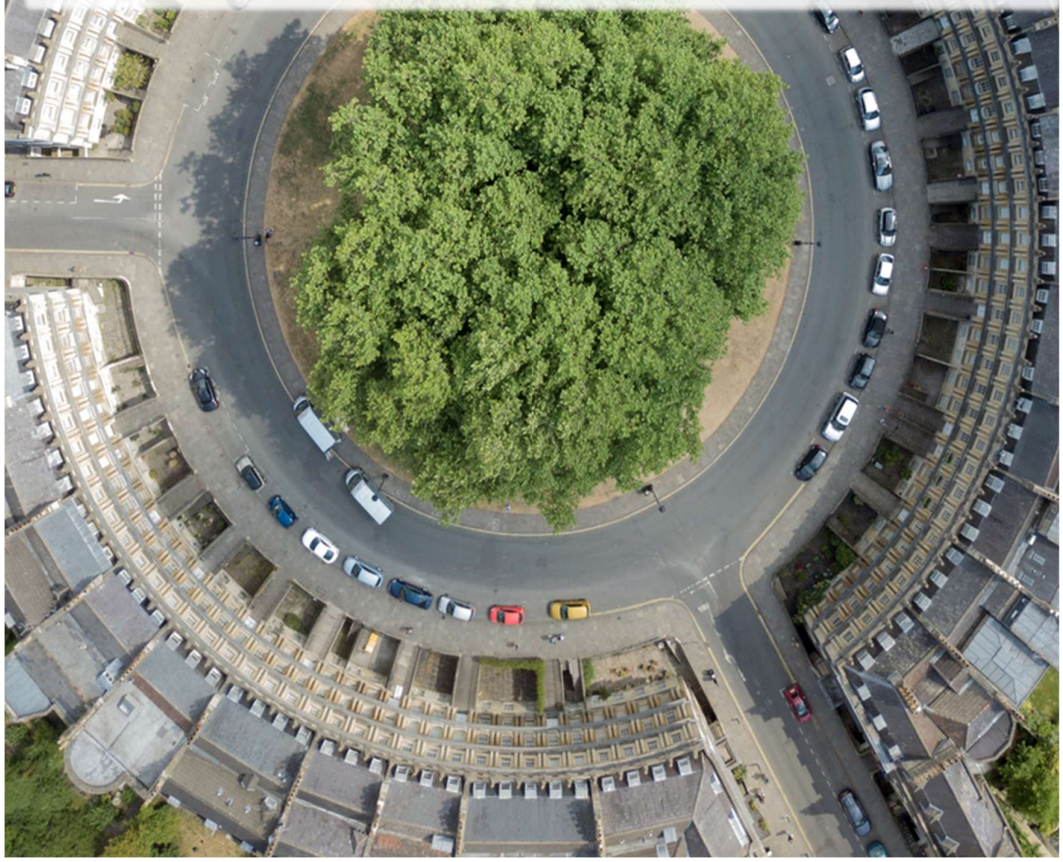
Uxbridge Road, Hayes

Circular Economy Statement

Ensphere Group Ltd on behalf of
Shurgard UK Ltd



Ensphere Group Ltd
52 Grosvenor Gardens
London, SW1W 0AU
+44 (0) 20 7846 9040
www.enspheregroup.com

ensphere

Uxbridge Road, Hayes

Circular Economy Statement

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

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Final	V2	Danielle Cawley	Pete Jeavons	August 2022

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Contents

1. Executive Summary

1.1 This Statement presents the Circular Economy strategic approaches and aspirations for the proposed scheme at Uxbridge Road, Hayes, UB4 0HD.

1.2 Proposals include the partial demolition and extension to an existing building to provide additional self-storage floorspace (Use Class B8) with associated new car and cycle parking, refuse storage, landscaping and other associated works ancillary to the development.

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 Shurgard UK Ltd to produce a Circular Economy Statement for the proposed development at Uxbridge Road, Hayes, UB4 0HD.

Site and Surroundings

2.2 The application site (the 'Site') is located along Uxbridge Road/The Broadway, adjacent to the Grand Union Canal, and falling under the jurisdiction of London Borough of Hillingdon.

2.3 As existing, Site comprises an existing Shurgard self-storage facility with internal storage units within a 5-storey building and external direct-access storage units within a series of 1-storey structures. The ancillary shop is located at the front of the Site with a "lighthouse" attached.

2.4 Pedestrian and vehicular access is via Uxbridge Road/The Broadway. 15no. car parking spaces are provided beyond the secure gate.

2.5 Bounded by Uxbridge Road/The Broadway to the south, the Grand Union Canal to the east, residential dwellings to the west and Tollgate Drive to the north, the Site lies within an area of mixed townscape character. The immediate area is predominantly residential in character, with a mix of commercial and institutional uses on the opposite side of Uxbridge Road/The Broadway and the Grand Union Canal.

Proposed Development

2.6 Partial demolition and extension to existing building to provide additional self-storage floorspace (Use Class B8) with associated new car and cycle parking, refuse storage, landscaping and other associated works ancillary to the development.

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

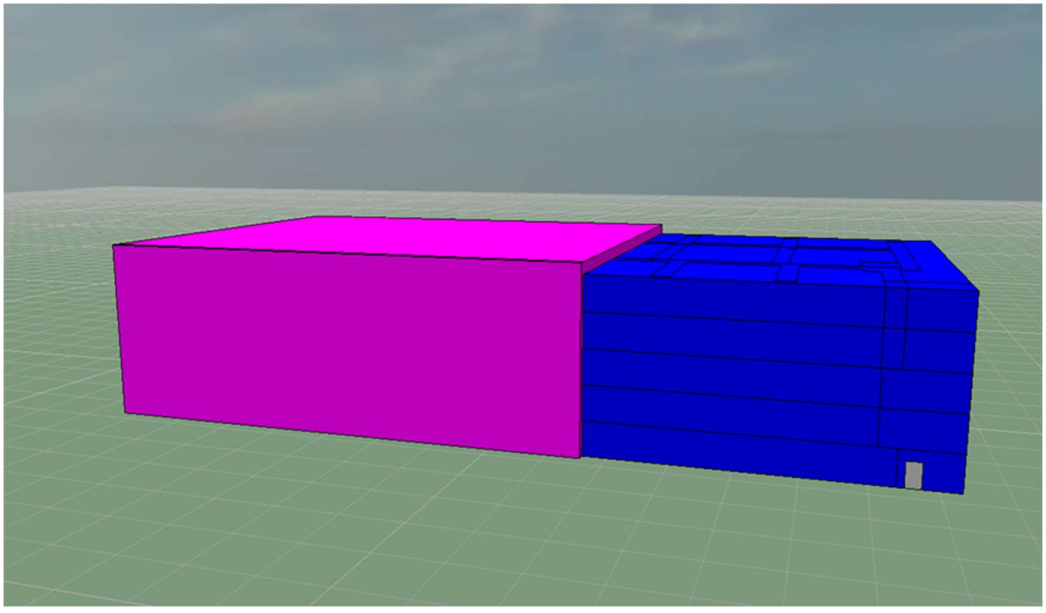
3.1 The Circular Economy Statement seeks to demonstrate:

- 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, with geometry being created and defined within IES VE 2022 and exported to the One Click tool.

