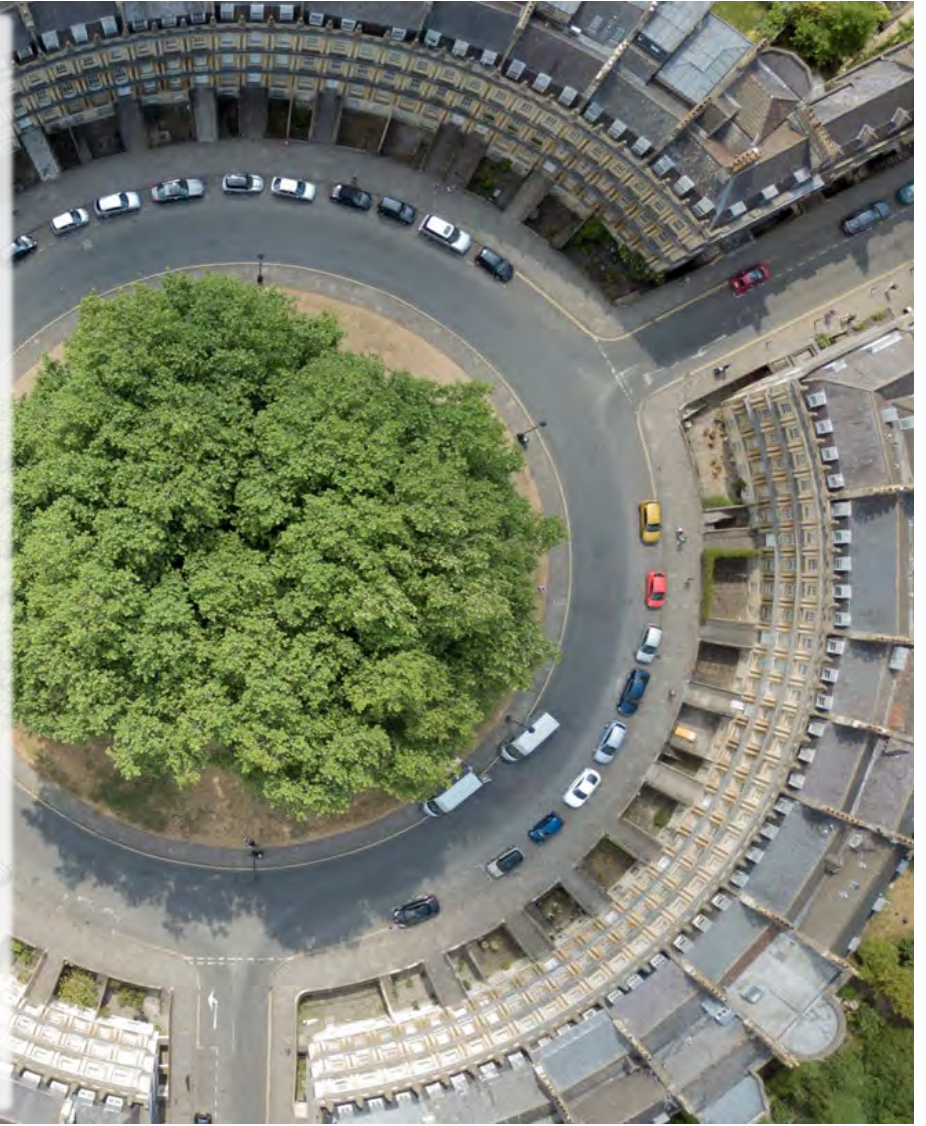


**707-725 Lordship Lane,
Wood Green, London**

Circular Economy Statement

**Ensphere Group Ltd on behalf of
Atri7 2 Limited & Fusion Global Management LLP**



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707-725 Lordship Lane, Wood Green, London

Circular Economy Statement

Client Name: Atri7 2 Limited & Fusion Global Management LLP
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Quality Assurance Approval Status

This document has been prepared and checked in accordance with Ensphere Group Ltd's Quality Management System.

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Sustainability	Energy	Climate Change	Socio-Economic
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1. Executive Summary

- 1.1 This Statement presents the Circular Economy strategic approaches and aspirations for the proposed scheme at 707-725 Lordship Lane, Wood Green, London.
- 1.2 The proposed development will comprise a mixed-use scheme consisting of a purpose-built student accommodation building, shared ownership and social rent residential units as well as some flexible ground floor commercial floorspace, with buildings ranging between three and nine storeys.
- 1.3 Consideration has been given to the most appropriate Circular Economy strategic approaches based on the nature and predicted lifespan of the development.
- 1.4 Attention has been given to the planning policy and other requirements and a number of specific goals are proposed for the development. Key commitments include:
 - Design for adaptability and flexibility;
 - The use of materials that have high durability for longevity;
 - Diversion of demolition and construction waste from landfill by converting elements and materials for alternative use;
 - Efficient construction and operational waste management via accessible, dedicated areas for segregated waste volumes.
- 1.5 Overall, the design for the scheme will account for the overarching values of the Circular Economy including conserving resources, designing to eliminate waste and managing waste sustainably.

2. Introduction

- 2.1 Ensphere Group Ltd was commissioned by Atri7 2 Limited & Fusion Global Management LLP to produce a Circular Economy Statement for the proposed development at 707-725 Lordship Lane, Wood Green, London.

Site and Surroundings

- 2.2 The Site is located within the Wood Green Town Centre, approximately 150m east of Wood Green Station.
- 2.3 The Site is approximately 0.86 hectares (ha) in size and is currently occupied by a single storey building, in use by Mecca Bingo as a bingo hall. The remainder of the Site is occupied by surface level car parking. The site is bound by:
- Lordship Lane (A109) to the north of the site;
 - Sultan Terrace and Vincent Square to the east of the site;
 - Residential properties along Moselle Avenue to the south of the site; and
 - Omnibus House and Redvers Road to the west of the site.
- 2.4 Within the surrounding context, Lordship Lane is characterised by a variety of two and three storey properties, to the east of the application site is bound by a housing estate with three storey blocks, the southern boundary is characterised by Wellesley Road with two and three storey town houses and the rear gardens of the properties along Moselle Avenue. The West of the application site is bound by Omnibus House, a seven to nine storey residential building.
- 2.5 The Site is not located within a Conservation Area, nor does it contain any listed buildings. The Noel Park Conservation Area is located immediately to the south of the site.

Proposed Development

- 2.6 Demolition of the existing building and redevelopment to provide affordable homes, purpose-built student accommodation, and flexible ground floor commercial (Class E) floorspace within buildings ranging between 3 – 9 storeys, public realm and landscaping works, cycle parking, and associated works.

Report Objective

- 2.7 The objective of the Circular Economy Statement is to demonstrate how the proposed development will incorporate circular economy measures into all aspects of the design, construction and operation process. The purpose being to ensure schemes:

- Consider strategies to facilitate the transition towards a circular built environment;
- Report against numerical targets that will facilitate monitoring of waste and recycling; and
- Recognise opportunities to benefit from greater efficiencies that can help save resources, materials, and money.

