unit 7, W H Smiths, uses it as a retail area.
- The units and shops are:
  - Unit 1 Greggs
  - Units 2 & 3 Halifax Bank
  - Units 4 & 5 Card Factory
  - Unit 6 Oxfam
  - Unit 7 W H Smiths (continues into Belmont Road).
- Only the retail area of the shops were inspected. All have fully glazed curtain wall shop fronts.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
1st Floor Slab	Concrete						
Units 2 & 3				109			
Units 4 & 5				107			
Unit 6				55			
Unit 7				589			
Total			0.3	860	258	2,400	619
Re-bar	200	(kg/m^3 of concrete)					52
All Brickwork	(Ground and First Floor)						
Ext. / Party Walls							
Unit 1 -2 / 3	61						
Units 2 & 3 / 4 & 5	36						
Units 4 & 5 / 6	36						
Units 6 / 7	65						
Total	198	4.875	0.205	965	198	1,850	366
Internal Walls	60	4.875	0.103	293	30	1,850	55
Total							422
Glass							
Single Pane	60	4.8	0.010	116	1.2	2,500	3
Mixed Metals							5
Soft Strip							12
WEEE							3
Total Concrete	100% recycled into secondary aggregates						619
Total Brickwork	100% recycled into secondary aggregates						422
Total Steel	100% open loop recycled.						52
Mixed Metals	100% open loop recycled.						5
Total Glass	100% recycled into glass / secondary aggregates						3
Total Soft Strip	185% open loop recycled.						12
Total WEEE	100% open loop recycled.						3

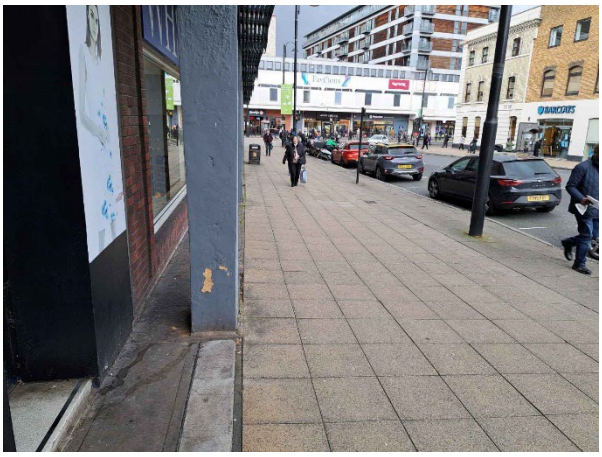
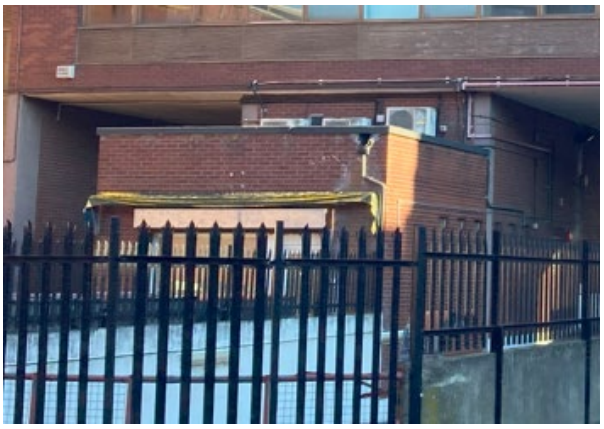
	
Unit 1 Greggs	Units 2 & 3 Halifax Bank
	
Units 4 & 5 Card Factory	Unit 6 Oxfam
	
Stairs to car park between units 6 and 7	Unit 7 W H Smith

- Limited access to trading retail units.

Belmont Road Shops

- There are four shops facing onto Belmont Road and returning onto Bakers Road. W H Smith's retail unit occupies the largest length of the ground floor end of the row of shops at the Junction of the high Street.
- The first-floor areas of some of the shops do not lie over same unit on the ground floor.
- The units and shops are:
    - Unit 8 Eager Fashions
    - Unit 9A Jack and Jills
    - Unit 9B Carpet Centre
    - Unit 10 (26 Bakers Road)
- Only the retail area of the trading shops were inspected. All have fully glazed curtain wall shop fronts.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
1st Floor Slab	Concrete						
Total			0.3	525	158	2,400	378
Rebar	200 (kg/m^3 of concrete)			107			32
All Brickwork	(Ground and First Floor)						
Ext. / Party Walls	150	4.875	0.205	731	150	1,850	277
Internal Walls	45	4.875	0.103	219	22	1,850	42
Total							319
Glass							
Single Pane	65	4.8	0.010	116	1.2	2,500	3
Mixed Metals							8
Soft Strip							20
WEEE							2
Total Concrete	100% recycled into secondary aggregates						378
Total Brickwork	100% recycled into secondary aggregates						319
Total Steel	100% open loop recycled.						32
Mixed Metals	100% open loop recycled.						8
Total Glass	100% recycled into glass / secondary aggregates						3
Total Soft Strip	185% open loop recycled.						20
Total WEEE	100% open loop recycled.						2

	
View down Belmont Road to High Street	Unit 8
	
Units 9A	View down Belmont Road from High Street
	
Unit 9B	Unit 10 (rear)

- Limited access to trading retail units.

Cock's Walk

- Narrow pedestrian walkway with a dog leg in. Runs from High Street to Bakers Road. The footpath is situated over the underground car park, as evidenced by the smoke vents.
- Along the elevations with the retail units the upper storeys overhang the shop fronts. The depth of overhang is larger on The High Street than on Baker's Road.
- The site boundary is formed by a wall with three boarded up kiosks and one trading kiosk operating as a Chinese take away.
- Behind the wall, accessed from the service yard is an open store space and an electrical transformer.

Element	Dimensions						
	Length (m)	Height (m)	Thickness (m)	Area (m^2)	Volume (m^3)	Density (kg/m^3)	Mass (Tonnes)
All Brickwork	31	3.2	0.103	99	10	1,850	19
Mixed Metals							1
Soft Strip							1
WEEE							1
Total Brickwork	100% recycled into secondary aggregates						19
Mixed Metals	100% open loop recycled.						1
Total Soft Strip	85% open loop recycled.						1
Total WEEE	100% open loop recycled.						1

Kiosk 5 – Chinese Take Away

Boarded up kiosks one to four

	
Cock's Walk with smoke escape covers	Cock's Walk under Bakers House

- Walk appears little used probably due to the dog leg in it restricting full vision.

5 Duty of Care

5.1 Waste Carriers

- This section is only used once a contract has been awarded for the actual site works.

- DSM maintains an approved list of registered waste carriers. All waste carriers on the list have the registration details checked using public registers.

- When a waste carrier is selected for entry on the Contract Materials Management Plan spreadsheet the validity of the carrier's registration is automatically checked. This operation is carried out at Head office not site level, where the central records are maintained.

- The Contract Materials Management Plan spreadsheet forms the core record relating to waste, a copy of which completed for this contract is contained in section 8. It gives both the name of the waste carrier and their registration number.

5.2 Waste Disposal Points

- DSM maintains an approved list of permitted waste disposal points. All disposal points on the list have their permit details checked using public registers and copies of full permit condition provided by the facility operator. These are identified from previous contracts carried out in the area, information published by the GLC and industry sources.

- When a disposal point is selected for entry on the Contract Materials Management Plan spreadsheet the availability of the held information is automatically checked. Facilities are not added to the database until they have been checked and approved.

- Due to the variable nature of wastes handled, and the geographical spread of sites, contract specific disposal points are frequently used. The checking of these facilities is carried out at Head Office, not site level, although site staff often propose facilities to use.

- As well as waste facilities with permits some wastes may be taken to sites with exemptions to except waste, for example U1 Exemption to use waste in construction. Such exemptions are verified by DSM as well as being obtained by DSM where applicable.

- The Contract Materials Management Plan spreadsheet forms the core record relating to waste, a copy of which completed for this contract is contained in section 8. It gives the name of the disposal point, the type of waste operation carried out, the recovery rate and the permit / exemption number.

- For clarity where waste carriers or disposal points are changed during a contract any unused carriers or disposal points are no longer shown. The forecast types and individual quantities of waste and recovery rates are not however changed.

- The selection criteria for disposal points includes:
    - Recycling / recovery performance.
    - Previous performance for DSM.
    - Availability / capacity.
    - Distance from site (transport carbon footprint).

5.3 Post Contract Information File

- This section is only used once a contract has been awarded for the actual site works.

- On completion of the contract a Post Contract Information File will be produced. This contains both the information required in a Health and Safety Files and Duty of Care Information as well as details of ancillary operations such as environmental impacts and monitoring.