Figure 3.1 IES Representation of the Site



3.3 The geometries of the building were modelled within IES VE 2022, based upon drawings provided by the architect and structures teams. Once the building's geometry had been modelled, materials were assigned to the building elements such as the floors, external walls, internal partitions, foundations, and roof.

3.4 The completed IES VE 2022 model was then imported into One Click LCA, where the appropriate datasets were assigned to the model, along with their geometries. Elements such as the substructure, structural frame, retaining wall and hard landscaping were added manually into the model once it had been imported into One Click LCA.

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 (including BREEAM pre-assessment).

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 3.1 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"

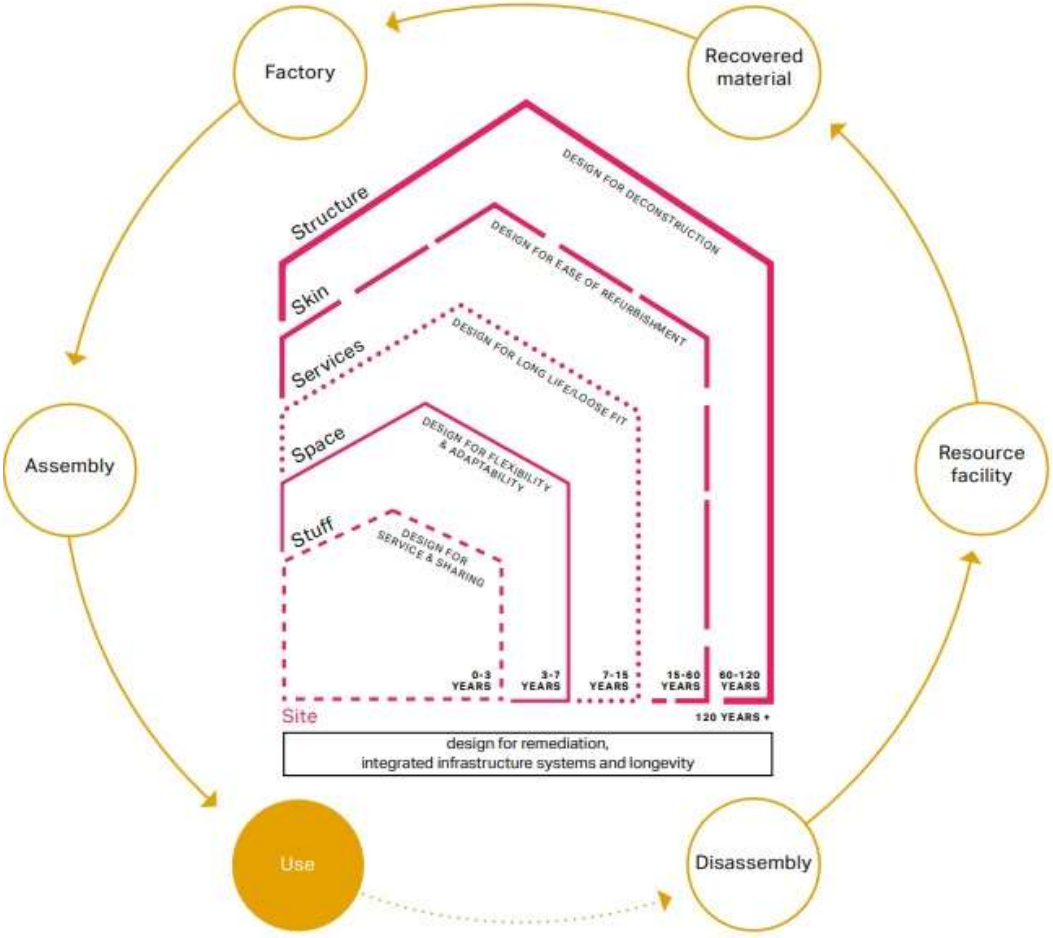
4.3 A useful way to understand a building or development is in terms of "layers", where each layer has its own lifecycle that may require a different approach (or different solutions) to be adopted.

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

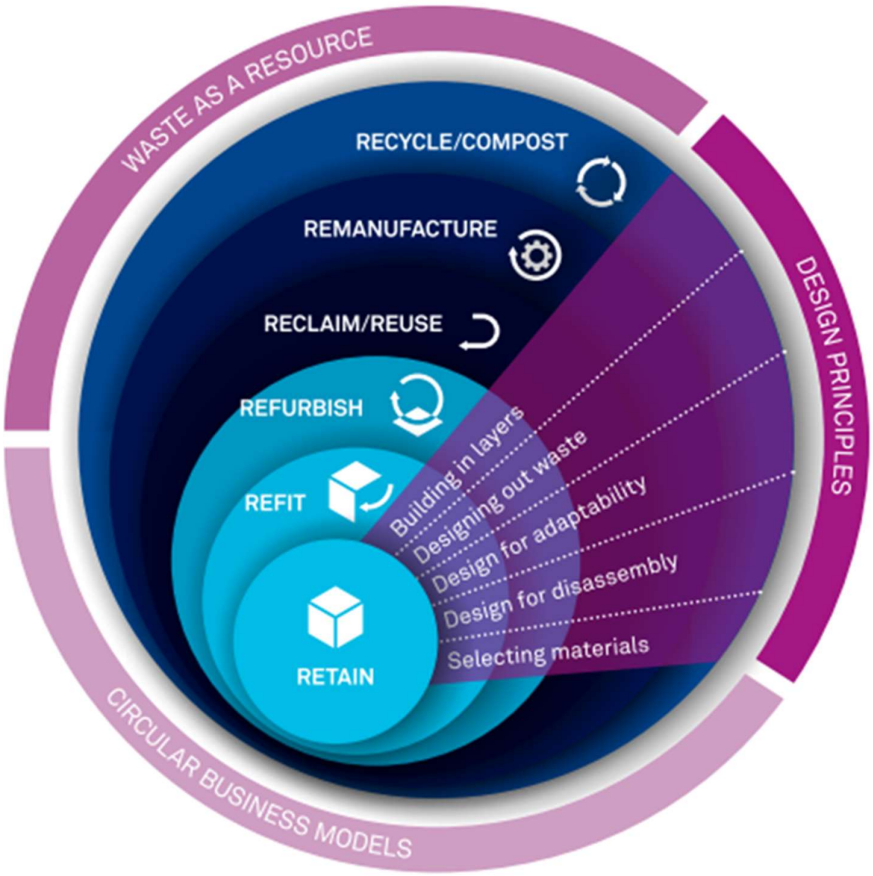
Figure 4.1 "Building in Layers Diagram" Source GLA/Useful Projects



