The South Molton Triangle

July 2022

Circular Economy Statement

GROSVENOR

TWINEARTH

TABLE OF CONTENTS

GLOSSARY

ASHP	Air Source Heat Pump – Electrically powered heating and cooling system that transfers heat from the outside air to the inside, and vice versa when in cooling mode.
CIBSE	Chartered Institute of Building Services Engineers
Circular Economy	An economic system based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.
CO_2	Carbon dioxide emissions – released as a result of burning fossil fuels.
Embodied Carbon	The carbon emissions associated with a building's materials, accounting for the raw material supply, manufacturing and transportation.
GLA	Greater London Authority
LTHW	Low Temperature Hot Water - Water circulated for space and hot water heating at less than 90°
SPG	Supplementary Planning Guidance
SuDS	Sustainable Urban Drainage Systems - A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.
SWMP	Site Waste Management Plan.
WCC	Westminster City Council – the relevant planning authority

EXECUTIVE SUMMARY

“The LWARB estimate that moving to a circular economy could add between £3bn and £5bn in value to the built environment sector in London by 2036. It could also create as many as 12,000 jobs over the same period, whilst reducing waste and other environmental impacts.” (GLA, 2021).

This report summarises the proposed Circular Economy Strategy for the land contained within the red line plan known as “the South Molton Triangle”, located in Westminster, London.

1 EXECUTIVE SUMMARY

This report summarises the proposed Circular Economy Strategy for the land contained within the red line plan known as "the South Molton Triangle", located in Westminster, London.

This Circular Economy Statement Addendum has been prepared by Twin&Earth on behalf of Grosvenor Britain and Ireland ('the Applicant') in support of a Section 73 application for the project referred to as "South Molton Triangle", which is located within the City of Westminster.

A Circular Economy Strategy has previously been developed for the scheme which has been summarised in the Circular Economy Statement report (reference "The South Molton Triangle, Detailed Circular Economy Statement, June 2020") which was submitted as part of the planning application for the site under the following registration numbers:

- 20/03987/FULL
- 20/03901/LBC – 50-54 Davies Street
- 20/03902/LBC – 40-46 Brook Street and 40 South Molton Lane
- 20/03903/LBC – 1-7 Davies Mews and 28-30 South Molton Lane
- 20/03907/LBC – 10 South Molton Street
- 20/03909/LBC - 15-21 South Molton Street
- 20/03910/LBC – 24 and 25 South Molton Street

A number of amendments are proposed to the consented scheme and this document has been prepared to provide an update on the sustainability strategy. As such, this report supersedes the previously submitted Circular Economy Statement "The South Molton Triangle, Detailed Circular Economy Statement, June 2020".

1.1 Section 73 – Summary of key changes

This report provides a full update to the Circular Economy Statement capturing the South Molton Triangle development as a whole. The report assesses the following key changes to the scheme that would affect the Circular Economy Statement. A full list of the changes can be found within the supporting Design and Access Statement:

North & South Blocks

- In order to reduce the carbon footprint of the North and South blocks, the depth of the structural zone has been increased by up to 500mm. This resulted in an increase of the height of both buildings with subsequent reduction in the frame steel quantities resulting in reduced embodied carbon emissions.
- The flexible retail and F&B areas at the North and South Blocks have been changed in order to rationalise the layouts and expand the Running Horse Pub (to improve user experience) and the ground floor Community and infrastructure Facility.
- In order to reduce the embodied carbon of the North and South blocks and provide better quality Community and Infrastructure Facility, the second basement level to North Block has been removed.
- Additional windows are proposed for the upper floors of the North Block. This will improve natural daylighting to the office floor plates.
- 56 Davies Street windows have been adjusted to improve the façade.
- The South Block Brookfield House window proportion has been revised to improve the daylighting within the office and visual appearance of the building in keeping with original design proportions.
- Glazing has been added to 1-8 Davies Mews dormer windows to improve daylighting within the floors.
- 48-50 Brook Street existing timber casement and sash windows have been replaced with double glazed sash windows to improve thermal performance.
- Secondary glazing will be installed to existing leaded windows at 52-54 Brook Street to improve thermal performance.
- The 56-58 Brook Street windows window heights have been modified as an adjustment for building height increase level changes. The existing windows have been replaced to improve thermal performance.
- The 48-58 Brook Street windows at lower ground floor level facing vaults have been adjusted for new slab levels and provide improved daylighting to the retail basement space.
- At 40-46 Brook Street, the basement under Davies Mews has been omitted and therefore the uses have been rearranged.
- Any kitchen extract systems within retail and food and beverage units within the North and South Blocks will be fitted with a demand control kitchen extract ventilation system to reduce fan energy consumption and heating/cooling loads. As the kitchen extract systems will be installed by the tenants, the requirement for installing a demand control system will be included within a tenant Green Lease.
- Following further design development, the efficiencies and expected level of lighting control (daylight/occupancy control) has been amended to capture any changes.
- Following further design development, the target thermal performance of the building fabric has been amended to capture any changes.
- As a result of further design development and selection of MEP plant, the seasonal efficiencies of the heat pumps have been updated.
- PV arrangements at roof level on the South Block have changed to accommodate the increase in plant enclosure size. Although panel numbers have reduced, the annual estimated generation is above the requirements as set out in the June 2020 energy statement as panels with improved efficiency will be specified.

South Molton Street

- The basement dig to No 20-25 South Molton Lane has been omitted in order to reduce the embodied carbon in construction.
- The South Molton Street retail units have been reconfigured to create a more varied unit mix, allowing for the omission of basement dig and stronger façade activation to South Molton Lane.
- South Molton Street shopfront designs have been changed to better align with existing heritage fabric, include retail ventilation and suit proposed unit type and use.
- Mezzanine to No. 21 and 22 South Molton Lane has been omitted to create level floor and improve accessibility.
- The width of opening to new doors to No. 15 and 16 South Molton Lane at third floor rear elevation has been increased to allow more daylight into unit interiors.
- Residential extensions have been added to No. 20 and 22 South Molton Lane at second floor in order to provide better residential offering for the units, allow reinstatement of front room plan form and create new external amenity for apartments above.

- South Molton Street residential interiors have been replanned to enhance resident experience, retain building fabric, accommodate services requirements, and provide storage.
- New openings have been added to South Molton Street residential front room to connect kitchens in order to enhance resident experience and allow daylight into the internal rooms.
- A number of existing windows within the residential units of 10, 15-25, 27 and 42 South Molton Street will be fitted with replacement double glazed units with a target u-value of 1.4 W/m2K. This strategy is in place of secondary glazing (as per the Energy Statement, June 2020), and will further reduce the heat loss from the properties and allow easier operation of the windows for natural ventilation.
- The micro retail/F&B units in 10, 15-25, 27 and 42 South Molton Street will be naturally ventilated to minimise energy consumption from fans. The remaining retail units will have louvres/ductwork installed to allow the incoming tenants to install their own ventilation system to suit their requirements/fit out design.
- For the F&B uses within the flexible South Molton Street retail/F&B units the proposed strategy for kitchen ventilation/grease removal is to make allowance for a recirculation system that recirculates the air from the kitchen canopy through a filtration system.
- Electrically powered air source heat pumps located at roof level are now proposed in place of the gas fired boilers in 10, 27 and 42 South Molton Street residential units. This will help to further improve local air quality levels and also benefit from lower lifetime carbon emissions as the electrical grid continues to decarbonise.
- In order to provide room for additional plant and equipment at roof level within the South Molton Street properties, the number of PV panels have been reduced. In order to maintain the same annual energy generation, a PV panel with a higher peak output will be specified.

All other design aspects of the development remain as per the consented scheme as detailed within the Circular Economy Statement dated June 2020.

All other design aspects of the development remain as per the consented scheme.