- DSM's standard policy regarding waste reporting is to issue the final and complete Contract Materials Management Plan spreadsheet together with lists of all individual waste movements by waste type. Details include waste ticket number, mass of waste, carrier and disposal point. Copies of tickets are not issued unless requested due to the very large number of tickets that can be involved.

6 Training and Plan Reviews

6.1 Training

- This section is only used once a contract has been awarded for the actual site works.
- To eliminate the creation of waste where practicable, or maximise the re-use, recycling and recovery of waste that has to be generated it is essential that everybody involved with this project understands the issues.
- To maximise the understanding of waste issues DSM has appointed for this site a Waste Champion, see section 3.2. Their task is to ensure that waste issues are understood by all and that the most appropriate operations are carried out consistently to minimise waste.
- To reinforce this on-site training is given in the following three ways.
- During the site induction that all staff have to attend.
- By routine toolbox talks on the issue of waste (Reason R)
- By toolbox talks where a specific waste issue on site has been recognised (Reason I)
- The table below record the toolbox talks relating to waste given on this contract. Details of the attendees etc to individual toolbox talks are contained within DSM's standard tool box talk records.

Date	Topic	Reason

6.2 Waste Plan Routine Reviews

- This section is only used once a contract has been awarded for the actual site works.
- The actual waste plan, section 8, must be reviewed at least every six months. These reviews will be carried out by the site staff in conjunction with Head Office where all waste data is held. (Actual measured waste tonnages are issued by facilities with invoices direct to Head Office).
- Waste reviews can be requested by site staff or head office staff at any time should an issue be identified.
- The table below is used by site management to record that dates that reviews of this site waste management plan have been undertaken.

Date	Comments / Actions	Initials

6.3 Post Contract Review

- This section is only used once a contract has been awarded for the actual site works.
- This review must be carried out within three months of the completion of the site works and the receipt of all waste details from all receiving sites.
- The review must include:
- Any significant variation between pre-work estimated waste quantities and actual and why.
- Any waste types missing from pre-works estimate and why.
- Any changes to disposal route eg recycled to disposed.

- (change of used facilities are judged valid changes and do not automatically require comment).
- Variation between estimated and actual overall recycling rate.
- Comment on success of the plan.
- Comment on lessons learnt moving forward.
- Review carried out by

Date	Name	Signed

Post Contract Review

7 Waste Movement Records

7.1 Site Waste Records

- This section is only used once a contract has been awarded for the actual site works.
- All loads of waste removed from site will have either a waste duty of care note or a hazardous waste consignment note.
- The site staff check that the waste is being taken to the agreed disposal point and that all notes are correctly completed.
- The top copy of each note is retained and the details entered on a record form, paper or electronic depending on the size of the site. The actual notes and a copy of the record form are sent to Head Office weekly.
- Site records of waste comprise copies of the record form and details issued from Head Office once the individual load weights are known. These are issued to the site on request.
- A copy of the standard waste record form, F365, is given below.

Material Record Sheet (One sheet per carrier / per day)

Contract No				Contract Name					YOU MUST ENTER ONE OF THE DESCRIPTIONS AS BELOW	
Date	Vehicle Reg	Carrier	Destination	Time In	Time Out	Ticket Number	No of Loads / Qty	Material Type	Description Imported / Exported	DSM Employee Signature

001 F365

8 Site Waste Management Plan

8.1 Current Site Waste Management Plan

- The columns labelled forecast contain the pre-demolition waste audit figures and are not changed during the contract works. Also given are the target (forecast) recycling rates for each individual waste stream as well as the proportion of the total waste each waste stream forms. The columns labelled actual give the last, or final, measured figures.
-
- This table also identifies the planned disposal routes, selected to minimise the residual amount of actual disposed waste as well as re-using, recycling and recovering waste as high up the waste hierarchy as possible.
-
- The following pages contain the current version of the site waste management plan. Only the initial pre-works plan and final completed works plan also include the environmental footprint of the works (estimated and actual).
-
- Details of the plans produced for this contract are summarised in the table below.

Date	Version	Details
21 March 24	1	Pre-works baseline site waste audit findings issued

- Previous issues of the plan are retained and are available on request.

Site Waste Management Plan - Pre-Works Forecast Report

Contract Number B13131 **Contract Name** Uxbridge Demolition **Phase Number** n/a

Date of Issue 22 March 2024 **Version Number** 1

99.4	Demolition Index	0.0	Retained Material Index
99.4	Non-Hazardous Demolition Waste Diverted from Landfill (% Weight)		

Total Tonnes

12,351	**All Wastes**	**12,351**	**Demolition Waste**	**0**	**Other Wastes**
0	Hazardous	0	Hazardous	0	Hazardous
12,351	Non Hazardous	12,351	Non Hazardous	0	Non Hazardous

Retained on Site Tonnes

0	**All Wastes**	**0**	**Demolition Waste**	**0**	**Other Wastes**
0	Hazardous	0	Hazardous	0	Hazardous
0	Non Hazardous	0	Non Hazardous	0	Non Hazardous

RRR'd Tonnes

12,276	**All Wastes**	**12,276**	**Demolition Waste**	**0**	**Other Wastes**
0	Hazardous	**0**	Hazardous	0	Hazardous
12,276	Non Hazardous	**12,276**	Non Hazardous	0	Non Hazardous

RRR'D Operations Tonnes

0	**Re-Used Total**	**12,276**	**Re-Cycled Total**	**0**	**Recovered Total**
0	Demolition	12,276	Demolition	0	Demolition
0	Other	0	Other	0	Other

Waste / Material Details				Disposal Point / Source Location Details							Movement Details				
Description	EWC Code	Total Mass Tns	% of Demolition Waste	Details	Postcode	Permit Number		Process Code	Recovery %	RRRd Mass Tns	Carrier Name	Registration Number	Registration Expiry	No. of Loads / Trips	Mean Load Mass Tns
Demolition Waste				**Process / Disposal Codes**											
Non Demolition Waste				RUS Re-Use On Site		RCS Recycle On Site		RE Recover Energy							
Hazardous Waste				RUO Re-Use Off Site		RCO Recycle Off Site		RS Recover Capping etc							
Non-Hazardous Waste				D5 Landfill		D15 Store Prior To Landfill									
Total Mass of Waste		**12,351**					**Total Mass of All Wastes RRRd**			**12,276**			**Total of All Waste Loads Moved Below**	**721**	**17.1**
Concrete	**17 01 01**	**10,271**	**83.2**	-						**10,271**				**570**	**18.0**
		10,271 e		O'Donovan - Markfield	N15 4QF	80317		RCO	100	10,271	O'Donovan	CBDU 116673	Jul-25	570	18.0
Brickwork	**17 01 02**	**1,126**	**9.1**	-						**1,126**				**65**	**17.3**
		1,126 e		O'Donovan - Markfield	N15 4QF	80317		RCO	100	1,126	O'Donovan	CBDU 116673	Jul-25	65	17.3
Steel	**17 04 05**	**735**	**6.0**	-						**735**				**52**	**14.1**
		735 e		EMR Ltd - Brentford	TW8 9HA	80370		RCO	100	735	EMR	CBDU 188448	Aug-26	52	14.1
Mixed Metals	**17 04 07**	**20**	**< 1.0**	-						**20**				**2**	**10.0**
		20 e		EMR Ltd - Brentford	TW8 9HA	80370		RCO	100	20	EMR	CBDU 188448	Aug-26	2	10.0

Site Waste Management Plan - Pre-Works Forecast Report

Contract Number B13131 **Contract Name** Uxbridge Demolition **Phase Number** n/a

Date of Issue 22 March 2024 **Version Number** 1

Waste / Material Details				Disposal Point / Source Location Details							Movement Details					
Description	EWC Code	Total Mass Tns	% of Demolition Waste	Details	Postcode	Permit Number		Process Code	Recovery %	RRRd Mass Tns	Carrier Name	Registration Number	Registration Expiry	No. of Loads / Trips	Mean Load Mass Tns
Soft Strip	**17 09 04**	**42**	**< 1.0**	-						**36**				**7**	**6.0**
		42 e		O'Donovan - Markfield	N15 4QF	80317		RCO	85	36	O'Donovan	CBDU 116673	Jul-25	7	6.0
Glass	**17 02 02**	**14**	**< 1.0**	-						**14**				**1**	**14.0**
		14 e		O'Donovan - Markfield	N15 4QF	80317		RCO	100	14	O'Donovan	CBDU 116673	Jul-25	1	14.0
WEEE	**20 01 36**	**7**	**< 1.0**	-						**6**				**1**	**7.0**
		7 e		O'Donovan - Markfield	N15 4QF	80317		RCO	85	6	O'Donovan	CBDU 116673	Jul-25	1	7.0
Mastic / Insulation	**17 06 04**	**136**	**1.1**	-						**68**				**23**	**5.9**
		136 e		O'Donovan - Markfield	N15 4QF	80317		RCO	50	68	O'Donovan	CBDU 116673	Jul-25	**23**	5.9

11. Appendix 4

Refuse Strategy

Calculations

Through initial consultation with Hillingdon's Waste Services, we have been provided with the draft guidance that is being developed. We have used this guidance to determine the waste storage requirements.