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

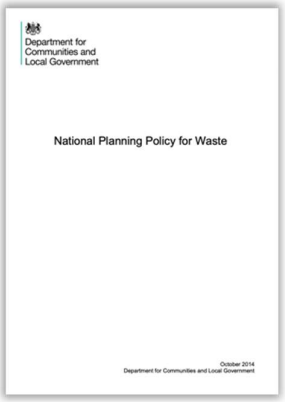
National Planning Policy Framework (2021)

5.2 The National Planning Policy Framework (NPPF) was updated in July 2021. References are made throughout the document concerning the minimisation of waste. Paragraph 7 of the revised NPPF states that:

"The purpose of the planning system is to contribute to the achievement of sustainable development. 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



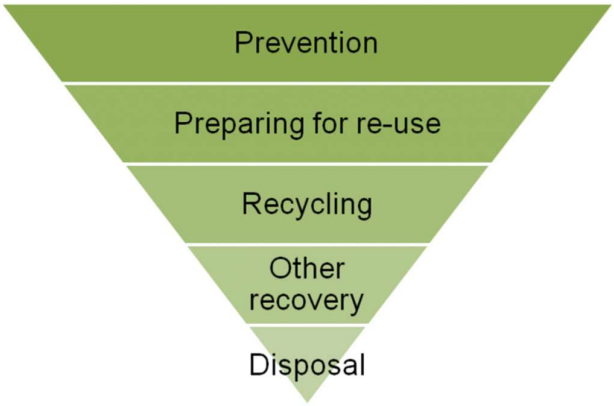
5.1 The National Planning Policy for Waste sets out the Government's ambition to work towards a more sustainable and efficient approach to resource use and management.

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:

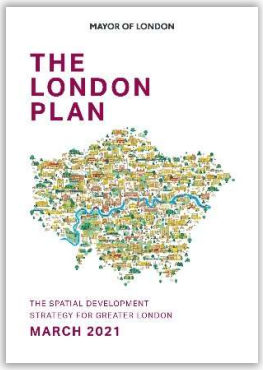
Figure 4.1 The Waste Hierarchy



London Planning Policy

London Plan (2021)

5.5 The New 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.

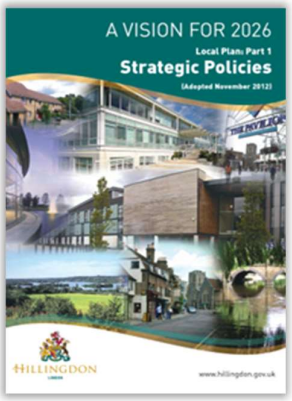
- Policy SI8 (*Waste Capacity and Net Waste Self-Sufficiency*) – seeks to manage London's waste sustainably with a target of net self-sufficiency. Requires development proposals to implement the waste hierarchy and contribute to London's circular economy.

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.

Local Context

London Borough of Hillingdon Local Plan Part 1 - Strategic Policies (2012)



5.8 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

5.9 The following policies are considered pertinent to this report:

- Policy BE1 (*Built Environment*) - The Council will require all new development to improve and maintain the quality of the built environment in order to create successful and sustainable neighbourhoods. Includes reference to aligning with the carbon dioxide targets of the London Plan; and BREEAM.

- Policy EM1 (*Climate Change Adaptation and Mitigation*) - The Council will ensure that climate change mitigation is addressed at every stage of the development process.

- 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, ensuring that all waste is managed towards the upper end of the waste hierarchy.

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

5.10 This Development Management Policies document forms part of Hillingdon's Local Plan Part 2. Its purpose is to provide detailed policies that will form the basis of the Council's decisions on individual planning applications.

5.11 The following policies are highlighted:

- Policy DMEI2 (*Reducing Carbon Emissions*) - All developments are required to make the fullest contribution to minimising carbon dioxide emissions in accordance with London Plan targets.

6. Circular Economy Aspirations

6.1 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.

6.4 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.

7. Strategic Approach

7.1 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.

7.2 The existing self-storage facility comprises internal self-storage units within a 5-storey building and external direct access 1-storey self-storage units. The Proposed Development comprises the extension of the existing facility for additional self-storage floorspace (Use Class B8) and will involve the demolition of the existing single-storey elements located to the middle of the site, adjacent to the main 5-storey building. This equates to roughly 1,540sqm GIA demolition.

Figure 7.1 Existing site, as viewed from Grand Union Canal (Google Maps)

7.3 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. 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.

7.4 An independent pre-demolition audit is to be carried out to determine the site-specific opportunities for re-using existing materials and/or components. 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.

7.5 Table 8.1 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 ≤3.4m^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

8. Circular Economy Commitments

8.1 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 ≤3.4m^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 contactors 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 ≤3.4m^3 or ≤3.2 tonnes per 100m^2 of the gross internal floor area for construction waste.								Achieving the targets will depend on the contactors 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

8.2 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.
- Some of the concrete hardstanding on the existing part of the site for redevelopment could be crushed to aggregate for use as a piling matt.
- Maximising recycled content in superstructure where possible e.g., metal frame / rebar and cladding, and targeting 30% cement replacement (recycled product).
- 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.
- Any plastic waste from the site could be made into landscape furniture.