3. Methodology

3.1 The Circular Economy Statement seeks 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.

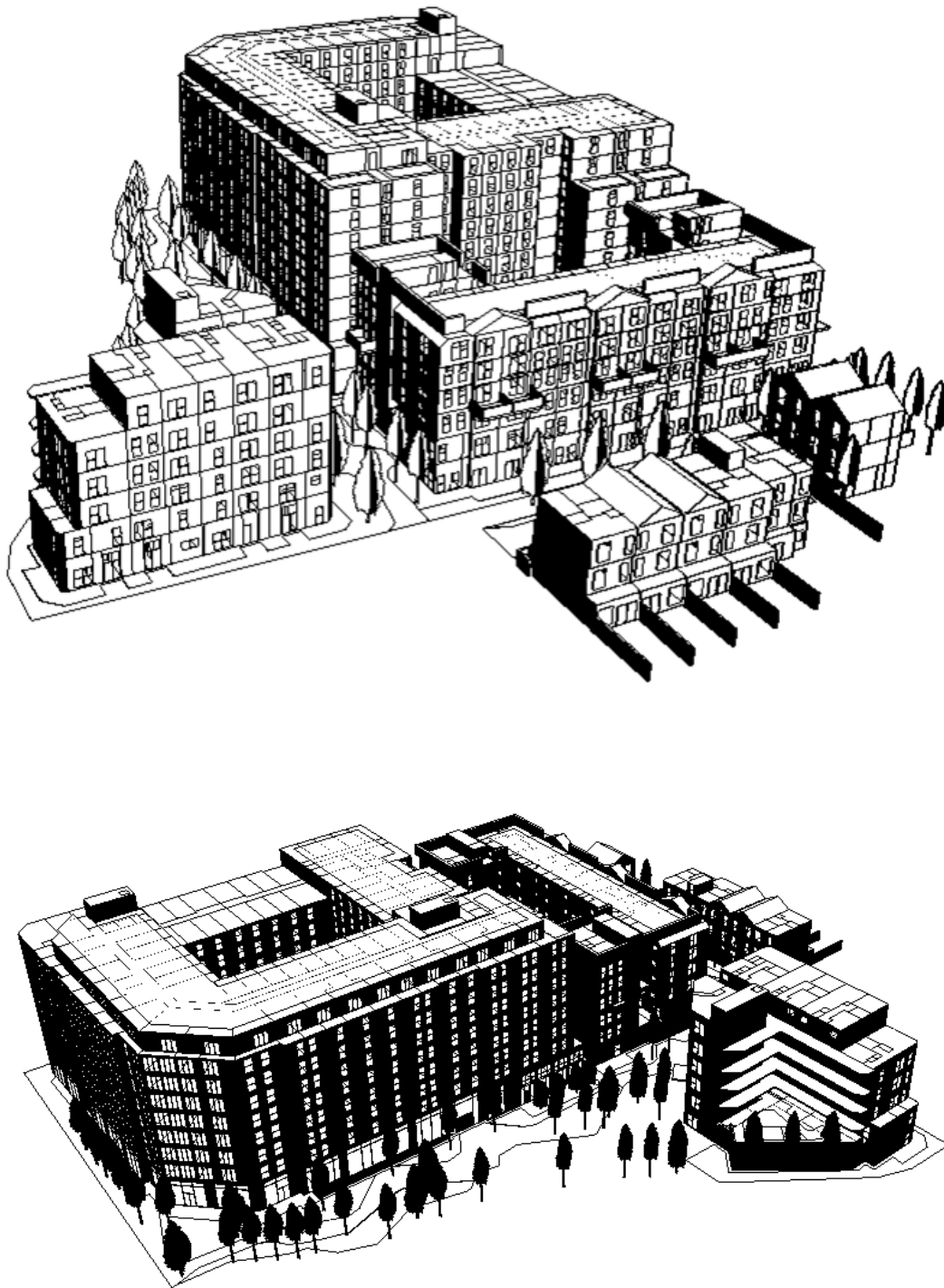
Data & Modelling

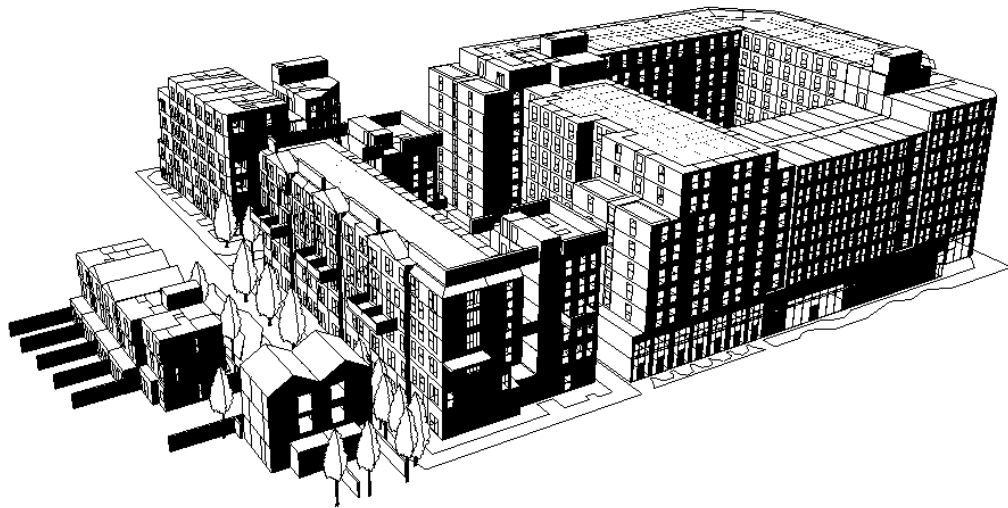
3.2 The assessment of circularity was calculated with reference to the One Click LCA software, utilising the building circularity tool.

3.3 The geometries of the building were modelled within IES VE 2023, based upon drawings provided by the architect. Once this was completed, data detailing the measurements of building elements were exported from IES VE 2023 and inserted into One Click LCA, providing the appropriate material quantities for the assessment. This process was assisted by the project cost plan, as well as detailed architectural and structural assumptions for the relevant materials.

3.4 Building materials were then attached to the appropriate building elements based on available information from the design team, including the cost plan.

Figure 3.1 IES Representation of the Site





Related Reports

3.5 A number of additional documents have been prepared which are relevant to the content of this Circular Economy Statement, these include:

- Design and Access Statement;
- Energy Statement;
- Whole Life-Cycle Carbon Assessment;
- Sustainability Statement.

4. Circular Economy Concepts

Aim

- 4.1 The end goal of the Circular Economy is to retain the value of materials and resources indefinitely, with no residual waste at all.

Core Principles

- 4.2 The application of Circular Economy philosophy to the built environment is complex, with issues overlapping and trade-offs to consider. Nevertheless, the following promotes some of the core guiding principles that promote a regenerative and restorative whole systems approach.

Table 4.1 Core Principles

Principle	Development commitments to:
1. Conserve resources, increase efficiency and source sustainably	Minimise the quantities of materials used Minimise the quantities of other resources used Specify and source materials and other resources responsibly and sustainably.
2. Design to eliminate waste (and for ease of maintenance)	Design for longevity, adaptability or flexibility and reusability or recoverability Design out construction, demolition, excavation, and municipal waste arising
3. Manage waste sustainably and at the highest value	Manage demolition waste Manage excavation waste Manage construction waste Manage municipal waste (and industrial waste, if applicable)

“Building in Layers”

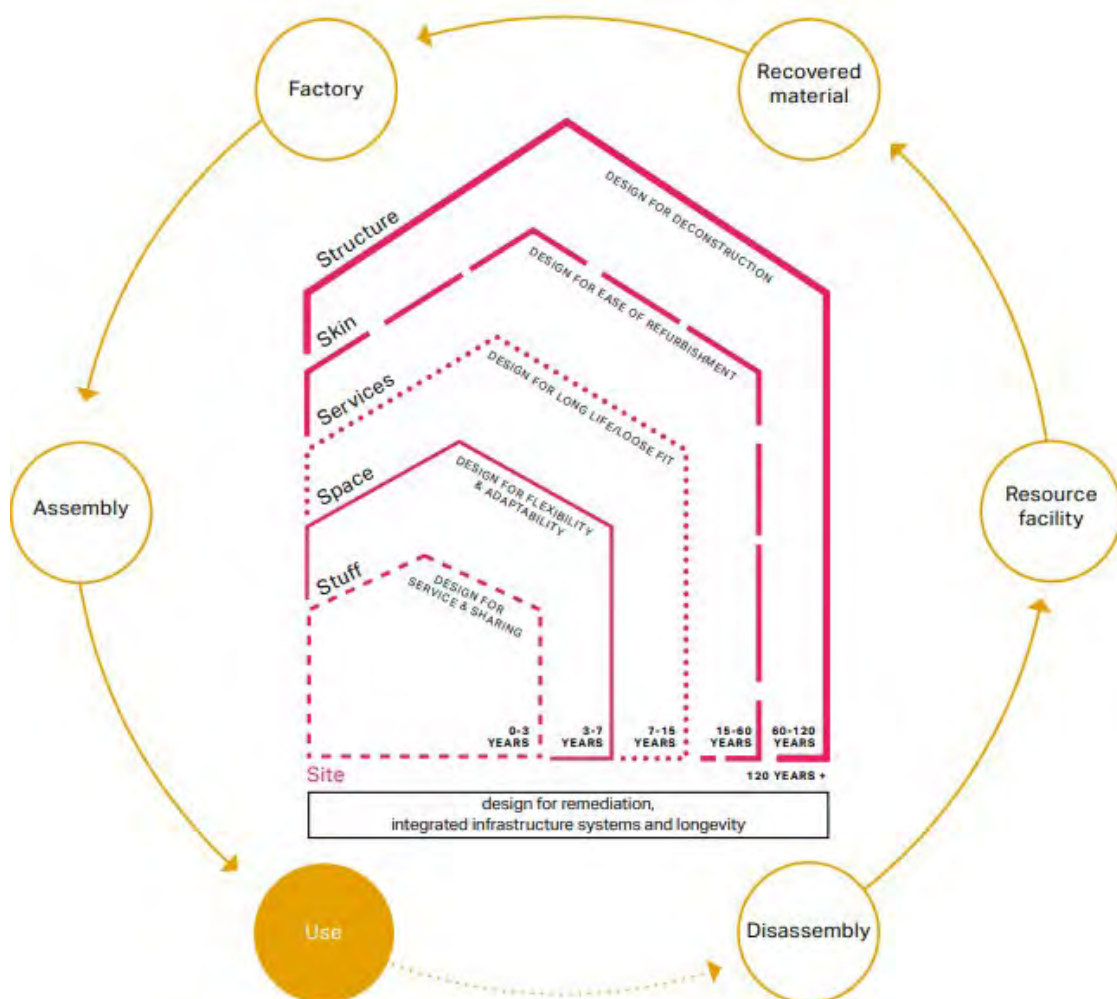
- 4.3 A useful way to understand a building or development is in terms of “layers”, where each layer has its own lifecycle that may require a different approach (or different solutions) to be adopted.

Table 4.2 Building in Layers

Layer	Summary and constituent elements
Site	The geographical setting, urban location, and external works
Substructure	Excavations, foundations, basements, and ground floors

Superstructure	Load-bearing elements above plinth including roof supporting structure
Shell / Skin	The layer keeping out water, wind, heat, cold, direct sunlight, and noise
Services	Installations to ensure comfort, practicality, accessibility, and safety
Space	The layout internal walls, ceilings, floors, finishes, doors, fitted furniture
Stuff	Anything that could fall if the building was turned upside down
Construction Stuff	Any temporary installations/works/materials, packaging, and equipment