Co-Living

The total waste generated has been calculated according to the adjacent excerpt from Hillingdon's draft guidance. Based upon 320 studios, the anticipated total waste and recycling generated is as follows:

320 studios x (60L recycling + 60L waste) = 38,400 Litres

In addition to refuse and recycling storage, Hillingdon supports the storage and collection of food waste. Initial communication with Waste Services suggested a minimum of one 140L food waste bin in each store. However, with reference to the figures in Table 3, we have proposed a total of 5 food waste bins across the two stores.

The total resultant waster storage volumes are detailed in the table below and utilise 1280L Eurobins for bulk collection. The communal kitchens will have separate bins for waste, recycling and food waste. This will be regularly collected by building management and transported to the communal stores as identified on the following page.

Hotel

The hotel has a refuse store on the ground floor, serving directly onto Belmont Road. Whilst the operator of the hotel is not yet confirmed, it is anticipated that they will have daily servicing, including of waste, as part of their overall logistics management. On this basis, we have provided storage for 4no. 1280L Eurobins; 2 for recycling and 2 for residual waste. This equates to a total storage capacity of 5120L which would provide a weekly capacity of at least 25,600L based on 5 collections per week.

Class E spaces

The ground floor Use Class E spaces will manage waste storage within their own demise, accessed from the street. As the specific use is not yet known it is anticipated that this will be further detailed when occupancy type is known.

5.1.1 External waste storage capacity

Where communal facilities are required (i.e., the dwellings will share central recycling a sack waste bins), Table 2 can be used to calculate the total volume of all black sack wa recycling generated in a week

Table 2: Estimated Waste and Recycling Generated

Size of Household	Number of Bedrooms in Development	Projected Weekly Waste per Household (60L Black sack waste + 60L Recycling)	Waste Produced from all Households
Studio/one bedroom	A	120 litres	A x 120 = W litres
Two bedrooms	B	240 litres	B x 240 = X litres
Three bedrooms	C	360 litres	C x 360 = Y litres
Total Weekly Waste Arising			W+X+Y = Z litres

If there are 5 or more households in a block of flats, bulk bins will be required. The stand bins the Council adopts have a minimum capacity of 1100 litres for black sack waste and re plastic wheelie bins must not be used for flats due to their lack of durability when being li emptied by the refuse collection vehicle. The Council will not be held responsible for any caused to plastic containers whilst being wheeled or emptied.

The minimum required containers can be calculated as below:

$$\text{Number of bulk bins required} = \frac{\text{Z litres (from Table 2)}}{\text{1,100 litres or 1280 litres (Volume of bulk bin)}}$$

Finally, divide this figure by 2 to calculate the number of individual black sack waste and r bins required for the development.

Excerpt from London Borough of Hilingdon's draft Waste Management guidance detailing calculation method for waste storage capacity

5.1.2 Food waste

Food waste has a high environmental cost, as well as a high economic cost to the Council if not recycled. Provision of food waste recycling storage is therefore important and necessary. The Council recommends 140-litre food waste bins inside housing units for communal properties.

Large developments with multiple blocks of flats need to have food waste units in each individual bin store; the required capacity per bin store will depend on the number of flats allocated to it. The food waste storage capacity requirements are listed in Table 3;

Table 3: Food Waste Storage Requirements

Number of dwellings using the bin store	5-20	21-50	51+
Number of food waste housing units required per bin store	1 x communal food waste unit up to 140 litres	2 x communal food waste units up to 140 litres	Contact the Council to agree your required capacity

An email can be sent to recycling@hillingdon.gov.uk for the following details:

- the Council's preferred food waste unit provider
- how to obtain 5L kitchen caddies, caddy liners and literature for residents
- artwork for signage to be displayed in waste storage areas

Where possible, communal food waste units must be located within the waste storage area, next to black sack waste and recyclable waste containers. Clear signage should be installed to signpost residents to the food waste unit.

Excerpt from London Borough of Hilingdon's draft Waste Management guidance detailing calculation method for food waste storage capacity

Refuse Calculations

Coliving

No. of 1280L Eurobins (total requirement in litres)

	Recycling	Residual	Food (140L bins)	Total volume	Total Eurobins
Co-Living Refuse Store A	8 (10240L)	8 (10240L)	2 (280L)	20760L	16 @1280L, 2@140L
Co-Living Refuse Store B	7 (8960L)	7 (8960L)	3 (420L)	18340L	14 @1280L, 3@140L
Co-Living Total	**15 (19200L)**	**15 (19200L)**	**5 (700L)**	**39100L**	**30 @1280L, 5@140L**

Calculations for waste storage capacity for co-living proposals

Refuse Strategy

Arrangement

As detailed in the Delivery & Servicing Plan that accompanies this application, the proposals are to establish 2 loading locations to service the development.

The adjacent diagram highlights the connections and distances between a loading bay on Belmont Road as well as one on Bakers Road. Further details are available in the accompanying transport strategies, and especially the Delivery & Servicing Plan

Management

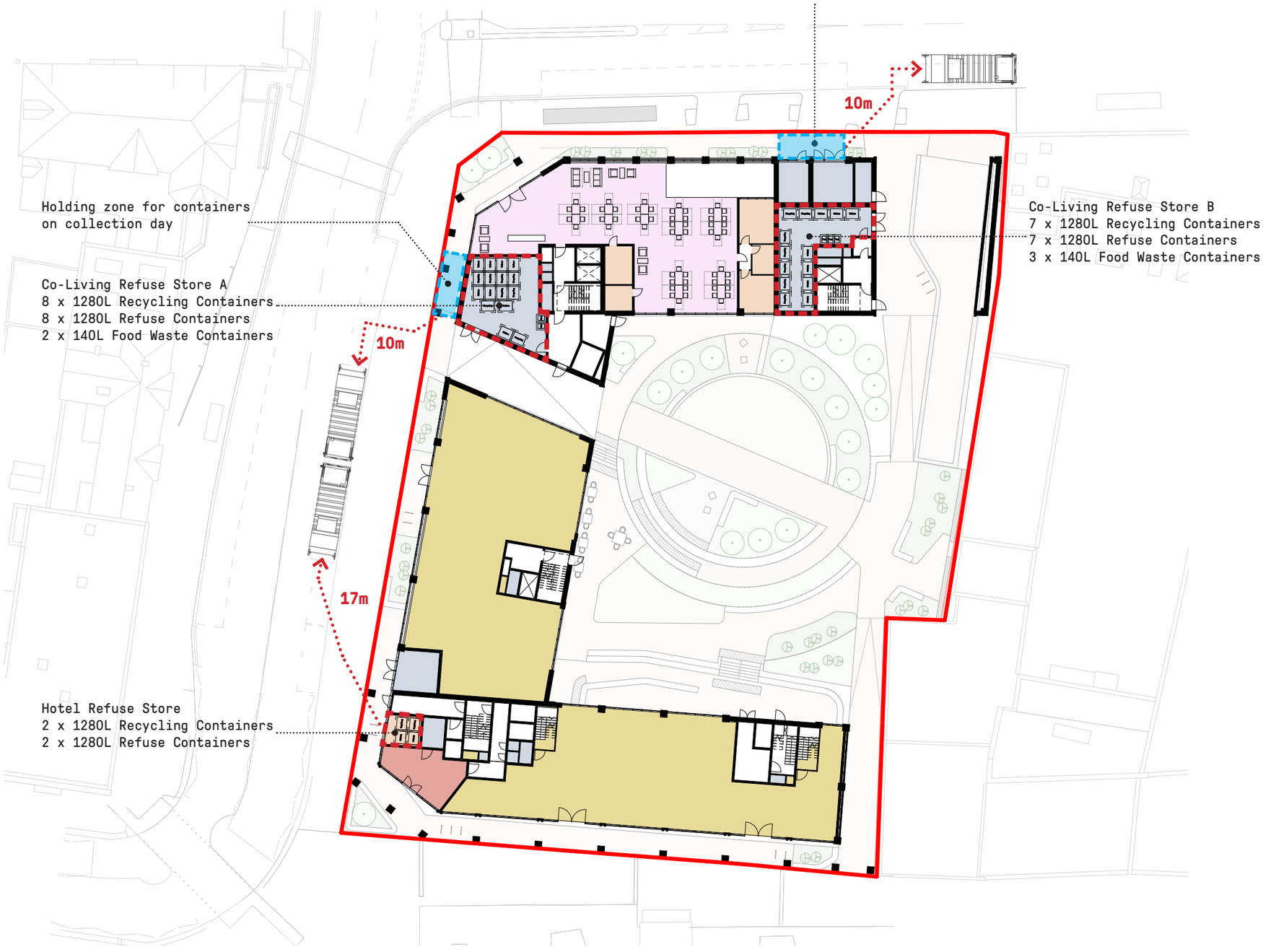
Both co-living stores will require a level of management by the building staff. Refuse Store A has provided a zone for rotation of the eurobins as they become full to assist in minimising the number of collections per week. Whilst refuse Store B may benefit from some rotation of the eurobins, they are all accessible without movement.