9. Reporting Forms – Bill of Materials

Table 9.1 Building Materials

Resource	Quantity (kg)	Material Intensity (kg/m2)	Recycled Content (%)
Foundations & Substructure			
EPS Insulation, T: 10-2400 mm, 600 x 1200 mm, 0.031 W/m2K, 16 kg/m3 (EPS-gruppen	4,136	0.81	
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)	744,480	145.12	3%
Plastic vapour control layer, 0.2 mm (Tommen Gram)	190	0.04	
Reinforcement steel (rebar), generic, 97% recycled content (typical), A615	27,926	5.44	97%
Self levelling mortar, for floors, walls and overhead appl., 3-50 mm, 1400 kg/m3, Pericret (PCI Augsburg)	28,952	5.64	
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)	294,507	57.41	3%
Reinforcement steel (rebar), generic, 97% recycled content, A615	20,425	3.98	97%
Vertical Structures and Façade			
Sandwich panel with glasswool insulation and double steel siding, U=0.35W/(m2K), 120.9mm (Total), 0.5mm (Outer sheet), 0.4mm (Liner sheet), 120mm (Insulation), 10.36kg/m2, 85.69kg/m3, Elite System 51.35 (Tata Steel Europe & Euroclad Group Ltd)	15,000	2.92	
Structural hollow steel sections (HSS), cold rolled, generic, 10 % recycled content, circular, square and rectangular profiles, S235, S275 and S355	18,240	3.56	10%
Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	95,000	18.52	3.2%

Water-borne interior paints, 1.36 kg/L, average coverage 8-10 m2/L, Biora, Ekora, Kolibri Sand, Paneelikattomaali, Ranch, Superlateksi, Tapettipohjamaali, Teknospro, Tela, Timantti, Trend (Teknos)	1,180	0.23	
Structural steel profiles, generic, 60% recycled content, I, H, U, L, and T sections, S235, S275 and S355	12,190	2.38	60%
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)	11,015	2.15	12%
Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3)	95,000	18.52	3.2%
Horizontal structures: beams, floor's, and roofs			
Sandwich panel with glasswool insulation and double steel siding, U=0.35W/(m2K), 120.9mm (Total), 0.5mm (Outer sheet), 0.4mm (Liner sheet), 120mm (Insulation), 10.36kg/m2, 85.69kg/m3, Elite System 51.35 (Tata Steel Europe & Euroclad Group Ltd)	11,000	2.14	
Steel sheets, generic, 60% recycled content, S235, S275 and S355	8,100	1.58	60%
Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 0% recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	2,018,400	393.45	
Reinforcement steel (rebar), generic, 90% recycled content, A615	85,136	16.60	90%
Structural steel profiles, generic, 60% recycled content, I, H, U, L, and T sections, S235, S275 and S355	90,720	17.68	60%
Other structures and materials			
Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	23,040	4.49	1%
Reinforcement steel (rebar), generic, 90% recycled content, A615	958	0.19	90%
Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)	67,200	13.10	1%

Reinforcement steel (rebar), generic, 90% recycled content, A615	2,760	0.54	90%
Porcelain WC kit (toilet and tank), 37.4 kg/unit, DURAVIT : Duraplus)	75	0.01	
Porcelain sink, 29.6 kg/unit, 50 x 70 cm (SFISB)	59	0.01	
Emulsion matt paint for allround interior use, Pigment: Lightfast Pigments, binder: PVA Copolymer emulsion , solvent: Water, 1.443 kg/l, 18m2/l, 0.16 kg/m2, Supermatt White, Almond White, Gardenia, Magnolia, Light Base, Medium Base (Dulux Trade)	680	0.13	
Waterproof, protective, flexible coating, 1.5 kg/l, Lastogum (PCI Augsburg)	320	0.06	
Tile adhesive, all round, for ceramics, 1-5 mm, 1400 kg/m3, Verlegemörtel (PCI Augsburg)	300	0.06	16%
Ceramic wall tiles, 7.5 mm, 3000 kg/m2 (Seranit Granit Seramik)	5,112	1.00	
Foam backed vinyl (PVC) flooring, heterogeneous, 2.6 mm, 1.8 kg/m2, TX Classic (Tarkett)	7,300	1.42	
Aluminium framed windows, double leaf, 26.55 kg/m2 (SNFA)	66	0.01	
Steel hallway entry door, DONNEE PAR DEFAUT (DED)	350	0.07	
External areas and site elements			
Facing bricks, clay pavers and brick slips, 900-2500 kg/m3 (Bauen mit Backstein Zweischalige Wand Marketing)	2,538	0.49	
Sand, compacted dry density, 1682 kg/m3	45,414	8.85	
Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	144,000	28.07	
Building Technology			
Air heat pump, 2,2 kW, R410A	350	0.07	
Electricity distribution system, cabling and central, for all building types, per m2 GFA	4,100	0.80	
Drinking water supply piping network, per m2 GIFA (residential buildings	1,300	0.25	
Sewage water drainage piping network, per m2 GIFA (factories and logistics buildings)	310	0.06	

Heat distribution piping network, per m2 heated area, all building types	950	0.19
Solar panel photovoltaic system, EU average	3,600	0.70

9.1 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.

10. Reporting Forms – Recycling and Waste Metrics

Table 10.1 Building Circularity – Materials Recovered

Category	Total Tonnes	Tonnes / m2	Virgin Tonnes	Renewable Tonnes	Recycled Tonnes	Reused Tonnes
Construction materials	3 703	0.72	3 467	0	236	0
Earth masses, asphalt and stones	189	0.04	189	0	0	0
Construction site – material waste	171	0.03	160	0	11	0
Material replacement and refurbishment	44	0.01	41	0	2	0
Total	4 107	0.80	3 858	0	249	0

Table 10.2 Building Circularity – Materials Returned

Category	Reuse Tonnes	Recycling Tonnes	Downcycling Tonnes	Use as energy Tonnes	Disposal Tonnes
Construction materials		488	3 185	12	19
Earth masses, asphalt and stones			189		
Construction site – material wastage		39	130	1	1
Material replacement and refurbishment		8	5	15	16
Total		535	3 509	27	36

Table 10.3 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	3 148	99	1		100		50	26
Metals	292	33	67			100	100	83
Bricks and Ceramics	8	100	0		100		50	25
Gypsum-based	219	97	3		13	87	93	48
Insulation	15	91	9	73	27		14	11
Glass								
Wood and biogenic								
Earth masses and asphalt	189	100	0		100		50	25
Other materials	21	94	6	37	36	27	45	25

11. Anticipated Arisings

11.1 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

11.2 Some 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.

11.3 Arisings have been estimated using drawings of the existing site layout and elevation, to better understand the building areas and storey heights. A model was then built based on the drawings in IES VE 2022 software. The model used generic assumptions for the floor slab, roof and wall thicknesses, calculating the quantities which were then outputted to estimate the amount of materials. No assumptions have been made regarding the internal layouts.

11.4 The existing building was assessed; and demolition waste arisings (excluding any material associated with the internal party walls or hard landscaping) were estimated to be circa 437 m^3. Using a typical density for concrete of 2,400kg/m3, this is likely to equate to a tonnage in the order of 1,051 tonnes. Demolition waste arisings will be confirmed in the site Pre-Demolition Audit.