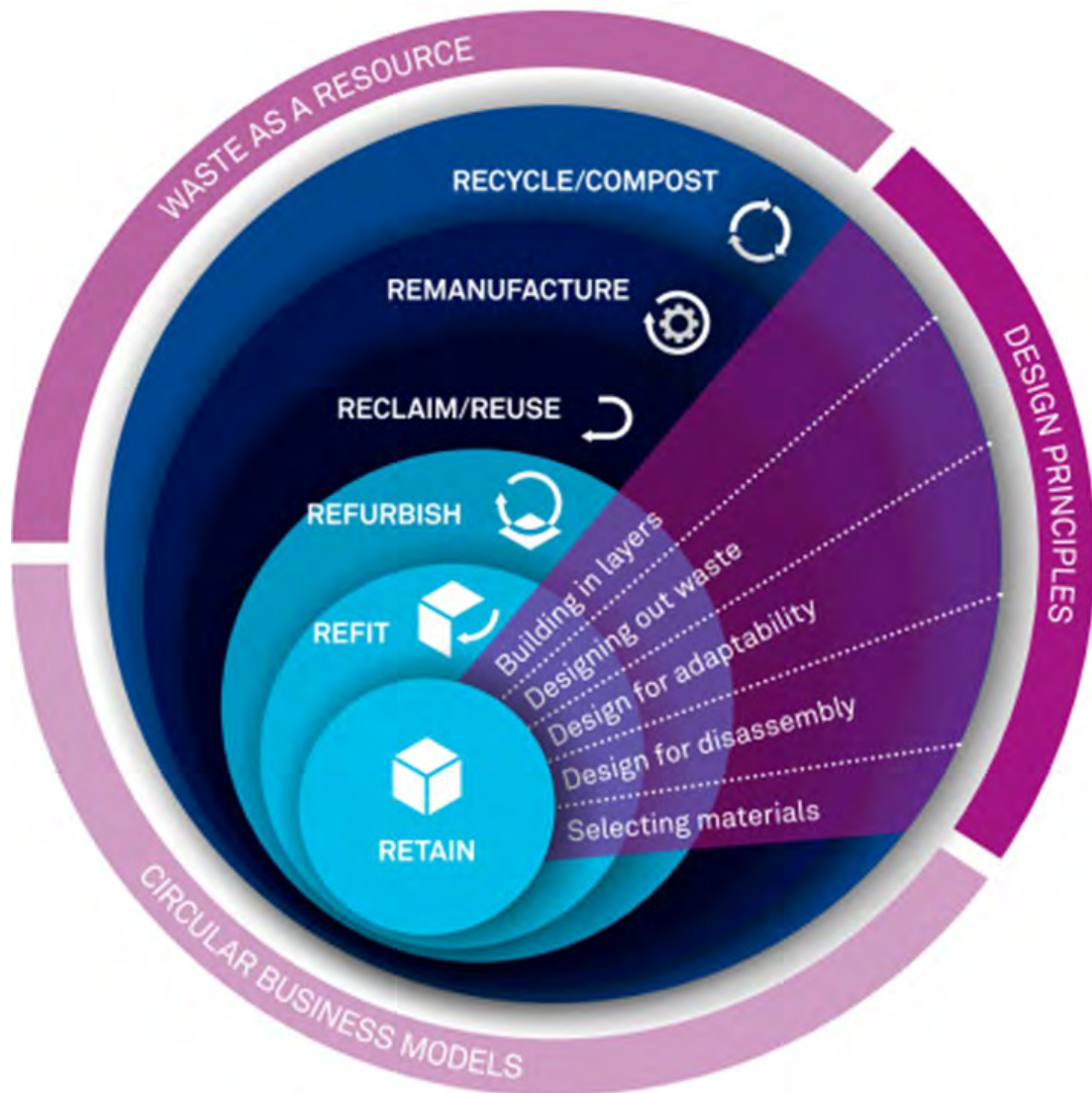
Figure 4.1 “Building in Layers Diagram” Source GLA/Useful Projects



Hierarchy for Building Approaches

- 4.4 The following figure, taken from the London Plan and originally presented in *Building Revolutions* (2016), David Cheshire, RIBA Publishing, presents a hierarchy for building approaches.

Figure 4.2 Circular economy hierarchy for building approaches



5. Planning Context

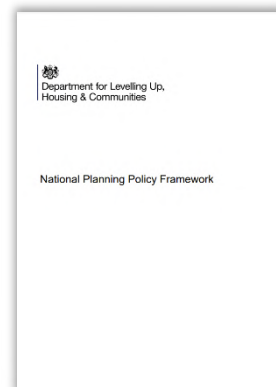
- 5.1 Local planning policy relevant to sustainable development is considered below:

National Context

National Planning Policy Framework (2023)

- 5.2 The National Planning Policy Framework (NPPF) was updated in December 2023. Paragraphs 7 of the revised NPPF include reference to the following:

7. “The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development, and supporting infrastructure in a sustainable manner. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

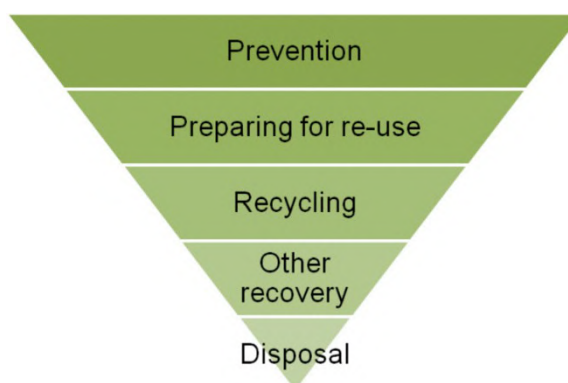


- 5.3 Minimising waste is listed as part of the “environmental objective” in relation to achieving sustainable development.

National Planning Policy for Waste

- 5.1 The National Planning Policy for Waste sets out the Government’s ambition to work towards a more sustainable and efficient approach to resource use and management.
- 5.2 The document sets out detailed waste planning policies. It should be read in conjunction with the National Planning Policy Framework, the National Waste Management Plan for England and National Policy Statements for Waste, Water and Hazardous Waste, or any successor documents. All local planning authorities should have regard to its policies when discharging their responsibilities to the extent that they are appropriate to waste management.
- 5.3 The document states that planning should ensure the design and layout of new residential and commercial development and other infrastructure complements sustainable waste management, including the provision of appropriate storage and segregation facilities.
- 5.4 The document presents the Waste Hierarchy as follows:

Figure 4.1 The Waste Hierarchy

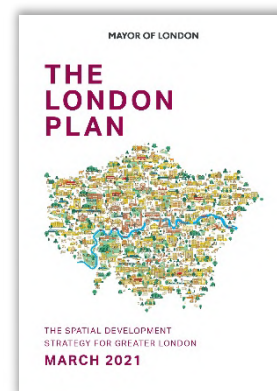


London Planning Policy

London Plan (2021)

- 5.5 The London Plan is a broad plan setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The Plan introducing the concept of “Circular Economy”, defining it as:

“An economic model in which resources are kept in use at the highest level possible for as long as possible in order to maximise value and reduce waste, moving away from the traditional linear economic model of ‘make, use, dispose’.”



- 5.6 Policies considered pertinent the Circular Economy are listed below:

- Policy GG5 (*Growing a Good Economy*) - those involved in planning and development must recognise and promote the benefits of a transition to a low carbon circular economy to strengthen London’s economic success.
- Policy GG6 (*Increasing Efficiency and Resilience*) - those involved in planning and development must seek to improve energy efficiency and support the move towards a low carbon circular economy.
- Policy D3 (*Optimising Site Capacity Through the Design-led Approach*) - Development proposals should aim for high sustainability standards and take into account the principles of the circular economy.
- Policy SI7 (*Reducing Waste and Supporting the Circular Economy*) – requires applications to promote circular economy outcomes and aim to be net zero-waste. Requires submission of a Circular Economy Statement with referable applications.

- Policy SI8 (*Waste Capacity and Net Waste Self-Sufficiency*) – seeks to manage London’s waste sustainably with a target of net self-sufficiency. Requires development proposals to implement the waste hierarchy and contribute to London’s circular economy.

London Plan Guidance Circular Economy Statements (2022)

- 5.7 This guidance document explains how to prepare a Circular Economy Statement to accompany strategic planning applications referred to the Mayor as set out in London Plan Policy SI7.

North London Waste Plan (Adopted 2022)

- 5.8 The seven North London Boroughs are working together to produce the North London Waste Plan (the ‘NLWP’). The NLWP’s purposes is to ensure there will be adequate provision of suitable land and to provide policies for waste development.

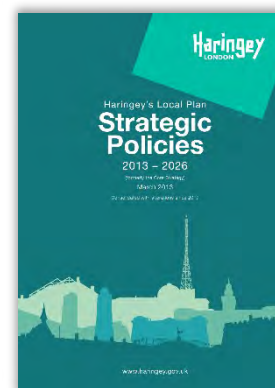
Local Context

Haringey’s Local Plan Strategic Policies (2013; consolidated with alterations since 2017)

- 5.9 The Local Plan sets out the key planning policies for the future development of the borough up to 2026 and provide a consistent basis for deciding planning applications.

- 5.10 The following policies are seen as pertinent to this report:

- Policy SP4 (*Working Towards a Low Carbon Haringey*) - requires a 25% improvement on Part L 2010 (equivalent to a 19% improvement on Part L 2013 and Code Level 4 energy performance). Non-residential to achieve BREEAM “Very Good” and aspire to “Excellent”. Promotes low carbon technologies;
- Policy SP6 (*Waste and Recycling*) – requires integrated, well-designed recycling facilities to be incorporated into all new developments;
- Policy SP11 (*Design*) – encourages all new developments to be sustainable and impacts on biodiversity, natural resources, climate change, and health are minimised;



Haringey's Development Management DPD – July (2017)

5.11 This Development Plan Document (DPD) provides support to help contribute to the delivery of sustainable development in accordance with the Haringey strategy. It sets out criteria based policies against which planning applications will be assessed.

5.12 The following policies are highlighted:

- Policy DM4 (*Provision and Design of Waste Management Facilities*) - All proposals should consider how to sustainably manage waste arising from the development during the design, construction and occupation phases;
- Policy DM21 (*Sustainable Design, Layout and Construction*) – Promotes new developments to consider and implement sustainable design, layout and construction techniques;
- Policy DM23 (*Environmental Protection*) – requires new development proposals to consider air quality, noise and vibration, light pollution, contaminated land and hazardous substances;



6. Design Approach

- 6.1 To implement Circular Economy principles most effectively, high level strategic opportunities have been explored early in the development process. As outlined above, the developer and design team have undertaken a programme of meetings, many of which for the purpose of discussing sustainability and the overarching Circular Economy strategy for the project. The Applicant is committed to sustainable development and recognises the interrelationships between sustainable design and the circular economy.
- 6.2 In the context of the proposed development, the Applicant is seeking to decouple economic activity from the consumption of finite resources by recognising and attaching value to sustainable design as part of its product offering.
- 6.3 In terms of the proposed development, it is intended to seek to excel with sustainable design; surpassing the planning policy requirements in terms of on-site carbon reductions (including embodied carbon); with performance maximised within feasibility and budget considerations. These objectives embody various circular economy requirements, the majority of which will need to be satisfied to a high standard to achieve the targeted requirements.
- 6.4 The existing site consists of a single storey industrial unit housing a Mecca Bingo Hall measuring approximately 3,700 m², along with a 120-space hardstanding car park. The proposed development is for a purpose-built student accommodation building, shared ownership and social rent residential units as well as some flexible ground floor commercial floorspace. Buildings will range between three and nine storeys. In addition, the site will have associated cycle parking, waste/recycling storage, landscaping and other ancillary works.