As the co-living building has a management staff, it is anticipated that they will manage, monitor and record the use of the recycling, waste and food waste containers. As part of the applicant's wider aspirations, the building management will encourage residents to recycle both dry goods, with separate collection for at least card, paper, mixed plastics, metals and glass; food waste and other waste, responding to the operational performance monitoring that is undertaken.

The management staff will monitor the waste management performance. This will include routine visual checks of the bin storage areas to ensure that all bins collected are returned to the bin storage area and to ensure this area is maintained so as not to cause any environmental nuisance to occupiers. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified. Annual waste reports from the appointed waste collection company will be reviewed to ensure that the waste collected is in line with the recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all occupiers which will include information on what materials can be recycled and the waste streams that can be placed in bins.

Occupiers, alongside the management staff, will explore measures to increase waste consolidation, smart logistics and community-led waste minimisation schemes. The management staff will facilitate greater coordination across occupiers to support these principles.

A full pack of Transport Strategies accompanies this application. Please refer to this for further detail on the proposed transportation strategy for both buildings.



12. Appendix 5

Uxbridge High Street – CE

26 JANUARY 2024

Attendees

Role	Company	Attendee
Architect	CGL	Aaron Down
		James Felstead
Energy, Sustainability, BREEAM and WLC	Ridge	Carl Niland
Circular Economy	Savills	Joanna Conceicao
	Caddick Group	James Edwards
Planning	Savills	Chris Brady
		Ellie Cannon
Project Management	Caddick Group	James Edwards

Contents

Policy Context

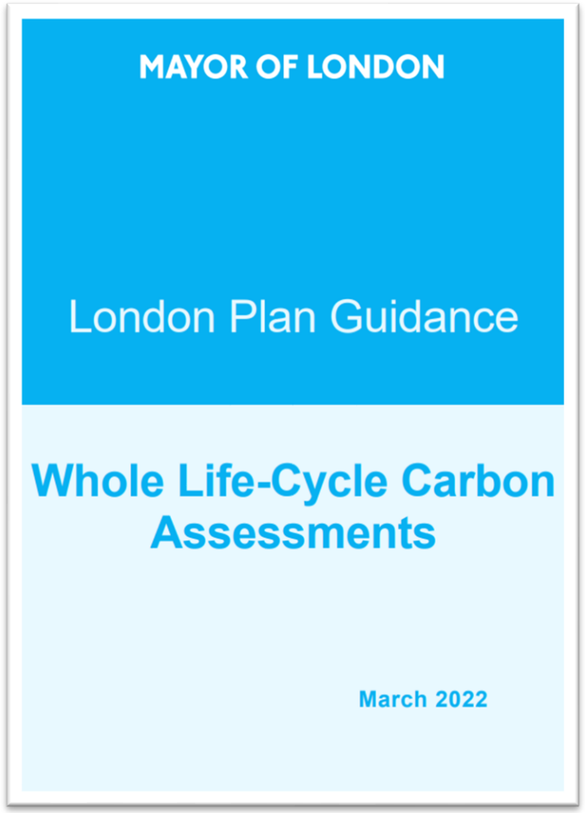
GLA GUIDANCE

GLA DECISION TREE

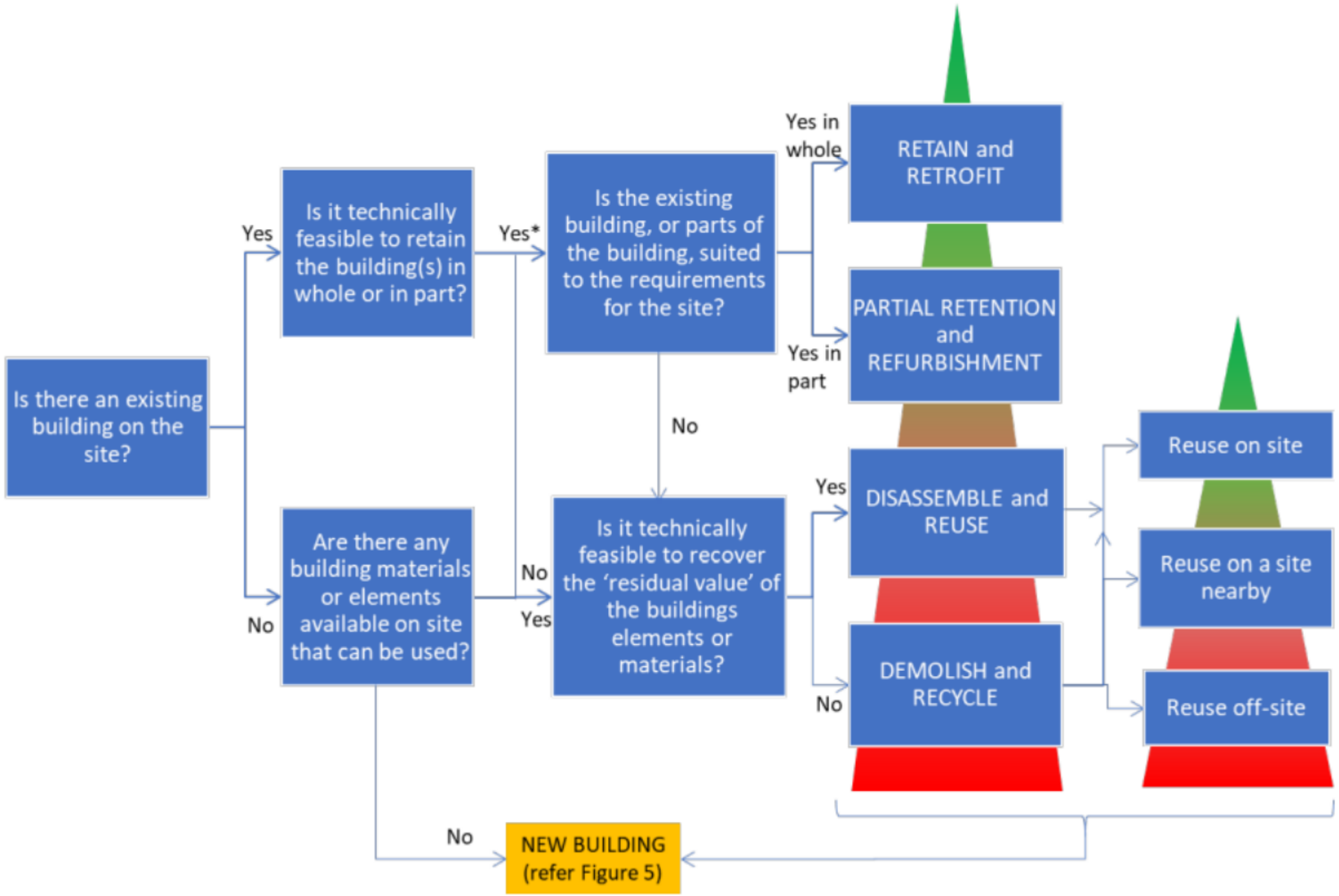
GLA guidance

PRE-APPLICATION STAGE
- Confirmation that options for retaining existing buildings and structures have been fully explored
- An estimate of the percentage of the new build development which will be made up of existing façades, structures, buildings
- CE Principles table & waste reduction targets