Excavation

11.5 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

11.6 A calculation of waste from construction has been undertaken using the data provided by the One Click LCA tool.

11.7 Assuming the default wastage values for the materials specified, the total construction wastage for the site equates to ~171 tonnes. Based on the total GIA given in the area schedule of 5,130 sqm, the total tonnes of construction waste generated per 100 sqm is therefore estimated to be around 3.3 tonnes.

Operational Waste

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

11.9 The waste from the operation of the building is considered to be minimal due to the proposed site activities which is predominately self-storage.

11.10 As taken from the 'Stage 2 document' prepared by Threesixty Architecture, assuming that circa two employees are present on site on an ongoing basis, and using on the BS 5906:2005 weekly arisings for offices, an estimated 100 litres / week is predicted. Using the WRAP conversion factor for co-mingled (plastic bottles, news & prams, cardboard, mixed cans and glass) of 84kg/m3 (as measured from samples taken from 240 litres wheeled bins); the total weekly arisings are estimated to be 8.4kg. This equates to a total of 0.4 tonnes annually.

12. Waste Management

12.1 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

12.2 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.

12.3 Recycling will be prioritised. Furthermore, whenever possible, to help reduce the number of trips and optimise transport operations, vehicles delivering materials to the Site will leave with waste.

12.4 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.

12.5 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 9.2 for further actions to be explored). An independent pre-demolition audit will also be conducted to manage demolition waste and maximise reuse/reclamation.

12.6 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.

12.7 Therefore, of the 1,051 tonnes associated with demolition and the 171 tonnes associated with construction; ~1,161 tonnes (i.e. 998 tonnes and 162 tonnes respectively) would be diverted from landfill. Residual materials requiring landfill would therefore likely be 61.1 tonnes.

Operational

12.8 The refuse strategy will be designed to meet the London Borough of Hillingdon waste management guidelines, as well as in accordance with the London Plan and BREEAM guidance.

12.9 There is one existing refuse store located behind the existing shop, close to the site entrance, which will be where any refuse vehicle would make a collection. As the only waste generated

will likely be by the shop, it is not anticpated that the requirements will change. Shurgard customers are prohibited from leaving their waste on Site. Therefore, the only waste generated would from the front desk element in the building, with the site operated by circa two employees.

12.10 Any waste produced by the building will be sorted into 4 bins (General Waste, Glass, Plastics and Paper). It is therefore expected that a significant portion of the anticipated waste arisings will be diverted from landfill.

12.11 Specific actions will be confirmed in the Operational Waste Management Plan once developed.

Minimising Operational Waste

12.12 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 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.

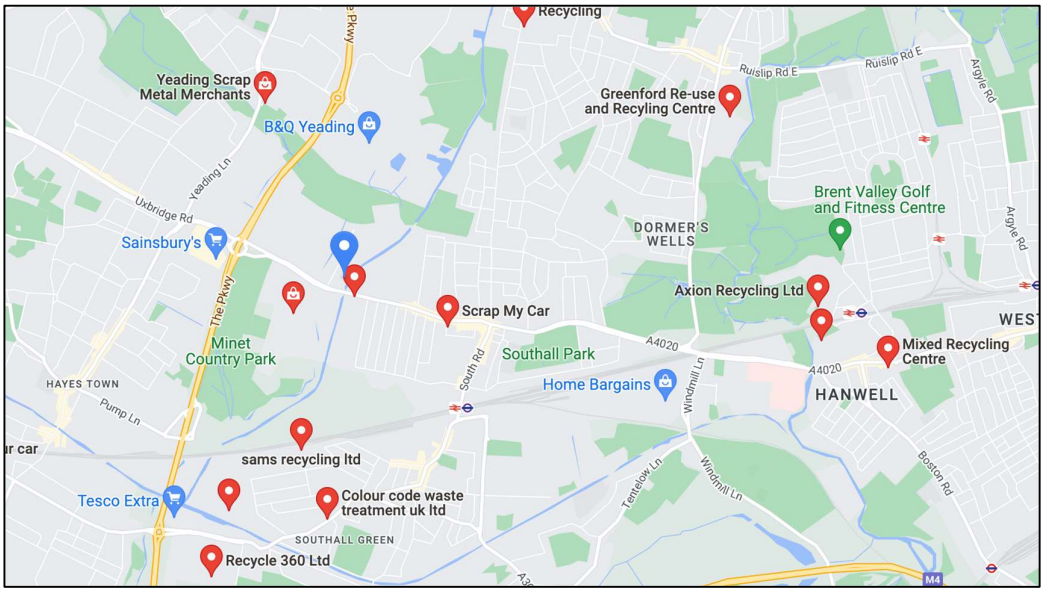
12.13 Community initiatives can be important in influencing a persons' behaviour and thus are essential in promoting a more circular economic lifestyle. The possibility of supporting and implementing community initiatives on site should be considered for the development where feasible.

12.14 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 Municipal / Operational Waste Management Plan once developed.

Council Waste & Recycling Services

12.15 Hillingdon Council provides a number of services with the purpose of managing waste arisings in the local area, as shown in the image below.

Figure 12.1 Recycling Centers near the proposed development (Google Maps)



Recycling and Waste Reporting Form

12.16 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 12.1 Demolition, Excavation & Construction Arisings (Anticpated)

	Total tonnage	t/m² GIA	Diversion from landfill		Residual	
			% reused or recycled onsite	% reused or recycled offsite	% to landfill	% to other management
Demolition	1,051	0.2	10	85	5	
Excavation	0	0	-	95	5	
Construction	171	0.03	0	95	5	
Municipal	0.4	-	65		35	

13. Circular Economy Narrative

13.1 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.

13.2 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

13.3 As part of the efforts to conserve resources, the design will be reviewed to ensure that material quantifies 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.

13.4 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.

13.5 In terms of the existing site, a pre-demolition audit will be 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.

13.6 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)

13.7 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

13.8 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.

14. Plans for Implementation

14.1 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.

14.2 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 to be completed ASAP and 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)

15. End-of-Life Strategy

15.1 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.

15.2 Building information concerning material selections will form part of the hand-over documentation.

15.3 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

15.4 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.

15.5 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.

15.6 Across the project, preference will be given to mechanical fixings rather than adhesives or cements where feasible to allow for deconstruction and reuse of individual components.

16. Summary

16.1 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.