Figure 7.1 Existing Site, Aerial View – Looking North (Google Maps)



- 6.5 As confirmed in the Pre-demolition Audit (see appendix), the current site was originally constructed in the 1980s as a DIY store and was repurposed in 1995 as a Mecca Bingo Hall. The building is made of brick and steel construction. From an early stage, the project delivery stakeholders have considered how to maximise the residual value of the building, materials and elements on site. Due to the scale of the proposed development, it was not deemed viable to retain the existing structures or refurbish. Instead, in line with the decision tree in the GLA guidance, the focus shifted to whether it would be technically feasible to recover the building elements or materials of the previous development.
- 6.6 Corstorphine & Wright Ltd stated the following:
- “The current structure on site consists of a single storey industrial unit housing a Mecca Bingo Hall with the rest of the site set as an asphalt finished car-park. Upon review of the existing site conditions, it was evident that the existing building and foundations could not be retained or reused within the new development due to the difference in scale and use.*
- Minimal existing brickwork forming the lower levels of the Mecca Bingo Hall maybe reused within the proposal as hardcore to form the external ground levels.”*
- 6.7 An independent pre-demolition audit has been carried out to determine the site-specific opportunities for re-using existing materials and/or components (see appendix). If the existing elements on site do not meet the functional requirements and objectives of the new development, such as by impacting the expected longevity of the building, good practice measures will be adopted to maximise recovery of materials via reuse, reclamation or recycling. This will involve implementation of detailed demolition strategies, effective material segregation, appropriate storage and monitoring waste flows, as well as partnering with local organisations where feasible to direct elements for onward reuse, if unable to be incorporated on site. It is understood that General Demolition Ltd. also set a minimum 40% re-use target, which is achieved through careful selection of waste management companies, as-well-as through stringent site controls and methods.
- 6.8 Table 7.1 further details the high-level strategic approach of the proposed development.

Table 7.1 Strategic Approach

Aspect	Phase / Building / Area	Steering Approach	Explanation	Target	Supporting Analysis / Studies / Surveys / Audits
Circular economy approach for the new development	Building & landscaped areas	Conserve Resources	Minimise the quantities of materials used. Optimise the structural design to ensure the minimum amount of material whilst maintaining structural performance.	Material efficiency	Structural Design and ongoing value engineering process.
			Minimise the quantities of other resources used. Consider the Life Cycle Impacts associated with materials during selection.	Incorporate findings of the Life Cycle Assessment (LCA) into decision making Fabric and services to be highly efficient to reduce energy requirements	Concept Stage Materials LCA Technical Design Stage Materials LCA Energy Statement & SBEM
			Specify and source materials and other resources responsibly and sustainably Requiring consideration of the supply chain and use of sustainably certified products and prioritisation of local suppliers and those operating Environmental Management Systems	Maximise suppliers with sustainability certification and ISO14001	Review of the Contractor credentials and suppliers
		Eliminate Waste	Design for longevity, adaptability or flexibility and reusability or recoverability Elements chosen based on the long-term needs and durability. Comparable elements will be studied in line with the life expectancy of the building/default design life of 60 years (if life expectancy is not formally agreed) Requires balancing of priorities between competing factors (e.g., embodied carbon vs recyclability)	Longevity to be key when selection of structure and skin and, to a lesser extent, services, space and stuff (although other factors may dominate here) Structure to be designed to last >60yrs.	Structural & architectural Design Concept Stage Materials LCA Technical Design Stage Materials LCA
			Design out construction, demolition, excavation and municipal waste arising To reduce the potential for waste arising through careful design and procurement	Targeting $\leq 3.4\text{m}^3$ or ≤ 3.2 tonnes per 100m^2 of the gross internal floor area for construction waste;	Pre-demolition audit Site Waste Management Plan

		Manage Waste	Manage demolition waste Where waste is generated, seek to divert this from landfill, in line with the circular economy	95% of demolition waste (tonnes) to be diverted from landfill;	Pre-demolition audit Site Waste Management Plan
			Manage excavation waste Where waste is generated, seek to divert this from landfill, in line with the circular economy	All non-hazardous waste to be diverted from landfill.	Contaminated Land appraisal Site Waste Management Plan
			Manage construction waste Where waste is generated, seek to divert this from landfill, in line with the circular economy	95% of non-demolition waste (tonnes) to be diverted from landfill.	Site Waste Management Plan
			Manage municipal waste (and industrial, where identified) Where waste is generated, seek to divert this from landfill, in line with the circular economy	Any hazardous waste to be suitably disposed of	Contaminated Land appraisal Site Waste Management Plan
Circular economy approach for the existing site	Land parcel, existing structure(s) and ground / groundwater	Conserve Resources	Minimise the quantities of materials used. Audit existing site and structure to assess the potential for incorporation into the proposed designs.	Crushed inert material to be used as a sub-base.	Pre-demolition audit Site Waste Management Plan
		Eliminate Waste	Where recovered material cannot be used on site, ensure that material is used usefully offsite.	Crushed inert material to be used as a sub-base; and surplus material to be diverted from landfill.	Pre-demolition audit Site Waste Management Plan
		Manage Waste	Waste arisings to be managed in accordance with a Site Waste Management Plan.	95% of demolition waste to be diverted from landfill;	Pre-demolition audit Site Waste Management Plan
Circular economy approach for municipal waste during operation	Proposed building(s) and landscaped areas	Conserve Resources	Conservation of resources will be primary achieved through reduced consumption. Due to the nature of the development, decision making will – to a significant extent - be delegated to building users. Education of these users will be an important factor in resource conservation; particularly with regards to materials consumption.	Reduced consumption rate per capita. Will require consideration of billing data and metering.	Building User Guide Energy & Water Metering Data

			Energy and water resources will be conserved through efficient design and control systems.		
		Eliminate Waste	Elimination of waste requires careful procurement and switching off of devices when not in use. This will partly be resolved through the proposed systems and automation; however, education will play a part.	Reduced consumption rate per capita. Will require consideration of billing data and metering.	Building User Guide Energy & Water Metering Data
		Manage Waste	Where waste cannot be avoided, facilities will be provided to ensure that occupants can sort waste at source and convenient and well-integrated waste storage areas will be positioned in suitable location.	A dedicated space for the segregation, storage, and collection of the recyclable waste streams. Containers will be of a suitable size, number and type given the likely waste arisings.	Building User Guide

7. Circular Economy Commitments

7.1 The following table summarises how the nine Circular Economy principles can be applied to each building “layer”. The contents of the table will be refined and updated as the design progresses. The commitments listed below are only those that hold the greatest opportunities, representing the strongest commitments that go above and beyond standard practice.

Table 8.1 Key Commitments

Aspect	Site	Substructure	Superstructure	Shell / Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counteractions + Who + When	Plan to prove and quantify
SECTION A: CONSERVE RESOURCES												
Minimise the quantities of materials used		Cement alternatives will be sought, where feasible. Maximise efficiency through design value engineering.	Maximise efficiency through design value engineering.	Prefabricated items, or those assembled off-site, will be installed, where possible.					Consideration to be given to overlapping supporting works, including financial LCA to ensure OPEX is considered along with CAPEX. Material quantities will be reviewed and refined at the detailed design stage.	Delays and insufficient storage on site could cause issues in relation to delivery and installation of prefabricated or off-site assembled items. Risk of additional costs is therefore high. Fragmented supply chain.	Contractor to manage supply chain and consider material alternatives in line with commitments. Architect to review design and material quantities.	Sustainable procurement plan Lean design options appraisal

Minimise the quantities of other resources used (energy, water, land)	A Whole Life Carbon Assessment has been undertaken to reduce both embodied and operational carbon emissions.		Efficient systems will be installed (see Energy Strategy).			The energy and water used during construction will be monitored and reported by the contractor.	Energy and water use to be highly efficient. Monitoring of energy and water consumption during construction.	Water consumption target is dependent on occupant behavior.	Contractor	Site impact monitoring records
Specify and source materials and other resources responsibly and sustainably	Develop a sustainable procurement plan and prioritise materials sourced locally.	Maximise responsible sourcing credits under BREEAM, with priority given to certified products such as those under the BES 6001 standard. Concrete with a higher proportion of recycled binders or GGBS content to be used, where feasible.					Procurement of the major building elements from responsible suppliers will help minimise environmental impact.	Capital cost could increase and materials with higher recycled content may be more difficult to source. Structural considerations could also limit concrete opportunities.	Principle contractor to develop a sustainable procurement plan.	Sustainable procurement plan
SECTION B: DESIGN TO ELIMINATE WASTE (AND FOR EASE OF MAINTENANCE)										
Designing for reusability / recoverability / longevity / adaptability / flexibility		Structure to be designed to last >60yrs. The flexibility and adaptability of the floorplan design has also been considered. The building is designed with a grid frame structure which favours future adaption to residential or office accommodation.					Material selection will be reviewed and refined at the detailed design stage, with consideration given to life cycle cost and durability.		Architect	Scenario modelling demonstrating adaptability
Designing out construction, demolition, excavation, industrial and municipal waste arising	Targeting $\leq 3.4\text{m}^3$ or ≤ 3.2 tonnes per 100m^2 of the gross internal floor area for construction waste. Just-in-time delivery will be used where possible to minimise material wastage.						Waste management targets will be satisfied through elimination of waste, as well as care with procurement and design.	The project will need to be managed effectively to prevent delays and storage time of materials on site.	Contractor to consider just-in-time delivery when sourcing materials and set up suitable storage on site to minimise breakages.	SWMP and Municipal / Operational Waste Management Plan