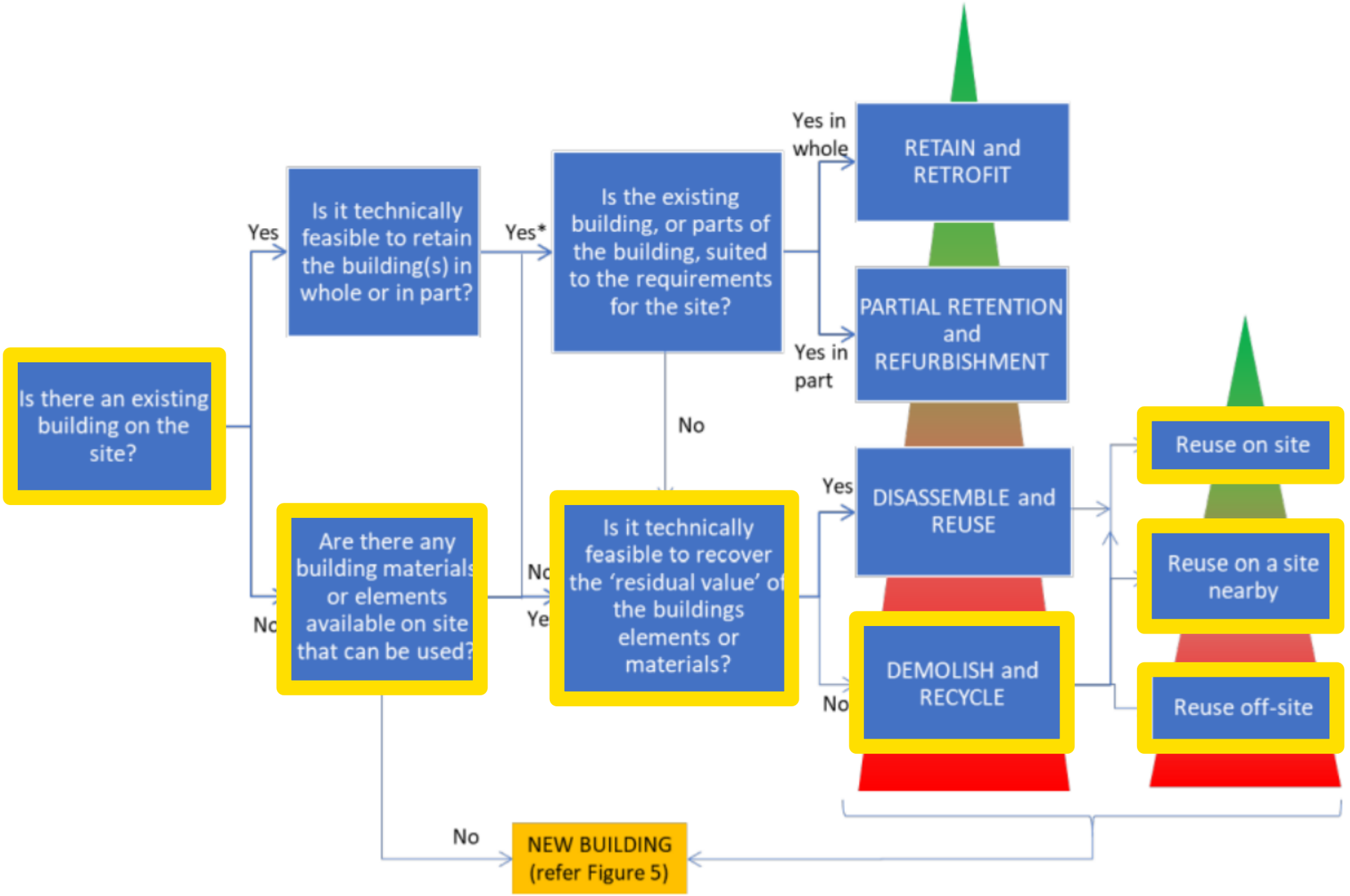
DETAILED PLANNING APPLICATION
- Detailed Circular Economy Statement
- Completion of the 'material quantities and end-of-life scenarios' table covering all building element categories.
- 'Bill of Materials' table and 'GWP of all life-cycle modules' table as part of the Circular Economy Statement



GLA decision tree



GLA decision tree



Circular Economy & Material Use

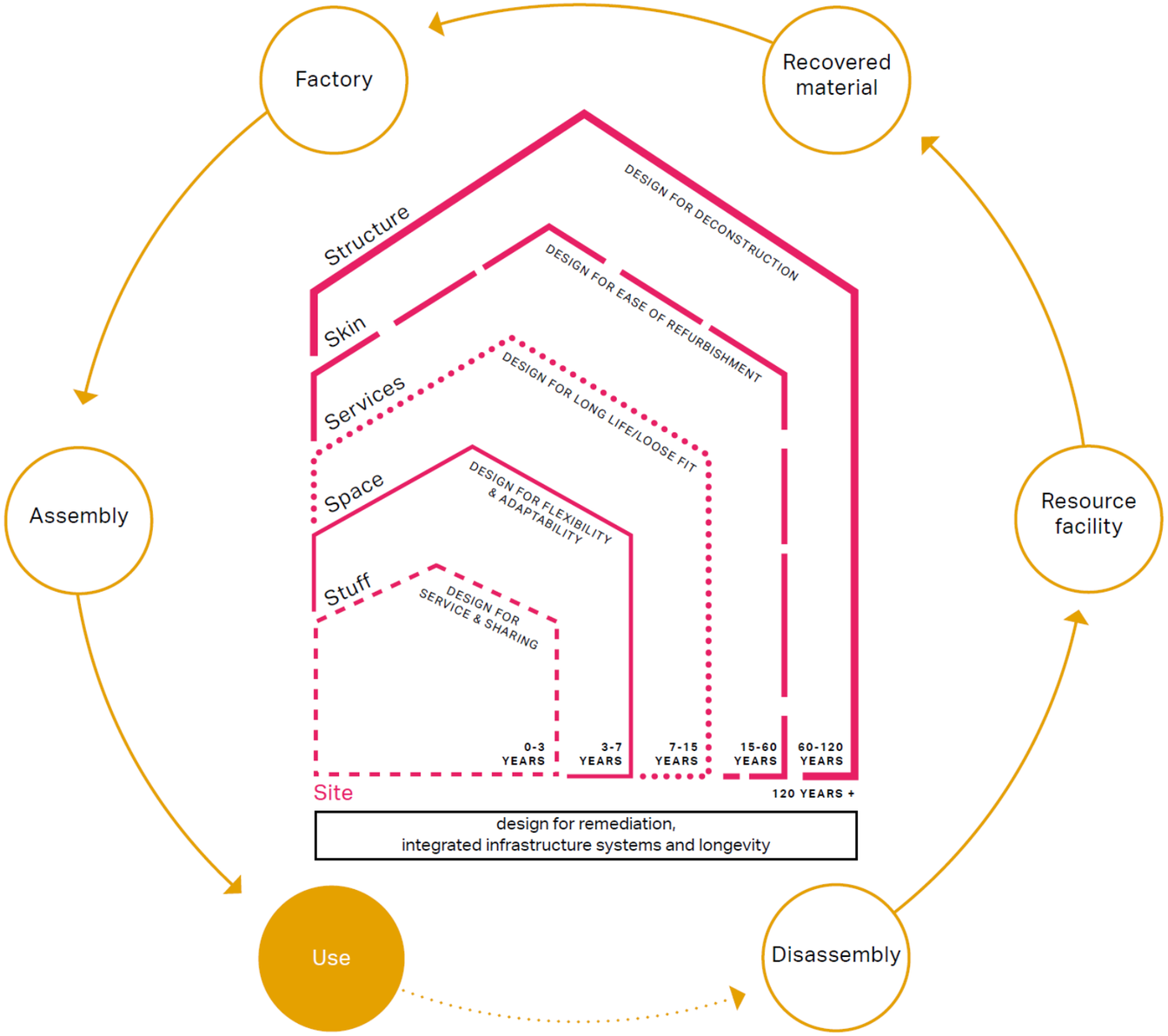
CIRCULAR PRINCIPLES

WASTE MANAGEMENT

Circular principles

Circular Economy Statement for large-scale developments are required to show how these principles were taken into account in the design process:

1. Building in layers
2. Designing-out waste
3. Designing for longevity
4. Designing for adaptability or flexibility
5. Designing for disassembly
6. Use materials/systems that can be re-used and recycled.