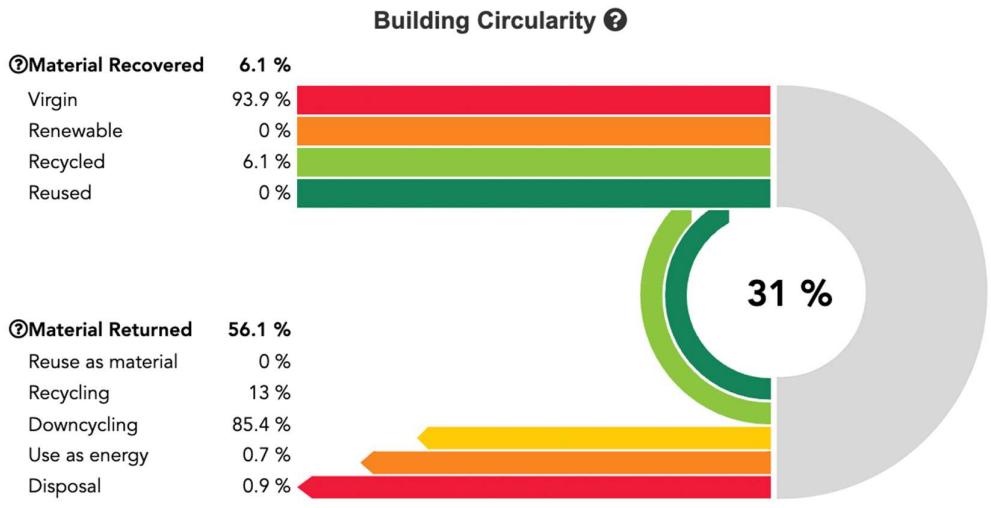
16.2 The application of Circular Economy philosophy to the built environment is complex with issues overlapping and trade-offs to consider. Nevertheless, a balanced approach has been sought in line with the overarching commitments to sustainable design and construction.

16.3 A review of the GLA's and Hillingdon 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.

16.4 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 Uxbridge Road Building Circularity (as represented by OneClick LCA)



16.5 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.

16.6 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.

Appendices

A. Site Plan


NOTES
ORIGINAL A1
All levels and dimensions to be checked on site prior to construction / fabrication; report discrepancies immediately. Do not scale dimensions from this drawings. This drawing is copyright protected.
REVISION
A 230622 Redrawn AF
Paddington Branch
Boro Const & LB Bdy
Grand Union Canal
CC
7 to 9
LS
ESS
AR C
7465
18000
Visitor Parking: 4 x Car space (1 of which is Accessible and all electrical charging)
Customer Parking: 35 x Car space (2 of which are Electrical Charge points)
Van Parking: A van can utilize 2 parallel parking bays
EV Electrical Car "Twin" charging point
Bicycle Parking: 4 long stay, 4 short stay, 2 Cargo Bikes
Refuse Requirement = 0.1 sqm
Actual Refuse Store = 11m2
Calculation: Total back of house/shop area = 57m2 Storage area Req @ 2 m2 / 1000m2
Sum: 57/1000 x 2 = 0.114m2
LEGEND: Surface Finishes
Pavement (Highways Land)
Proposed Soft Landscaping Area
Please refer to landscaping drawing for more details
N
Site Boundary - 6156 msq
SCALE 1:250
0 2 4 6 8 10m
SCALE 1:250
DATE Jun'22
DRAWN AF
CHECKED DA
PROJECT
SHURGARD UK
UK04 - HAYES
LONDON UB4 0HD
DRAWING
Site Plan
As Proposed
Threesixty Architecture
10 MONTROSE STREET
GLASGOW
G1 1RE
0141 229 7575
www.360architecture.com
DRAWING No.
21065GA-D-001A

B. Key Local Planning Policy Requirements

London Plan (2021)

Policy GG5: Growing a good economy

To conserve and enhance London's global economic competitiveness and ensure that economic success is shared amongst all Londoners, those involved in planning and development must:

A) promote the strength and potential of the wider city region

B) seek to ensure that London's economy diversifies and that the benefits of economic success are shared more equitably across London

C) plan for sufficient employment and industrial space in the right locations to support economic development and regeneration

D) ensure that sufficient high-quality and affordable housing, as well as physical and social infrastructure is provided to support London's growth

E) ensure that London continues to provide leadership in innovation, research, policy and ideas, supporting its role as an international incubator and centre for learning

F) promote and support London's rich heritage and cultural assets, and its role as a 24-hour city

G) make the fullest use of London's existing and future public transport, walking and cycling network, as well as its network of town centres, to support agglomeration and economic activity

H) 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

To help London become a more efficient and resilient city, those involved in planning and development must:

A) seek to improve energy efficiency and support the move towards a low carbon circular economy, contributing towards London becoming a zero carbon city by 2050

B) ensure buildings and infrastructure are designed to adapt to a changing climate, making efficient use of water, reducing impacts from natural hazards like flooding and heatwaves, while mitigating and avoiding contributing to the urban heat island effect

C) create a safe and secure environment which is resilient the impact of emergencies including fire and terrorism

D) take an integrated and smart approach to the delivery of strategic and local infrastructure by ensuring that public, private, community and voluntary sectors plan and work together.

Policy D3: Optimising site capacity through the design-led approach

The design-led approach

A) All development must make the best use of land by following a design-led approach that optimises the capacity of sites, including site allocations. Optimising site capacity means ensuring that development is of the most appropriate form and land use for the site. The design-led approach requires consideration of design options to determine the most appropriate form of development that responds to a site's context and capacity for growth, and existing and planned supporting infrastructure capacity (as set out in Policy D2 Infrastructure requirements for sustainable densities), and that best delivers the requirements set out in Part D.

B) Higher density developments should generally be promoted in locations that are well connected to jobs, services, infrastructure and amenities by public transport, walking and cycling, in accordance with Policy D2 Infrastructure requirements for sustainable densities. Where these locations have existing areas of high density buildings, expansion of the areas should be positively considered by Boroughs where appropriate. This could also include expanding Opportunity Area boundaries where appropriate.

C) In other areas, incremental densification should be actively encouraged by Boroughs to achieve a change in densities in the most appropriate way. This should be interpreted in the context of Policy H2 Small sites.

D) Development proposals should:

Form and layout

1) enhance local context by delivering buildings and spaces that positively respond to local distinctiveness through their layout, orientation, scale, appearance and shape, with due regard to existing and emerging street hierarchy, building types, forms and proportions.

2) encourage and facilitate active travel with convenient and inclusive pedestrian and cycling routes, crossing points, cycle parking, and legible entrances to buildings, that are aligned with peoples' movement patterns and desire lines in the area.

3) be street-based with clearly defined public and private environments.

4) facilitate efficient servicing and maintenance of buildings and the public realm, as well as deliveries, that minimise negative impacts on the environment, public realm and vulnerable road users.

Experience

5) achieve safe, secure and inclusive environments.