SECTION C: MANAGE WASTE												
Demolition waste (how waste from demolition of the layers will be managed)	The project will make best endeavors to divert 95% of demolition waste from landfill.								Materials will be diverted from landfill where possible.	Achieving the target will depend on the contractors used, as well as the supply chain, both of which are unknown at this stage.	Pre-demolition contractor	To be managed through the SWMP and pre-demolition audit.
Excavation waste (how waste from excavation will be managed)		All non-hazardous waste to be diverted from landfill.							Excavated waste to be reused on site where possible.	Incorporating excavation waste into the design and final development.		To be managed through the SWMP.
Construction waste (how waste arising from construction of the layers will be reused or recycled)		The project will make best endeavors to divert 95% of non-demolition waste from landfill. Targeting $\leq 3.4\text{m}^3$ or ≤ 3.2 tonnes per 100m^2 of the gross internal floor area for construction waste.								Achieving the targets will depend on the contractors used, as well as the supply chain, both of which are unknown at this stage.	Contractor	To be managed through the SWMP.
Municipal and industrial waste (how the design will support operational waste management)					A dedicated space for the segregation, storage, and collection of the recyclable waste streams. Containers will be of a suitable size, number and type given the likely waste arisings. The development will make best endeavors to encourage users to minimise waste and to reuse/ recycle. >65% of municipal waste to be diverted from landfill by 2030 is targeted.				Refuse store to be designed in consideration of council requirements. Waste will be managed in accordance with the waste hierarchy.	Waste generated will be largely dependent on the future occupiers (not yet known). Management will also be influenced the provision of council and/or local services/facilities.		Municipal / Operational Waste Management Plan

7.2 Additional options which could be explored through the detailed design stage are outlined below, demonstrating the project's commitment to go beyond standard practice.

- Prefabricated bathroom pods to minimise construction related waste. Bathroom pods could also be designed to allow for disassembly.
- Existing building materials crushed to aggregate for use in foundations.
- Maximising recycled content in superstructure where possible e.g., metal frame / rebar and cladding, and targeting >25% cement replacement (recycled product or GGBS).
- Repeating window detail and sizes throughout scheme suitable for use with prefabricated facade systems minimising waste through off site construction methods.
- Community engagement as part of the contractor's CCS certification – could include local schools talk on recycling, donation of waste material for school garden etc.

8. Reporting Forms – Bill of Materials

Table 9.1 Building Materials

Building Element Category	One Click LCA Resource	Quantity (kg)	Material Intensity (kg/m2)
Foundations	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	2,520,000	93
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	158,000	6
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	16,800,000	623
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	123,000	5
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	3,150,000	117
Lowest Floor Construction	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	189,000	7
	Damp insulation PA, 0.08 kg/m2	420	0
	Rock wool (mineral wool) insulation, unfaced, L = 0.0315 W/mK, R = 1 m2K/W, 31.5mm, 1.26 kg/m2, 40 kg/m3, (Range: 36-50kg/m3), 22% slag content (One Click LCA)	6,615	0
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	180,000	7
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	8,000	0
Frame	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	552,000	20

	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	28,000	1
Upper Floors	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	4,680,000	174
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	210,000	8
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	7,041,600	261
	Light gauge steel for façade infill or load bearing systems, t: 1.2, 1.6, 2.0 mm, 7850kg/m3, EOS Steel Frame (EOS Framing Ltd.)	224,000	8
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	855,000	32
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	53,000	2
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	1,760,400	65
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	56,000	2
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	1,710,000	63
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	106,000	4
	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	3,499,200	130
	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA 2022)	112,000	4
	Self-levelling mortar (SLM), 2024.3 kg/m3, 2.41 Mpa, additive: polyfunctional plasticizer, 50% recycled fine aggregate (One Click LCA)	75,384	3

	Glass fiber reinforcement mesh, 25 mm diam. glass fibre rods, 2200 kg/m3, Combar® (Schöck Bauteile)	126	0
	Rock wool (mineral wool) insulation, unfaced, L = 0.031 W/mK, R = 1 m2K/W, 31mm, 1.86 kg/m2, 60 kg/m3, (Range: 51-65kg/m3), 50% slag content (One Click LCA)	1,900	0
	Plywood board, 490.6 kg/m3, EN15804+A2	5,500	0
	Glue laminated timber (Glulam), 544 kg/m3, 12% (± 3%) moisture content (One Click LCA)	31,000	1
	Rock wool (mineral wool) insulation, unfaced, L = 0.031 W/mK, R = 1 m2K/W, 31mm, 1.86 kg/m2, 60 kg/m3, (Range: 51-65kg/m3), 50% slag content (One Click LCA)	2,800	0
	Glass fibre for concrete reinforcement (One Click LCA)	2,720	0
	Glue laminated timber (Glulam), 544 kg/m3, 12% (± 3%) moisture content (One Click LCA)	2,720	0
Roof	Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 20% fly ash content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA 2022)	2,268,000	84
	Light gauge steel for façade infill or load bearing systems, t: 1.2, 1.6, 2.0 mm, 7850kg/m3, EOS Steel Frame (EOS Framing Ltd.)	82,000	3
	Polypropylene vapour membrane, French average, 0.18 kg/m2 (MDEGD)	945	0
	Glass wool insulation, R=5.0 m2K/W, L=0.040 W/mK, ép. 200 mm, 2.295 kg/m2, Lambda=0.04 W/(m.K), ISOLANT TOITURE 200 (ISOVER)	12,000	0
	Bituminous waterproofing system - Single layer, 5.44 kg/m2, AXTER, DERBIGUM, MEPLÉ, SIPLAST-ICOPAL, SOPREMA (Chambre Syndicale Française de l'Etanchéité)	29,000	1
	Polyethylene sealing film for slabs, ép. 150 micron, Donnee par default (MDEGD)	710	0
	Drainage floor underlay from EPS, ép.25 mm, Couche drainante en polystyrène expansé (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	1,800	0
	Geotextile from polypropylene, 300 g/m2 (MDEGD)	1,575	0

	Soil substrates for green roofs (MDEGD)	-	-
	Glue laminated timber (Glulam), 544 kg/m3, 12% (± 3%) moisture content (One Click LCA)	710	0
	PVC waterproofing membrane, 2.93 kg/m, Bandeau de rive de toiture en PVC (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT)	440	0
	Glue laminated timber (Glulam), 544 kg/m3, 12% (± 3%) moisture content (One Click LCA)	14,000	1
	Glass wool insulation panels, unfaced, generic, L = 0.031 W/mK, R = 3.23 m2K/W (18 ft2°Fh/BTU), 25 kg/m3 (1.56 lbs/ft3), (applicable for densities: 0-25 kg/m3 (0-1.56 lbs/ft3)), Lambda=0.031 W/(m.K)	1,900	0
	Plastic vapour control layer, 0.2 mm (Tommen Gram)	58	0
	Roof slate, 30 kg/m2, EN15804+A2	9,300	0
Stairs and Ramps	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	420,000	16
	Reinforcement steel (rebar), generic, 90% recycled content, A615	17,407	1
	Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	1,204,128	45
	Reinforcement steel (rebar), generic, 90% recycled content, A615	50,172	2
	Cross laminated timber (CLT), 481 kg/m3, 12% (± 3%) moisture content (One Click LCA)	160,000	6
External Walls	Red brick, average production, UK, 215 mm x 102.5 mm x 65 mm, 2.13 kg/unit, 1485 kg/m3 (Brick Development Association (BDA) Ltd (2019))	1,600,000	59
	Masonry mortar/facing wall mortar/mortar with special properties, 1500 kg/m3, EPD coverage: >1500 kg/m3 (IWM)	320,000	12

	Rock wool insulation panels, unfaced, generic, L = 0.039 W/mK, R = 2.56 m ² K/W (15 ft ² °Fh/BTU), 200 kg/m ³ (12.49 lbs/ft ³) (applicable for densities: 150-200 kg/m ³ (9.36-12.49 lbs/ft ³)), Lambda=0.039 W/(m.K)	450,000	17
	Masonry mortar/facing wall mortar/mortar with special properties, 1500 kg/m ³ , EPD coverage: >1500 kg/m ³ (IWM)	220,000	8
	Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m ² (2.20 lbs/ft ²) (for 12.5 mm/0.49 in), 858 kg/m ³ (53.6 lbs/ft ³)	140,000	5
	Gypsum plaster, 1100 kg/m ³ (Bundesverband der Gipsindustrie)	42,000	2
	Water-borne interior paints, 1.36 kg/L, average coverage 8-10 m ² /L, Biora, Ekora, Kolibri Sand, Paneelikattomaali, Ranch, Superlateksi, Tapettipohjamaali, Teknospro, Tela, Timantti, Trend (Teknos)	1,722	0
	Aluminium façade cladding panel, anodized, 7.5 kg/m ² , 70% recycled content (One Click LCA)	3,500	0
Windows	Aluminium framed windows, double leaf, 26.55 kg/m ² (SNFA)	80,000	3
	Aluminium framed rooflight, U = 1.1 W/m ² K, 51.67 kg/m ² , Mardome Glass Trade (Brett Martin Daylight Systems)	3,600	0
External Doors	Aluminium framed double glazed doors, per m ² , 79.5% glass, 15.7% aluminium, 2.2% steel, 44 kg/m ² , width:1.23m, height:2.18m, 6mm toughened and 8.8mm laminated glass, Edge Symmetry (Optima)	7,040	0
	Entrance metal door with metal frame, 28.7 kg/m ²	2,870	0
Internal Walls and Partitions	Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m ² (2.20 lbs/ft ²) (for 12.5 mm/0.49 in), 858 kg/m ³ (53.6 lbs/ft ³)	350,000	13
	Light gauge steel for façade infill or load bearing systems, t: 1.2, 1.6, 2.0 mm, 7850kg/m ³ , EOS Steel Frame (EOS Framing Ltd.)	672,000	25
	Light gauge steel for façade infill or load bearing systems, t: 1.2, 1.6, 2.0 mm, 7850kg/m ³ , EOS Steel Frame (EOS Framing Ltd.)	168,000	6
	Light gauge steel for façade infill or load bearing systems, t: 1.2, 1.6, 2.0 mm, 7850kg/m ³ , EOS Steel Frame (EOS Framing Ltd.)	336,000	12