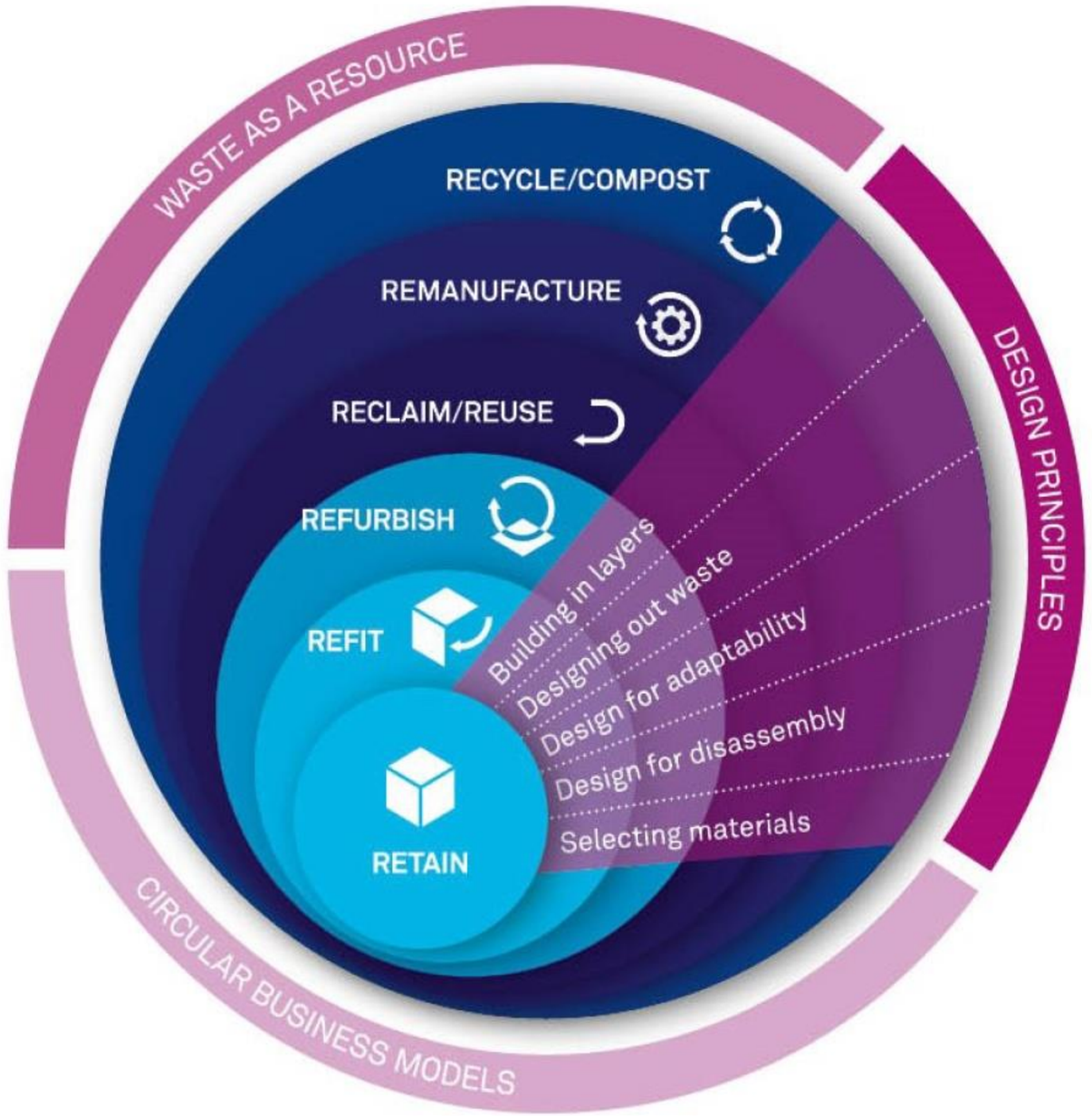
Waste management

Buildings designed for
- Adaptation,
- Reconstruction
- Deconstruction.

Construction and demolition waste:
95% is to be reused/recycled or recovered

Excavation waste: 95% beneficial use

Rethink recycled aggregates – becoming more feasible especially through planned landbanks



Assessment Methodology

CIRCULAR ECONOMY

Circular Economy

Circular Economy Design Approaches

Circular Economy Design Approaches for Existing Structures / Buildings		Applicant Response
Is there an existing building on the site?		yes
Circular Economy Design Approach	**Phase / Building / Area / Layer**	**Strategic Response**
Retain and Retrofit	Existing buildings	Can the existing building be retained/repurposed? Poor quality of accommodation, close to end of life, lota of additions, density not suitable for proposed development **ARCH**
Reconstruct	Existing buildings	Are any elements worth reconstructing? **No arch value, little openings, nit suitable ARCH**
Disassemble	Existing buildings	Wherever possible, disassembly will be prioritised over demolition so that building elements, original materials and components can be reused to maximise their lifespan. **ARCH / STRUC**
Demolish and Recycle	Existing buildings	Existing concrete of the hardscapes (if deemed not contaminated) could be crushed and reused as piling mat/hardcore for the proposed development. Any other materials/elements? Bricks could be reclaimed off-site, check pre-dem audit A more detailed building survey to be carried out will investigate further reuse opportunities. **ARCH / STRUC**
Circular Economy Design Approaches for New Buildings, Infrastructure and Layers Over the Lifetime of the Development		**Applicant Response**
Is the whole building designed to have a short life on its current site? (e.g. less than 10 yrs)		No
Circular Economy Design Approach	**Phase / Building / Area / Layer**	**Strategic Response**
Building relocation	Existing buildings	If relevant, can the building be relocated? **ARCH**
Component or material reuse	Existing buildings	We encourage a viability study to be undertaken to establish whether using existing materials may be appropriate, such as the possibility of reusing crushed concrete as piling mat/hardcore for the proposed development. **ARCH / STRUC**
Adaptability	Proposed buildings	Are floor to ceiling heights particularly generous? Can internal partitions be reconfigured in the future? Structure grid will allow other sized rooms, int partitions are not load bearing. Could become traditional apts **ARCH**
Flexibility	Proposed buildings	Building in layers to facilitate replacement and future disassembly. Services to be easily accessible for replacement. Brick could be disassembled (mortar?), services accessible and can be redirected **ARCH**
Replaceability	Proposed buildings	Easily accessible risers, rooftop plant removable by crane. Buried serviced to be kept to a minimum **ARCH / MEP**
Disassembly	Proposed buildings	Wherever possible, systems will be mechanically fixed, rather than using adhesive fix, to facilitate these being demounted and re-used or recycled - supporting a circular economy. Fire safety requires that **ARCH / STRUC**
Longevity	Proposed buildings	Focus on durability of materials for specification. The structure will be designed for a 50-year life span, while the design provides potential for planned maintenance to prolong the life of items such as facades beyond the strict 25-year design life. Glazing and brick - robust **ARCH / STRUC**

Circular Economy

Circular Economy Design Principles

Design Principle		Phase / Building / Area / Layer	Design Response
Designing out waste	Module A - Product Sourcing and Construction Stage	Site Structure	- Is there a sustainable procurement plan in place? Follow sust procurement guidelines, maybe one will be required by breeam - Prioritise local sourcing **ARCH** - All timber and timber-based products will be FSC or PEFC certified. **ARCH** - Prioritise products with EPDs, ISO14001, BES6001 or accredited EMS certification **ARCH** - A site waste management plan to be prepared and followed on site. This will be reviewed with contractor during pre-construction supply chain engagement. **PLANNING / CONTRACTOR** - Structure to use significant percentages of cement replacement alternative binders; and use concrete mixes that contain no ordinary Portland cement where feasible. Email struct eng **STRUC** - Using only certified timber for scaffolding, hoardings etc. **CONTRACTOR**
	Module B - In-Use Stage	Services Internal finishings	- Prioritise the use of products with an EPD & minimise composite materials. **MEP** - Prioritise the use of products with high recycled materials content. **ARCH / STRUCT** - Challenge suppliers to minimise packaging materials and quantities **ARCH / ALL**
	Module C - End-of-Life Stage	Site	- Pre-demolition audit will contain reuse and recycling percentage targets aiming to maximise reuse and recycling of demolition and waste **DEM CONTRACTOR** - The audit will also specify the materials and quantities to be reused in situ, reused on site, reused off-site, recycled, recovered and disposed.
	Module D - Benefits and Loads Beyond the System Boundary	Shell Services Equipment	- Salvage and reuse exterior cladding materials, such as bricks, stones, or metal panels, in other projects. - Recycle materials like glass, insulation, or metal for use in new products - Salvage and reuse mechanical, electrical, and plumbing equipment, such as pipes, fixtures, or HVAC systems, in other projects. - Recycle metals and electronic components for resource recovery.