6) provide active frontages and positive reciprocal relationships between what happens inside the buildings and outside in the public realm to generate liveliness and interest.

7) deliver appropriate outlook, privacy and amenity.

8) provide conveniently located green and open spaces for social interaction, play, relaxation and physical activity.

9) help prevent or mitigate the impacts of noise and poor air quality.

10) achieve indoor and outdoor environments that are comfortable and inviting for people to use.

Quality and character

11) respond to the existing character of a place by identifying the special and valued features and characteristics that are unique to the locality and respect, enhance and utilise the heritage assets and architectural features that contribute towards the local character.

12) be of high quality, with architecture that pays attention to detail, and gives thorough consideration to the practicality of use, flexibility, safety and building lifespan through appropriate construction methods and the use of attractive, robust materials which weather and mature well.

13) aim for high sustainability standards (with reference to the policies within London Plan Chapters 8 and 9) and take into account the principles of the circular economy.

14) provide spaces and buildings that maximise opportunities for urban greening to create attractive resilient places that can also help the management of surface water.

E) Where development parameters for allocated sites have been set out in a Development Plan, development proposals that do not accord with the site capacity in a site allocation can be refused for this reason.

Policy SI7: Reducing waste and supporting the circular economy

A) 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:

1) 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.

2) encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products.

3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026.

4) meet or exceed the municipal waste recycling target of 65 per cent by 2030.

5) meet or exceed the targets for each of the following waste and material streams:

a) construction and demolition – 95 per cent reuse/recycling/recovery.

b) excavation – 95 per cent beneficial use.

6) 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.

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

1) how all materials arising from demolition and remediation works will be re-used and/or recycled.

2) how the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and reused at the end of their useful life.

3) opportunities for managing as much waste as possible on site.

4) adequate and easily accessible storage space and collection systems to support recycling and re-use.

5) how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.

6) how performance will be monitored and reported.

C) Development Plans that apply circular economy principles and set local lower thresholds for the application of Circular Economy Statements for development proposals are supported.

Policy SI8: Waste capacity and net waste self-sufficiency

A) In order to manage London's waste sustainably:

1) the equivalent of 100 per cent of London's waste should be managed within London (i.e. net self-sufficiency) by 2026.

2) existing waste management sites should be safeguarded (see Policy SI 9 Safeguarded waste sites).

3) the waste management capacity of existing sites should be optimised.

4) new waste management sites should be provided where required.

5) environmental, social and economic benefits from waste and secondary materials management should be created.

B) Development Plans should:

1) plan for identified waste needs.

2) identify how waste will be reduced, in line with the principles of the Circular Economy and how remaining quantums of waste will be managed.

3) allocate sufficient sites, identify suitable areas, and identify waste management facilities to provide the capacity to manage the apportioned tonnages of waste, as set out in Table 9.2 - boroughs are encouraged to collaborate by pooling their apportionment requirements.

4) identify the following as suitable locations to manage borough waste apportionments:

a) existing waste and secondary material sites/land, particularly waste transfer facilities, with a view to maximising their capacity.

b) Strategic Industrial Locations and Locally Significant Industrial Sites.

c) safeguarded wharves with an existing or future potential for waste and secondary material management.

C) Mayoral Development Corporations must cooperate with host boroughs to meet identified waste needs.

D) Development proposals for materials and waste management sites are encouraged where they:

1) deliver a range of complementary waste management and secondary material processing facilities on a single site.

2) support prolonged product life and secondary repair, refurbishment and remanufacture of materials and assets.

3) contribute towards renewable energy generation, especially renewable gas technologies from organic/biomass waste, and/or

4) are linked to low emission combined heat and power and/or combined cooling heat and power (CHP is only acceptable where it will enable the delivery or extension of an area-wide heat network consistent with Policy SI 3 Energy Infrastructure Part D1c)

E) Developments proposals for new waste sites or to increase the capacity of existing sites should be evaluated against the following criteria:

1) the nature of the activity, its scale and location.

2) effective implementation of the waste hierarchy and its contribution to London's circular economy

3) achieving a positive carbon outcome (i.e. re-using and recycling high carbon content materials) resulting in significant greenhouse gas savings – all facilities generating energy from waste will need to meet, or demonstrate that steps are in place to meet, a minimum performance of 400g of CO_2 equivalent per kilowatt hour of electricity produced.

4) the impact on amenity in surrounding areas (including but not limited to noise, odours, air quality and visual impact) - where a site is likely to produce significant air quality, dust or noise impacts, it should be fully enclosed.

5) the transport and environmental impacts of all vehicle movements related to the proposal - the use of renewable fuels from waste sources and the use of rail and waterway networks to transport waste should be supported.

F) When planning for new waste sites or to increase the capacity at existing sites the following should be considered:

1) job creation and social value benefits, including skills, training and apprenticeship opportunities.

2) local need.

3) accessibility of services for local communities and businesses.

Local Planning Policy Framework

Local Plan Part 1 - Strategic Policies (2012)

Policy BE1: Built Environment

The Council will require all new development to improve and maintain the quality of the built environment in order to create successful and sustainable neighbourhoods, where people enjoy living and working and that serve the long-term needs of all residents. All new developments should:

1. Achieve a high quality of design in all new buildings, alterations, extensions and the public realm which enhances the local distinctiveness of the area, contributes to community cohesion and a sense of place;

2. Be designed to be appropriate to the identity and context of Hillingdon's buildings, townscapes, landscapes and views, and make a positive contribution to the local area in terms of layout, form, scale and materials and seek to protect the amenity of surrounding land and buildings, particularly residential properties;

3. Be designed to include "Lifetime Homes" principles so that they can be readily adapted to meet the needs of those with disabilities and the elderly, 10% of these should be wheelchair accessible or easily adaptable to wheelchair accessibility encouraging places of work and leisure, streets, neighbourhoods, parks and open spaces to be designed to meet the needs of the community at all stages of people's lives;

4. In the case of 10 dwellings or over, achieve a satisfactory assessment rating in terms of the latest Building for Life standards (as amended or replaced from time to time);

5. Improve areas of poorer environmental quality, including within the areas of relative disadvantage of Hayes, Yiewsley and West Drayton. All regeneration schemes should ensure that they are appropriate to their historic context, make use of heritage assets and reinforce their significance;

6. Incorporate a clear network of routes that are easy to understand, inclusive, safe, secure and connect positively with interchanges, public transport, community facilities and services;

7. Improve the quality of the public realm and provide for public and private spaces that are attractive, safe, functional, diverse, sustainable, accessible to all, respect the local character and landscape, integrate with the development, enhance and protect biodiversity through the inclusion of living walls, roofs and areas for wildlife, encourage physical activity and where appropriate introduce public art;