	Glass wool insulation panels, unfaced, generic, $L = 0.031 \text{ W/mK}$, $R = 3.23 \text{ m}^2\text{K/W}$ (18 ft ² °Fh/BTU), 25 kg/m ³ (1.56 lbs/ft ³), (applicable for densities: 0-25 kg/m ³ (0-1.56 lbs/ft ³)), $\Lambda=0.031 \text{ W/(m.K)}$	78,000	3
	Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m ² (2.20 lbs/ft ²) (for 12.5 mm/0.49 in), 858 kg/m ³ (53.6 lbs/ft ³)	350,000	13
Internal Doors	Doors with wooden frame, interior, Portes intérieures de communication avec huisserie bois (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	33,000	1
Finishes	Emulsion matt paint for interior use, 0.174 kg/m ² , 1.39 kg/l, Diamond Matt (Dulux Trade)	8,500	0
	Water-based epoxy floor paint, 1.44 kg/l, 6 m ² /l, 0.48 kg/m ² , Dulux Trade High Performance Floor Paint (AkzoNobel)	1,100	0
	Luxury vinyl flooring tile, 2.5 mm, 4.3 kg/m ² , wear layer: 0.5 mm (One Click LCA)	65,000	2
	Emulsion matt paint for interior use, 0.174 kg/m ² , 1.39 kg/l, Diamond Matt (Dulux Trade)	2,800	0
	Gypsum plasterboard for suspended ceiling systems, 12.5 mm, 9 kg/m ² , 720 kg/m ³	130,000	5
Fittings, Furnishings and Equipment	Ceramic toilet with flush tank (cistern), 34.8 kg/unit, 980 × 360 × 430 mm (One Click LCA)	20,880	1
	Ceramic shower tray, 33.3 kg/unit, 900 × 900 × 80 mm (One Click LCA)	19,980	1
	Sink from polyester resin reinforced with fiberglass, 5.77 kg/unit, Evier en matériau de synthèse [Long. 860 mm Larg. 500 mm Haut. 185 mm] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	3,500	0
	Basin faucet (single lever mixer), 3.68 kg/unit (Dornbracht AG & Co. KG)	2,208	0
	Mirror, 4 mm, 10 kg/m ² , 2500 kg/m ³ , Mirox MNGE Mirox MNGE SAFE+ Mirox 4Green Mirox 4Green SAFE+ (AGC France SAS)	2,700	0
Services (MEP)	Electricity distribution system, cabling and central, for all building types, per m ² GFA	110,000	4
	Drinking water supply piping network, per m ² GIFA (residential buildings)	7,000	0

Air/water heat pumps for the production of domestic hot water, without a tank, 476.5 kg/unit, P=35.1 kW, Q-TON ESA30EH Hydragreen ZéPAC70 QAHV-N560YA-HPB - Atlantic - Mitsubishi Electric- Auer - Mitsubishi Heavy Industries (Uniclima)	4,300	0
District heat distribution center, per 1kW	8,100	0
Heat distribution piping network, per m2 heated area, all building types	5,000	0
Air handling unit, with heat recovery through plate heat exchanger, 10 000 m3/h (5885.8 ft3/min), 1256 kg/unit (2769 lbs/unit)	8,900	0
Ventilation ducting, per m linear, D: 63 mm (2.48 in)	7,500	0
Sewage water drainage piping network, per m2 GIFA (residential buildings)	5,000	0
Concrete and concrete products, unreinforced, 2403 kg/m3 (VOB BETON)	14,413	1
Battery Lithium ion, French average, capacité=200Ah, Batterie Lithium ion (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	9,383	0
Motion detector, 0.147 kg/unit, 6412286 - DMB TYXAL+, Autres références visées: 6412311 (Delta Dore)	57	0
LED office lighting, 5.95 kg/unit	15,763	1
Cable 1-wire, 0.02 kg/m	7,344	0
Power cable, 0.02 kg/m, H07V-U PASSEO 1G1.5 GREEN/YELLOW C100m (Nexans)	18,296	1
Electronic access control mortise lock, 3.146 kg/unit, Corbin Russwin IN120 (Assa Abloy)	2,976	0
Electric operated passenger elevator, 320-1350 kg load capacity, elevator weight 2556.5 kg, 814.9 tkm life cycle, Schindler 1000, 3000 (Schindler)	15,339	1
Galvanized steel water supply plumbing, French average, DN=110mm, Réseau d'adduction d'eau en acier galvanisé (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	5,600	0

	Butterfly valve, fire suppressing, Diam.=100mm, Cartouche coupe feu ou pare-flamme (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	4	0
	Fire sprinkler, 0.072 kg/unit, Sprinkler pendant (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	12	0
	Flow meter with bendable plate, 0.93kg, Contrôleur de débit à palette (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	5	0
	Communication cable, 0.231 kg/m, Câble PTT 288 [14 paires] - DONNEE ENVIRONNEMENTALE PAR DEFAULT (MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L'HABITAT DURABLE)	160	0
	Photovoltaic monocrystalline panel, per m2, 14.5 kg/m2, 224 Wp (One Click LCA)	7,250	0
External Works	Precast concrete pavers/blocks, Danish average, 10 cm, 225 kg/m2 (Belægningsgruppen)	436,500	16
	Sand, compacted dry density, 1682 kg/m3	97,892	4
	Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	310,400	12
	Gravel, dry bulk density, 1680 kg/m3	33,600	1

- 8.1 Efforts will be made to maximise use of reused or recycled materials further by opting for materials with higher recycled content and reusing existing materials on site, for example, demolition waste will be used in the construction of foundations (if possible). Thus, best endeavours will be made to allow the scheme to align with GLA guidance of reusing/recycling at least 20% by value of materials.

9. Reporting Forms – Recycling and Waste Metrics

Table 10.1 Building Circularity – Bill of Materials

Result category	Material quantity kg	Material intensity (kg/m ² GIA)	Recycled content by value (%)	Reused content by value (%)	Estimated recyclable materials (kg/m ²)
1 Substructure	24,064,789	865.21	20.32	0	864.93
2.1 Superstructure: Frame	1,867,638	67.15	93.16	0	67.15
2.2 Superstructure: Upper Floors	21,270,998	764.76	34.97	0	762.82
2.3 Superstructure: Roof	2,530,240	90.97	30.73	0	88.45
2.4 Superstructure: Stairs and Ramps	1,946,670	69.99	10.64	0	63.28
2.5 Superstructure: External Walls	2,986,816	107.39	3.57	0	88.14
2.6 Superstructure: Windows and External doors	89,910	3.23	0.59	0	3.23
2.7 Superstructure: Internal Walls and Partitions	871,740	31.34	7.47	0	28.31
2.8 Superstructure: Internal doors	33,000	1.19	0	0	
3 Finishes	231,390	8.32	2.47	0	5.26
4 Fittings, furnishings & equipments					
5 Services (MEP)	304,835	10.96	35.39	0	8.05
8 External works	878,392	31.58	0	0	31.58
Total	57,076,419	2052.08	30.73	0	2011.2

Table 10.2 Building Circularity – Materials Recovered

Category	Total Tonnes	Virgin Tonnes	Renewable Tonnes	Recycled Tonnes	Reused Tonnes
Construction materials	54,213	49,969	213	4,030	-
Earth masses, asphalt and stones	451	451	-	-	-
Construction site – material waste	2,413	2,147	36	230	-
Material replacement and refurbishment	4,537	4,339	-	197	-
Total	61,613	56,907	249	4,458	-

Table 10.3 Building Circularity – Materials Returned

Category	Reuse Tonnes	Recycling Tonnes	Downcycling Tonnes	Use as Energy Tonnes	Disposal Tonnes
Construction materials	0	3,866	49,307	318	722
Earth masses, asphalt and stones	0	0	451	0	0
Construction site – material wastage	0	290	2,026	43	54
Material replacement and refurbishment	0	1,487	0	104	797
Total	0	5,643	53,933	464	1,573

Table 10.4 Building Circularity – Key Material Group

Result Category	Total Tonnes	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials Returned %	Circularity %
Concrete	47,091	97	3		100		50	26
Metals	2,602	4	96			100	100	98
Bricks and Ceramics	1,600	100	0		100		50	25
Gypsum-based	1,627	95	5	3	38	60	79	42
Insulation	558	82	18	100	0		0	9
Glass	3	70	30			100	100	65
Wood and biogenic	214	0	100		100		50	75
Earth masses and asphalt	451	100	0	0	100		50	25
Other materials	518	100	0	24	20	56	66	33

10. Anticipated Arisings

- 10.1 The anticipated waste arisings have been considered in the context of those originating from construction, demolition & excavation; and those emanating from the operation of the site.

Demolition, Excavation & Construction Waste

Demolition

- 10.2 The existing structures, and the associated hardstanding, will require demolition as part the redevelopment works. Where feasible, the recovered materials from the demolition process will be used as part of the sub-base across the site.
- 10.3 Demolition waste arisings have been confirmed in the site-specific Pre-Demolition Audit at 459.44 tonnes. Based on the total GIA given in the area schedule of 27,813.9 sqm, the total tonnes of construction waste generated per 100 sqm is therefore estimated to be around 1.65 tonnes.

Excavation

- 10.4 Whilst groundworks are expected in relation to drainage, laying of service runs and building foundations, any generated materials will likely be reused on site for levelling purpose (subject to any considerations regarding the contamination status). Similarly, it is expected that the construction of roads and transport interchange will allow for the redistribution and compaction of any won materials. Excavation wastes are therefore anticipated to be negligible.