Circular Economy

Circular Economy Design Principles

Design Principle	Phase / Building / Area / Layer	Design Response
Designing for longevity	Site	- Materials will be specified to ensure they are durable. - Waterproofing detailing, profiling, drainage details, fixings and general geometry will be thoroughly assessed. **ARCH / CONTRACTOR**
Designing for adaptability or flexibility	Proposed building	- Aim to specify standard sized components. Potential modular façade construction, bathroom pods for co-living **ARCH** - Use of demountable internal partitions instead of fixed walls to allow for flexibility in space allocation. **ARCH** - Consider flexible floor plates / grids. Modular sizing lends itself to it **ARCH / STRUC**
Designing for disassembly	Structure Façade Internal layout	- The concrete structural design will be difficult to design for disassembly, so will prioritise designing for longevity, efficient design and maximising the use of cement replacement. **STRUC** - Investigate the use of lime-based mortar to allow brickwork to be disassembled **ARCH / STRUC** - Prioritise the specification of modular components to allow for easy disassembly and reassembly, promoting reusability and adaptability, and also to enable future expansions or modifications without major disruptions. **ARCH / STRUC**
Using systems, elements or materials that can be re-used and recycled	Construction	- Temporary structures, such as construction site offices or worker accommodations, to be designed with modular components to enable easy disassembly and reassembly, promoting reusability in future projects. **CONTRACTOR** - Utilise reusable formwork systems, such as metal or plastic formwork, reducing waste generated during the concrete casting process. **CONTRACTOR / STRUCT** - Opt for rental equipment instead of purchasing new machinery or tools to provide flexibility and reduce the need for long-term storage. **CONTRACTOR**

Circular Economy

Circular Economy Targets

Circular economy targets for existing and new development	Policy Requirement	Target Aiming For (%)	Policy Met?
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	**WST / DEM CONT**	Yes
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.	**WST / CONT**	Yes
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	**WST / CONT**	Yes
Municipal waste	Minimum 65% recycling rate by 2030.	**WST**	Yes
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.	**ARCH / STRUC**	Yes

Send this to QS to factor in costing

Next Steps

CIRCULAR ECONOMY RFI

OUTPUTS FROM WLC MODELLING

Circular Economy RFI

Conserve Resources
ARCH / ALL

	Site	Substructure	Super structure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Who and When	Plan to prove and quantify
	The geographical setting, urban location and external works	Excavations, foundations, basements and ground floors	Load-bearing elements above plinth including roof supporting structure	The layer keeping out water, wind, heat, cold, direct sunlight and noise	Installations to ensure comfort, practicality, accessibility and safety	The layout, internal walls, ceilings, floors, finishes, doors, fitted furniture	Anything that could fall if the building was turned upside down	Any temporary installations/works/materials, packaging and equipment				
	Conserve Resources											
Minimising the quantities of materials used	Re using any existing buildings ?	Reusing any existing substructures ? Re use excavated materials on-site. Use of cement alternatives Utilise materials with a high recycled content. Design to reduce materials. Avoid over specification.	Lean design principles like efficient building shapes, optimised grids and framing, reduce reduction using voids. Optimise structure to reduce material usage. Targeting 100% recycled content steel rebars. Consider thinner floor slabs	Select robust and long-lasting finishes will be, reducing the need of frequent maintenance and replacement. Aspiration for high recycled-content aluminium for the apertures.	Accessibale for ease of maintenance and replacement without damage to internal or external building elements. Where possible, use prefabricated products and/or assembled off-site. Optimise distribution runs. Avoid fit-out strip out of base build.	Limit materials which could be stripped out by incoming tenants. Engage with tenants regarding fit-out materials and encourage circular economy principles. Consider circular economy principles in tenant lease agreements. Consider exposed services. Avoid fit-out strip out of base build.	Engage with tenants regarding fit-out materials and encourage circular economy principles. Consider circular economy principles in tenant lease agreements	Use of demountable and reusable scaffolding. Contractor to operate packaging take back scheme. Avoid stockpiling			Designers. Contractors.	Pre-demolition/pre-refurbishment audit Lifecycle Carbon Assessment SWMP
Minimising the quantities of other resources used (energy, water, land)	The project is located on previously used land (brown field). A Whole Life Carbon Assessment has been undertaken	Sourcing local materials where possible. Optimise delivery logistics.	Sourcing local products & materials where possible. Optimise delivery logistics.	Sourcing local products & materials where possible. Optimise delivery logistics. Design for high thermal efficiency. Careful consideration of glazing ratios.	Target low water consumption fittings and equipment. High energy efficient building services. Informative owner/occupier user guides. Optimise delivery logistics.	Engage with tenants regarding fit-out materials and encourage circular economy principles. Consider circular economy principles in tenant lease agreements	Informative owner/occupier/operator user guides.	The contractor will be required to set targets and monitor energy and water use during construction (Man 03 credit) Energy & water efficiency of construction plant, equipment and methods.			Designers. Contractors.	Site Waste Management Plan (SWMP).
Specifying and sourcing materials responsibly and sustainably	Select locally sourced materials where possible. Prioritise recycled/recovered materials.	Use significant percentages of cement-replacement alternative binders, such as Ground Granulated Blast-Furnace Slag (GGBS) in concrete elements. Concrete steel rebars to be from high % recycled steel. Prioritise the use of products with an EPD. Select locally sourced materials where possible. Prioritise recycled/recovered materials.	Use significant percentages of cement-replacement alternative binders, such as Ground Granulated Blast-Furnace Slag (GGBS) in concrete elements. Concrete steel rebars to be from high % recycled steel. Prioritise the use of products with an EPD. Select locally sourced materials where possible. Prioritise recycled/recovered materials.	Investigate & consider material procurement from manufacturers adopting cleaner manufacturing processes. Minimise composite materials. Challenge suppliers to minimise packaging materials and quantities.	Prioritise the use of products with an EPD. Minimise composite materials. Use of low GWP refrigerant. Design systems for low refrigerant volumes. Challenge suppliers to minimise packaging materials and quantities.	Use only certified timber. Minimise composite materials. Prioritise the use of products with high recycled materials content. Challenge suppliers to minimise packaging materials and quantities.	Circular economy principles will be encouraged with incoming tenants.	Using only certified timber. Select locally sourced materials where possible. Prioritise recycled/recovered materials. Challenge suppliers to minimise packaging materials and quantities.			Designers. Contractors.	Sustainable Procurement Plan

Circular Economy RFI

Design to eliminate waste
ARCH / ALL

	Site	Substructure	Super structure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Who and When	Plan to prove and quantify
	The geographical setting, urban location and external works	Excavations, foundations, basements and ground floors	Load-bearing elements above plinth including roof supporting structure	The layer keeping out water, wind, heat, cold, direct sunlight and noise	Installations to ensure comfort, practicality, accessibility and safety	The layout, internal walls, ceilings, floors, finishes, doors, fitted furniture	Anything that could fall if the building was turned upside down	Any temporary installations/works/materials, packaging and equipment				
	Design to eliminate waste											
Designing for reusability/recoverability/longevity/adaptability/flexibility			Consider flexible floor plates / grids. Maximise non structural internal partitions. Aim to specify standard sized components. Consider end of life value of materials & components.	Prioritise durable products & materials. Design for ease of disassembly & dismantling. Aim to specify standard sized components. Consider end of life value of materials & components.	Main mechanical plant suitable for alternative building uses. Aim to specify standard sized components. Consider end of life value of materials & components. Prioritise durable products & materials.	Aim to specify standard sized components. Consider end of life value of materials & components. Prioritise durable products & materials.	Engage with tenants regarding fit-out materials and encourage circular economy principles. Consider circular economy principles in tenant lease agreements	Detailed engagement with contractors when appointed regarding adopted circular economy design principles.				
Designing out construction, demolition, excavation and municipal waste arising				Investigate & consider off-site construction/ modular components. Design for ease of disassembly & dismantling.	Investigate & consider off-site construction/ modular components		Engage with tenants regarding fit-out materials and encourage circular economy principles. Consider circular economy principles in tenant lease agreements	Detailed engagement with contractors when appointed regarding adopted circular economy design principles.				

Circular Economy RFI

Manage Waste
WST / ALL

	Site	Substructure	Super structure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Who and When	Plan to prove and quantify
	The geographical setting, urban location and external works	Excavations, foundations, basements and ground floors	Load-bearing elements above plinth including roof supporting structure	The layer keeping out water, wind, heat, cold, direct sunlight and noise	Installations to ensure comfort, practicality, accessibility and safety	The layout, internal walls, ceilings, floors, finishes, doors, fitted furniture	Anything that could fall if the building was turned upside down	Any temporary installations/works/materials, packaging and equipment				
	Manage Waste											
Demolition waste (how waste from demolition of the layers will be managed)	Aim to achieve 95% diversion from landfill	Aim to use onsite and/or locally. Aim to achieve 85% diversion from landfill							Contractor to manage & monitor waste flows.		Contractor	Pre demolition audit. SWMP
Excavation waste (how waste will be managed)	Aim to achieve 95% diversion from landfill	Aim to use onsite and/or locally. Aim to achieve 85% diversion from landfill							Contractor to manage & monitor waste flows.		Contractor	SWMP
Construction waste (how waste arising from construction of the layers will be reused or recycled)		Aim to achieve 85% diversion from landfill	Contractor to liaise with suppliers regarding value, processing and take back of waste and unused materials. Aim to achieve 85% diversion from landfill	Contractor to liaise with suppliers regarding value, processing and take back of waste and unused materials. Aim to achieve 85% diversion from landfill.	Contractor to liaise with suppliers regarding value, processing and take back of waste and unused materials. Aim to achieve 85% diversion from landfill	Contractor to liaise with suppliers regarding value, processing and take back of waste and unused materials. Aim to achieve 85% diversion from landfill	Engage with tenants regarding fit-out waste and encourage circular economy principles with waste management plan. Consider circular economy principles in tenant lease agreements		Contractor to manage & monitor waste flows. FM to consider plan for maintenance & repair waste management.		Contractor	SWMP
Municipal Waste (how waste will be managed)							Engage with tenants/FM regarding operational waste and encourage circular economy principles with waste management plan. Consider circular economy principles in tenant lease and FM agreements.		50% diversion from landfill		Facilities	Operational Waste Management Plan