1.2 Planning Targets

As a GLA referable scheme, the development must submit a Circular Economy Statement as part of the planning submission, in line with policy SI7 of the London Plan (March 2021) and the supporting Circular Economy Statement Guidance (Adopted March 2022). The purpose of the Circular Economy Statement is to demonstrate how the proposed development aims to meet the following circular principles:

- how all materials arising from demolition and remediation works will be re-used and/or recycled.
- how the proposal's design and construction will enable building materials, components and products to be disassembled and re-used at the end of their useful life.
- opportunities for managing as much waste as possible on site.
- adequate and easily accessible storage space to support recycling and re-use.
- how much waste the proposal is expected to generate, and how and where the waste will be handled.

1.3 Proposed Circular Economy Strategy

The circular economy strategy is the result of a collaborative design process driven by the applicant and involved all disciplines within the internal design team.

This report focuses on demonstrating how the current design and proposals will follow the guidance set out within the Circular Economy Statement Guidance (Adopted April 2022) and the supporting Design for a Circular Economy Primer (March 2020) in order to comply with Policy SI7 of the London Plan. Outline targets have been set which address each policy requirement and confirm the circular approach for the existing development (i.e. targets for retention and minimising demolition waste), new development (i.e. targets for minimising excavation and construction waste and designing for future recoverability of building materials) and the development in use (i.e. targets for minimising municipal waste).

The outline strategy for implementing Circular Economy principles has followed, and will continue to follow, Grosvenor's strategic approach to align with their 2030 corporate objectives.

1.4 Proposed Circular Economy Commitments

Following the 'Building in layers' principle the Circular Economy commitments proposed outline the approach against each of the following principles (and sub-sequent sub-principles) set out by the Circular Economy Statement Guidance (adopted March 2022):

Principle 1 - Conserve resources and source ethically

Reducing the quantities of materials 'locked away' in the built environment is critical. The design of buildings, public realm and supporting infrastructure is important because it can influence the types and quantities of materials and other resources that will be used for many decades. This principle consists of:

- Minimising the quantities of materials used.
- Minimising the quantities of other resources used (energy, water, land).
- Specifying and sourcing materials and other resources responsibly and sustainably.

Principle 2 - Design to eliminate waste (and for ease of maintenance)

Minimising waste is about tackling waste reduction 'at source' and avoiding materials being classified as waste through careful design and specification. This should be considered in the context of the whole life cycle of the development, from strategic planning through to end of life. This principle consists of:

- Designing for longevity, adaptability or flexibility and reusability or recoverability.
- Design out construction, demolition, excavation and municipal waste arising.

Principle 3 - Manage waste sustainably and at the highest value

After considering opportunities to minimise the use of resources and design to eliminate waste, developers must demonstrate how they propose to manage any waste that does arise. This includes any waste arising during demolition, excavation, and construction (i.e. resulting from the process of developing the physical built environment), along with municipal waste (i.e. resulting from the activities of occupants) and industrial waste, if any. This principle consists of:

- Managing demolition waste.
- Managing excavation waste.
- Managing construction waste.
- Managing municipal waste (and industrial waste, if applicable).

1.5 Implementation

In general, the Circular Economy approach will be implemented directly through the form of prescriptive deliverables at the appropriate stages (e.g. Pre-demolition audit at Concept Stage), or indirectly, in the form of Circular Economy workshops at each stage. Implementation of Circular Economy principles will be monitored based on the specification and tender information and verified at the As Built stage.

INTRODUCTION

This report summarises the proposed Circular Economy Strategy for the land contained within the red line plan known as “the South Molton Triangle”, located in Westminster, London.

The following section will provide an introduction to the site and the proposed design as context to the circular economy statement.

2 INTRODUCTION

This section will provide an introduction to the site and the proposed design as context to the circular statement.

This Circular Economy Statement Addendum has been prepared by Twin&Earth on behalf of Grosvenor Britain and Ireland ('the Applicant') in support of a Section 73 application for the project referred to as "South Molton Triangle", which is located within the City of Westminster.

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A number of amendments are proposed to the consented scheme and this document has been prepared to provide an update on the sustainability strategy. Key changes are identified in the Executive Summary section. As such, this report supersedes the previously submitted Circular Economy Statement "The South Molton Triangle, Detailed Circular Economy Statement, June 2020".