Construction

- 10.5 A calculation of waste from construction has been undertaken using the data provided by the One Click LCA tool.
- 10.6 Assuming the default wastage values for the materials specified, the total construction wastage for the site equates to ~ 2,413 tonnes. Based on the total GIA given in the area schedule of 27,813.9 sqm, the total tonnes of construction waste generated per 100 sqm is therefore estimated to be around 8.7 tonnes.

Operational Waste

- 10.7 Consideration has also been given to anticipated waste arisings associated with the operation of the buildings.

Apartment / Flats

- 10.8 Based on the 2020 average waste arising per person of 399 kg (DEFRA; December 2021), annual waste arisings of 361 tonnes are expected in relation to the operation of the purpose-built student development and residential units. This assumes maximum occupancy numbers in regards to the schedule of accommodation. Note that waste from the non-residential space

has not been estimated due to the lack of accurate benchmarks, however it is expected to be minimal relative to the student accommodation and flats.

11. Waste Management

- 11.1 As well as considering opportunities to minimise the use of resources and design to eliminate waste, the development must also be able to manage any waste that does arise. Waste will be managed in accordance with the waste hierarchy, and it is expected that a significant portion of the anticipated waste arisings will be diverted from landfill.

Demolition, Excavation & Construction

- 11.2 It is expected that any developer would seek to actively manage waste arisings due to economic incentives and that the construction phase will be managed in accordance with a Site Waste Management Plan (SWMP), which will set targets and procedures for the diversion of material from landfill. An outline SWMP has been prepared and is appended
- 11.3 Recycling will be prioritised from start to finish. Furthermore, whenever possible, to help reduce the number of trips and optimise transport operations, vehicles delivering materials to the Site will leave with waste.
- 11.4 For example, certain manufactures offer take-back schemes for recycling products, including plasterboard and glass cullet. Such schemes will be considered when managing the demolition waste to ensure it is managed in accordance with the waste hierarchy.
- 11.5 A number of measures will also be explored to re-use material on Site. For instance, the piling matt might be formed of deconstructed site material from the previous development where possible (see section 15 for further actions to be explored). An independent pre-demolition audit is also being conducted to manage demolition waste and maximise reuse/reclamation.
- 11.6 Information presented in UK Statistics on Waste (DEFRA; July 2021) indicates that the recovery rate from non-hazardous construction and demolition waste in England was 93.8% in 2018. The development will aim for more than 95% by tonnage of demolition and construction waste to be diverted from landfill as per minimum, in line with the GLA's guidance.

Operational

- 11.7 The UK Statistics on Waste (DEFRA; July 2021) indicates that the UK recycling rate for waste from households was 46.2% in 2019, increasing from 45.0% in 2018.
- 11.8 Based on the 2019 rates of recycling, it would be expected that this development will divert ~167 tonnes per annum from landfill. In light of new policies, this figure is likely to increase, with the UK Government's Circular Economy Package (July 2020) setting a target to recycle 65% of municipal waste by 2035 and to have no more than 10% municipal waste going to landfill by 2035.

- 11.9 To facilitate these recycling rates, suitable storage will be located within the development (please see 'Operational Waste Management Plans' in the appendices). The refuse strategy will be designed to meet the North London Waste Plan management guidelines, as well as in accordance with the London Plan and BREEAM guidance. This includes the provision of separate containers for dry recycling, food waste and general waste.
- 11.10 Refuse storage will be of adequate size and easily accessible for building users. Communal storage facilities will be provided in each block, as well as within the kitchen spaces of the units.

Minimising Operational Waste

- 11.11 The development will also seek to reduce waste during the operational phase of the building. Information packs on recycling and waste prevention good practice measures should be given to new residents and any staff to encourage the correct use of the waste facilities provided on site and help achieve the development's waste targets. This should be maximised through clear signage (where possible) within the waste store provided on-site to assist the building occupiers in segregating waste correctly.
- 11.12 Community initiatives can be important in influencing a persons' behaviour and thus are essential in promoting a more circular economic lifestyle. The possibility of supporting and implementing community initiatives on site should be considered for the development where feasible, focusing primarily on household waste during the building's occupation. For example, the information packs provided to residents could include details on waste prevention schemes and resources within the Wood Green area. One community initiative includes online reuse groups, which provides a recycling network for people to donate and buy unwanted items in the local area. In Haringey, local community groups that collect items for reuse or recycling could get paid for the materials they send to the reuse and recycling credits scheme. Other services that promote circular economy principles are discussed further below.
- 11.13 It is understood that waste and recycling levels will be monitored to identify trends and allow the necessary action to be taken when falling below targets. Waste transfer notes and relevant documentation will be sought where available, and a record will be kept tracking waste quantities. The waste management team, who are responsible for transferring the waste between stores for refuse collectors' access, should also document arisings where possible. Specific actions will be confirmed in the Operational Waste Management Plan once developed.

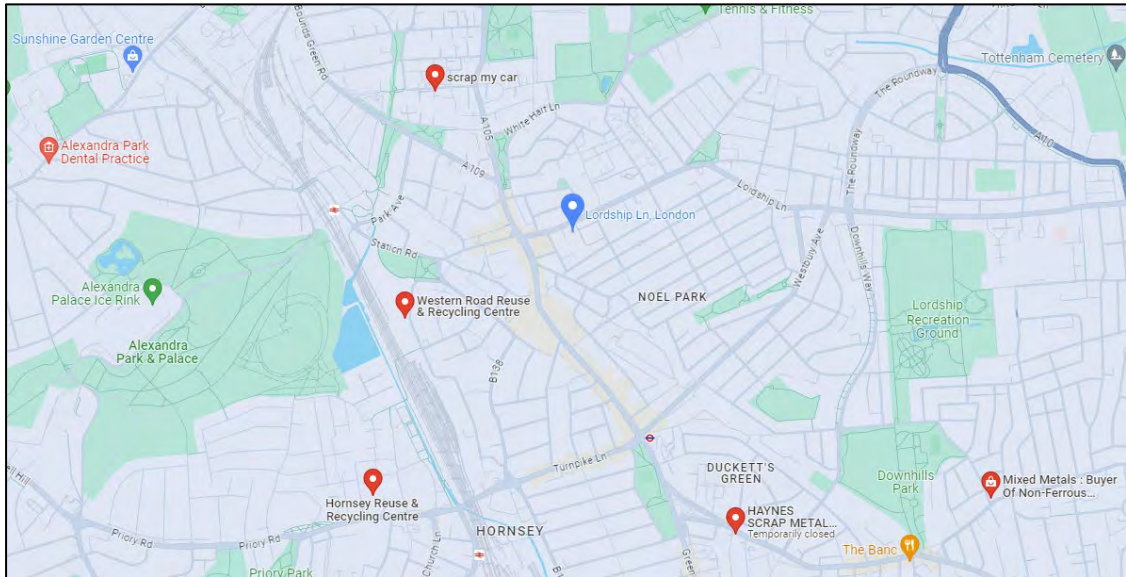
Council Waste & Recycling Services

- 11.14 Haringey Council provides a number of services with the purpose of managing waste arisings in the local area.
- 11.15 The following items are accepted by the council for recycling:
- Dry Recycling - including glass bottles and jars, food tins, paper and cardboard, plastic containers and bottles as well as food cartons.

- Food Waste – for most unused food scrapings.
- Garden Waste – including grass cuttings, leaves and prunings, small branches and flowers.

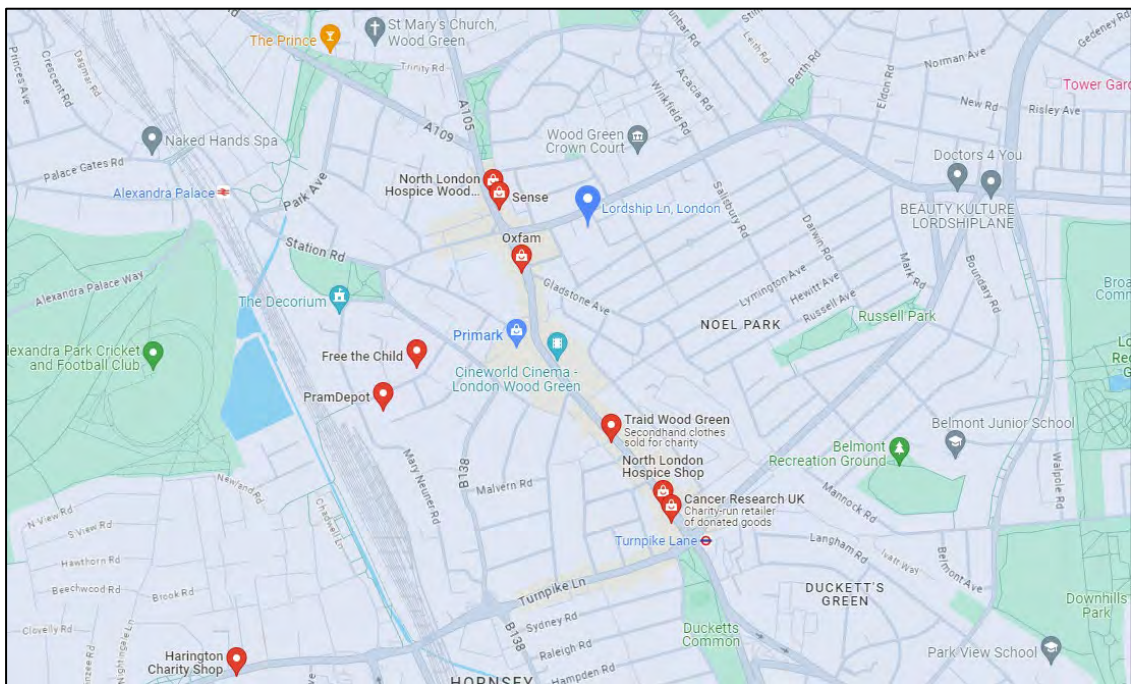
11.16 There are also numerous recycling centres in the local area, as shown in the map below.