Circular Economy RFI

Bill of Materials
ARCH / QS / COST

Layer	Element	Material quantity (kg)	Material Intensity (kg/m² Gross Internal Area)	Recycled content (% by value)	Reused content (% by value)	Estimated reusable materials (kg/m²)	Estimated recyclable materials (kg/m²)	Source of Information	
					OPTIONAL	OPTIONAL	OPTIONAL		
Structure	Foundation			Min 20% ambition					e.g. Building weight calculation. Specification documents. Environmental Product Declarations or other evidence of recycled content
	Floors			Min 20% ambition					
	Frame			Min 20% ambition					
	Roof			Min 20% ambition					
Shell/skin	Walls			Min 20% ambition					
	Cladding			Min 20% ambition					
	Windows			Min 20% ambition					
	Roof			Min 20% ambition					

Circular Economy RFI

Recycling and Waste Reporting Form
CONTRACTOR / WST

Category	Total Estimate	of which				Source of information
	t/m² Gross Internal Area (GIA)	% reused or recycled onsite	% reused or recycled offsite	% not reused or recycled max 5%		
				% to landfill	% to other management (e.g. incineration)	
Excavation waste						
Demolition waste						
Construction waste						
	t/annum	% reused on or off site	% recycled or composted, on or off site	% not reused or recycled		
				% to landfill	% to other management (e.g. incineration)	
Municipal waste				Max 35% and no recyclable compostable waste		

Outputs from WLC modelling

Bill of materials
WLC ASSESSOR

Bill of materials

Result category	Material quantity kg	Material intensity kg/m² GIA	Recycled content by value %	Reused content by value %	Estimated reusable materials kg/m²	Estimated recyclable materials kg/m²
1 Substructure	73,974,208.92	2,424.27	46.48	0		2,423.27
2.1 Superstructure: Frame	18,664,960	611.69	63.16	0		611.48
2.2 Superstructure: Upper Floors	15,148,977.57	496.46	40.77	0		495.53
2.3 Superstructure: Roof	2,489,517.9	81.59	33.84	0		13.63
2.4 Superstructure: Stairs and Ramps	546,132.12	17.9	7	0		17.9
2.5 Superstructure: External Walls	6,088,856.86	199.54	4	0		198.31
2.6 Superstructure: Windows and External doors	192,529.89	6.31	0	0		6.31
2.7 Superstructure: Internal Walls and Partitions	877,954.48	28.77	23.96	0		19.13
2.8 Superstructure: Internal doors	27,898	0.91	0	0		
3 Finishes	379,038.32	12.42	19.45	0		7.54
4 Fittings, furnishings & equipments	246,873.46	8.09	0	0		0.11
5 Services (MEP)	367,464.05	12.04	0	0		10.52
6 Prefabricated buildings and building units						
7 Work to existing building						
8 External works	7,466,061.78	244.68	9.51	0		244.67
0 Unclassified / Other						
Total	126,470,473.4	4,144.67	32.84	0		4,048.39

Outputs from WLC modelling

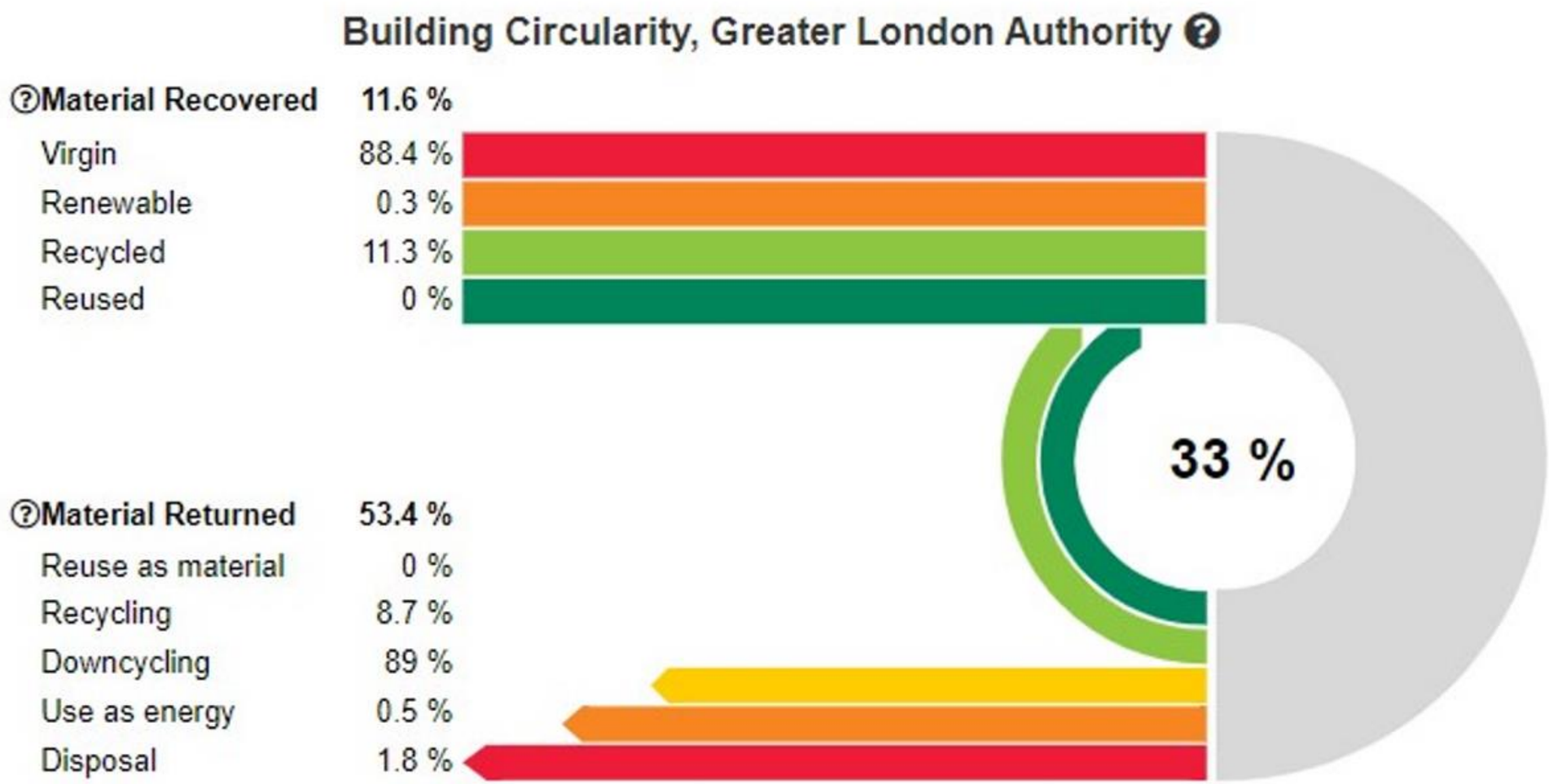
Circularity by material type
WLC ASSESSOR

Result category	Total kg	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials returned %	Circularity %
Concrete	107,765,615.40	95.7	4.3		100.0		50.0	27.1
Metal	9,391,127.89	6.5	93.5			100.0	100.0	96.8
Bricks and ceramics	617,822.84	100.0	0.0		100.0		50.0	25.0
Gypsum-based	665,095.81	92.1	7.9		0.7	99.3	99.6	53.8
Insulation	152,537	41.5	58.5	78.6	21.4		10.7	34.6
Glass								
Wood and biogenic	130,661.28	13.6	86.4		100.0		50.0	68.2
Earth masses and asphalt	1,918,060	95.5	4.5	100.0				2.2
Other materials	1,072,459.59	67.4	32.6	15.7	36.4	47.9	66.1	49.3

Estimated circularity by key material type – output from OneClick LCA

Outputs from WLC modelling

End of Life – Building circularity
WLC ASSESSOR



OneClick LCA Building Circularity tool results

Savills Earth

Savills Earth provides a full suite of energy and sustainability services across both the built and natural environments. Savills Earth consolidates our established lines of business and expertise to deliver the very best sustainability, energy and carbon strategies on behalf of our clients. With over 100 specialists in the team, Savills Earth turns client sustainability and energy aspirations into a reality.

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