8. Create safe and secure environments that reduce crime and fear of crime, anti-social behaviour and risks from fire and arson having regard to Secure by Design standards and address resilience to terrorism in major development proposals;

9. Not result in the inappropriate development of gardens and green spaces that erode the character and biodiversity of suburban areas and increase the risk of flooding through the loss of permeable areas;

10. Maximise the opportunities for all new homes to contribute to tackling and adapting to climate change and reducing emissions of local air quality pollutants. The Council will require all new development to achieve reductions in carbon dioxide emission in line with the London Plan targets through energy efficient design and effective use of low and zero carbon technologies. Where the required reduction from on-site renewable energy is not feasible within major developments, contributions off-site will be sought. The Council will seek to merge a suite of sustainable design goals, such as the use of SUDS, water efficiency, lifetime homes, and energy efficiency into a requirement measured against the Code for Sustainable Homes and BREEAM. These will be set out within the Hillingdon Local Plan: Part 2- Development Management Policies Local Development Document (LDD). All developments should be designed to make the most efficient use of natural resources whilst safeguarding historic assets, their settings and local amenity and include sustainable design and construction techniques to increase the re-use and recycling of construction, demolition and excavation waste and reduce the amount disposed to landfill;

11. In the case of tall buildings, not adversely affect their surroundings including the local character, cause harm to the significance of heritage assets or impact on important views. Appropriate locations for tall buildings will be defined on a Character Study and may include parts of Uxbridge and Hayes subject to considering the Obstacle Limitation Surfaces for Heathrow Airport. Outside of Uxbridge and Hayes town centres, tall buildings will not be supported. The height of all buildings should be based upon an understanding of the local character and be appropriate to the positive qualities of the surrounding townscape.

Support will be given for proposals that are consistent with local strategies, guidelines, supplementary planning documents and Hillingdon Local Plan: Part 2- Development Management Policies.

Policy EM1: Climate Change Adaptation and Mitigation

The Council will ensure that climate change mitigation is addressed at every stage of the development process by:

1. Prioritising higher density development in urban and town centres that are well served by sustainable forms of transport.

2. Promoting a modal shift away from private car use and requiring new development to include innovative initiatives to reduce car dependency.

3. Ensuring development meets the highest possible design standards whilst still retaining competitiveness within the market.

4. Working with developers of major schemes to identify the opportunities to help provide efficiency initiatives that can benefit the existing building stock.

5. Promoting the use of decentralised energy within large scale development whilst improving local air quality levels.

6. Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions.

7. Encouraging sustainable techniques to land remediation to reduce the need to transport waste to landfill. In particular developers should consider bioremediation as part of their proposals.

8. Encouraging the installation of renewable energy for all new development in meeting the carbon reduction targets savings set out in the London Plan. Identify opportunities for new sources of electricity generation including anaerobic digestion, hydroelectricty and a greater use of waste as a resource.

9. Promoting new development to contribute to the upgrading of existing housing stock where appropriate.

The Borough will ensure that climate change adaptation is addressed at every stage of the development process by:

10. Locating and designing development to minimise the probability and impacts of flooding.

11. Requiring major development proposals to consider the whole water cycle impact which includes flood risk management, foul and surface water drainage and water consumption.

12. Giving preference to development of previously developed land to avoid the loss of further green areas.

13. Promoting the use of living walls and roofs, alongside sustainable forms of drainage to manage surface water run-off and increase the amount of carbon sinks.

14. Promoting the inclusion of passive design measures to reduce the impacts of urban heat effects.

Policy EM11: Sustainable Waste Management

The Council will aim to reduce the amount of waste produced in the Borough and work in conjunction with its partners in West London, to identify and allocate suitable new sites for waste management facilities within the West London Waste Plan to provide sufficient capacity to meet the apportionment requirements of the London Plan which is 382 thousand tonnes per annum for Hillingdon by 2026.

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, ensuring that all waste is managed towards the upper end of the waste hierarchy.

The Council will follow the waste hierarchy by promoting the reduction of waste generation through measures such as bioremediation of soils and best practice in building construction. The Council will promote using waste as a resource and encouraging the re-use of materials and recycling. The Council will also support opportunities for energy recovery from waste and composting where appropriate. The Council will safeguard existing waste sites unless compensatory provision can be made.

The Council will seek to maximise the use of existing waste management sites through intensification or co-location of facilities.

Local Plan Part 2 - Development Management Policies (2020)

Policy DMEI 2: Reducing Carbon Emissions

A. All developments are required to make the fullest contribution to minimising carbon dioxide emissions in accordance with London Plan targets.

B. All major development proposals must be accompanied by an energy assessment showing how these reductions will be achieved.

C. Proposals that fail to take reasonable steps to achieve the required savings will be resisted. However, where it is clearly demonstrated that the targets for carbon emissions cannot be met onsite, the Council may approve the application and seek an off-site contribution to make up for the shortfall.

C. Lean Design Options Appraisal

This lean design options appraisal has been produced to consider how to avoid unnecessary material use arisings from over specification, without compromising structural stability, durability or the service life of the building. The aim of this is to:

- Reduce cost via optimising material use in building design.
- Encourage the reuse of existing materials and those with higher levels of recycled content.
- Promote greater understanding of alternative design and construction methods that result in lower material usage and waste levels.

Item	Opportunity	Actions to improve on Material Efficiency	Responsibility
1	Layout	The overall configuration of the blocks and internal layouts is predominantly rectilinear minimising material waste through cut offs of standardised materials.	Architect, Structural engineer
2	Core design simplification	The vertical core of the blocks (staircases & lifts) have been optimised to be more modular and align at each floor. Could be installed using precast stairs or standardised steel sections.	Architect, Structural engineer
3	To improve coordination efficiency	The fire engineer and acoustician will review partition acoustics and fire performance to ensure that the internal partition performance is not over-specified, avoiding any unnecessary material use.	Architect, Acoustic and Fire engineers
4	To standardize design components	Standard size door sets will be used as much as possible to reduce wastage from bespoke sized units.	Architect, door supplier
5	Façade design simplification	The number of cladding elements and features are to be minimal. This optimises the use of materials by simplifying the building envelope and number of aesthetical elements required.	Architect

D. General Notes

The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Ensphere Group Ltd for inaccuracies in the data supplied by any other party.

The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

No site visits have been carried out, unless otherwise specified.

This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.

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Ensphere Group Ltd
52 Grosvenor Gardens
London, SW1W 0AU
+44 (0) 20 7846 9040
www.enspheregroup.com