Figure 12.4 Recycling Centers near the proposed development (Google Maps)



11.17 Several charity shops are located within a mile of the proposed development. These give occupants an alternative method to discard unwanted items and allow others in the community to reuse them, thus contributing to a circular economy.

Figure 12.5 Local charity shops near the proposed development (Google Maps)



Recycling and Waste Reporting Form

- 11.18 Estimated arisings are summarised below as well as the targeted diversion rates. Since it is still early stages and the contactors, supply chain, occupiers etc. have yet to be decided/confirmed, the Project will make best endeavours to achieve these diversion rates. The targets and anticipated arisings will be confirmed in the SWMP and the Municipal / Operational Waste Management Plan once the design becomes finalised and the project team has been determined.

Table 13.1 Demolition, Excavation & Construction Arisings (Anticipated)

	Total tonnage	t/m ² GIA	Diversion from landfill		Residual	
			% reused or recycled onsite	% reused or recycled offsite	% to landfill	% to other management
Demolition	459	0.02	10	85	5	
Excavation	0	0	-	95	5	
Construction	2,413	0.09	0	95	5	

Table 13.2 Operational (Anticipated)

	Tonnage per annum	Diversion from landfill		Residual	
		% reused	% recycled or composted	% to landfill	% to other management
Municipal	361	65		35	

12. Circular Economy Narrative

12.1 This section of the Statement will provide a more detailed description of how the targets presented in the Waste Metrics reporting form and the Bill of Materials will be achieved.

12.2 The details presented below will require updating at RIBA Stage 4, on the basis that better data associated with the quantification and nature of the materials will be available at this point.

Conserve resources, increase efficiency and source sustainably

12.3 As part of the efforts to conserve resources, the design will be reviewed to ensure that material quantities are optimised. This will be particularly relevant in the context of the structural design whereby foundations and frame constitute a very significant part of the overall bill of materials.

12.4 There will be a need to consider (and potentially balance) other factors, such embodied carbon targets, as these will also be driving the materials strategy.

12.5 In terms of the existing site, a pre-demolition audit has been undertaken to better understand the quantity and nature of available materials. These will be reused on site wherever feasible on the basis that it will reduce disposal costs and improve the circularity of the development proposals.

12.6 The conservation of resources through the operation of the building will be the responsibility of the end users, however, this will be encouraged through the provision of suitable educational information (e.g., Building User Guide).

Design to eliminate waste (and for ease of maintenance)

12.7 The elimination of waste will be an objective to be targeted through careful procurement (i.e., only procuring the necessary quantity of materials), and ensuring the selection of building elements that are demonstrably more robust and therefore requiring reduced maintenance, repair and replacement.

Manage waste sustainably and at the highest value

12.8 Targets will be used (as set out earlier in this report) for the diversion of waste from landfill, ensuring that material is more productively used wherever possible.

13. Plans for Implementation

13.1 This section presents how the short- and medium-term targets or commitments will be implemented, monitored, and reported.

- Who – parties with key responsibility for the targets or commitments will be mostly the principle designer and contractor.
- What – the architect, working with the contractor (and their associated suppliers), will refine the materials choices, firming up quantity estimates and selected materials.
- When – many of the key actions will occur at RIBA Stage 4B and following the appointment of the contractor.
- How – the circular economy modelling will be revisited and updated to track progress against targets.

13.2 See below table for further details on the plan for implementation.

Table 14.1 Plans for Implementation

Target (What)	Responsibility (Who)	Action (How)	Timescale (When)
Manage waste sustainably and at the highest value during demolition and construction	Pre-demolition consultant, contractor and architect	Conduct a pre-demolition audit and SWMP to ensure waste is managed appropriately, prioritising reuse of materials/ elements where possible. Contractor to work with architect to determine feasibility of reusing existing materials on site. Nominate an individual on site to record quantities of waste being produced and monitor performance against the 95% diversion from landfill target. Waste transfer notes should be obtained where available.	Pre-demolition audit completed and detailed SWMP by end of RIBA Stage 4B (following appointment of the contractor)
Minimise the quantities of materials used	Principal designer (architect) and contractor	Review and refine design, firm up quantity estimates and materials selected in line with circular economy commitments. The objectives and opportunities listed in the 'Lean Design Options Appraisal' in Appendix C should be incorporated into the scheme, where feasible. Further measures should also be explored	RIBA Stage 4B (following the appointment of the contractor)

		throughout the technical design stage. The circular economy modelling will be revisited and updated to track progress against targets.	
Design to eliminate waste	Contractor	Contractor to look into options for sourcing materials and other resources sustainably when deciding supply chain. A sustainable procurement plan will be developed accordingly.	RIBA Stage 4B (following the appointment of the contractor)
Minimising waste on site	Contractor	Site introduction should include guidance on how to reduce waste on site, as well as information on sustainable waste management. Procedures for sorting, reusing and recycling construction waste into defined waste groups should be given in the SWMP and adhered to during construction. Regular site meetings should be organised throughout construction to update the team on progress against the waste targets and discuss further measures where required.	During construction (RIBA Stage 5)
Manage waste sustainably and at the highest value during operation	Waste management team	Handover building user guide to occupants (which should include information on waste management). Monitor operational waste arisings in accordance with the building specific operational waste plan.	Post construction (RIBA Stage 6)

14. End-of-Life Strategy

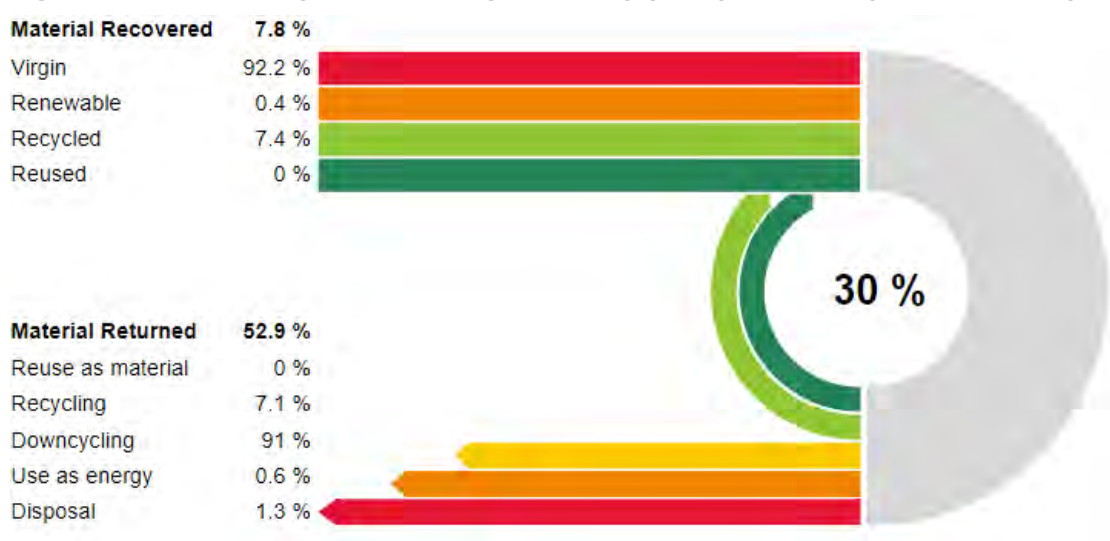
- 14.1 This section describes the strategy for how the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and reused at the end of their useful life.
- 14.2 Building information concerning material selections will form part of the hand-over documentation.
- 14.3 Specific end-of-life strategies will vary depending upon the nature of the material and will include:
- Steel recycling
 - Concrete crushed to aggregate (sub-base layers)
 - Plastic based material incineration
 - Cement / mortar used in a backfill
 - Brick / stone crushed to aggregate (sub-base layers)
 - Gypsum recycling
- 14.4 A significant proportion of the building material is likely to be concrete. Whilst this material can be used as a sub-base layer, a key challenge facing the construction industry will be whether there are better alternative means of recovering this material.
- 14.5 It is anticipated that the materials sector will undergo significant transformation over forthcoming years, and it would be sensible to re-evaluate options again at the appropriate time as there may be better options at this point to improve the circularity.
- 14.6 Consideration has been given as to how the building materials, components and products will be disassembled and reused at the end of their useful life. For example, through conversations with the Architect, the following actions are being taken into account and will be confirmed at the detailed design stage.
- Utilisation of mechanical fixings ahead of chemical/solvent fixings to increase disassembly options whilst reducing potential negative ecological impacts.
 - Separation of structure and facing material to allow for increased adaptability and separation when deconstructed.
 - Standard window and door sizes to allow for a wider range of recoverable systems and materials.

- Consolidation of MEP systems into core units/risers to minimise crossover runs for easier replacement/recovery and disassembly.
- Pre-fabricated bathroom pods with ability to be disassembled in modular units for reuse.

15. Summary

- 15.1 This Circular Economy Statement provides an overview as to how the proposed scheme has set strategic approach goals in the context of the design and construction considerations.
- 15.2 The application of Circular Economy philosophy to the built environment is complex with issues overlapping and trade-offs to consider. Nevertheless, a balanced approach has been sought in line with the overarching commitments to sustainable design and construction.
- 15.3 A review of the GLA's and local Council's planning policies has identified a number of requirements relating to the Circular Economy, in particular London Plan Policy SI7 (*Reducing waste and supporting the circular economy*), which requires applicants to submit a Circular Economy Statement.
- 15.4 A range of commitments are proposed; and these will be managed and recorded through a range of documentation. Key commitments include:
- Design for adaptability and flexibility;
 - The use of materials that have high durability for longevity;
 - Diversion of demolition and construction waste from landfill by converting elements and materials for alternative use;
 - Efficient construction and operational waste management via accessible, dedicated areas for segregated waste volumes.

Figure 16.1 Lordship Lane Building Circularity (as represented by OneClick LCA)



- 15.5 Overall, the proposals for the scheme will account for the overarching values of Circular Economy including conserving resources, designing to eliminate waste and managing waste sustainably.
- 15.6 An additional Circular Economy Post Completion Report will be provided once construction has finished to confirm performance against the numerical targets and indicate the actual waste volumes.