2.1 The Consented and Proposed Development

The ambition is to create a mixed-use development that respects the historical character of the area and showcases the listed buildings in and around the South Molton Triangle, whilst embracing 21st century design. The proposed scheme looks to deliver office, residential, retail, restaurant, drinking establishments, hotel and education or training centre, involving a mix of redevelopment, retained facades, refurbished listed buildings and changes of use.

The amended scheme proposes 32,431 sq. m GIA total floorspace, of which:

i. 19,140 sqm GIA is to be provided as offices (Class E)

ii. 3,083 sqm as hotel (Class C1),

iii. 698 sqm GIA as community infrastructure facilities (Class F1/E),

iv. 2,907 sqm of Residential (Class C3),

v. 5,605 sqm GIA as Flexible Retail/Restaurant (Class E);

vi. 797 sqm GIA as Pub and South Molton Street Bar (Class Sui Generis); and

vii. 146 sqm sui generis rooms above Pub.

viii. 55 sqm UKPN substation

The development can be broadly split into a number of 'parts'. Details of the main uses and extent of works are detailed in the following table.

Development 'Part'	Proposed use	Extent of work
North Block (including 50-54 Davies Street)	Comprising a mix of use Retail/ F&B, Offices, Community Infrastructure & Facilities and Sui Generis (Public house with rooms above) uses	Redevelopment and new build behind retained facades, including existing Grade II listed buildings
South Block	Comprising a mix of retail/F&B and offices	Redevelopment and new build behind retained facades
40-46 Brook Street	Hotel	Refurbishment and change of use (Grade II listed building)
South Molton Street properties (10, 15-25, 27 & 42 South Molton Street	Comprising retail/F&B uses at basement and ground floor, with residential floorspace above	Refurbishment / change of use (includes Grade II listed buildings and a single Grade II* listed building)

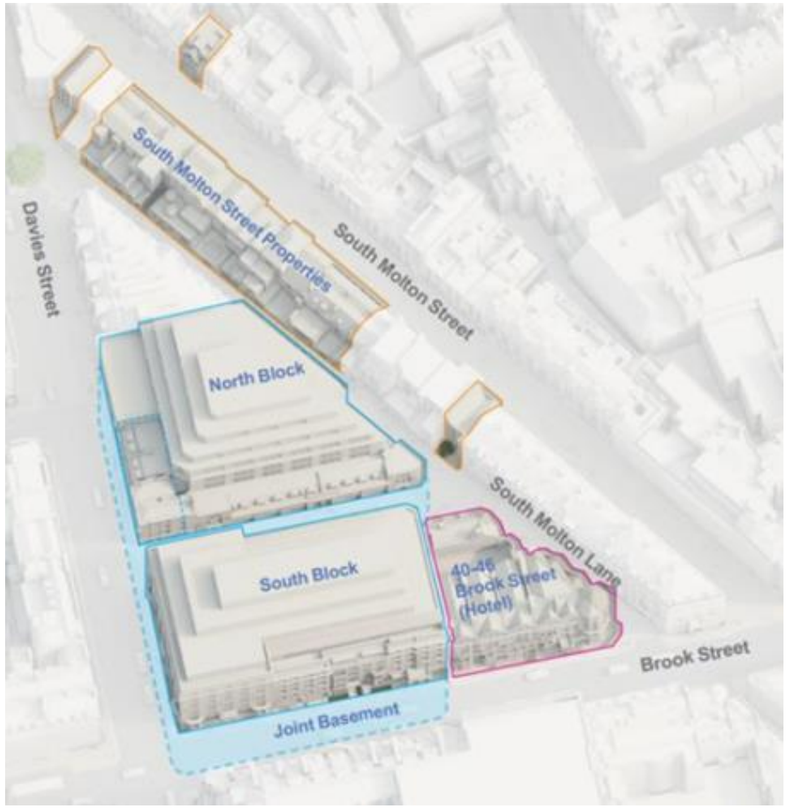


Figure 1. Proposed site

STRATEGIC APPROACH

“The built environment has a big role to play in addressing the challenge of the climate emergency. A powerful way to do that is to transition to a circular economy, making a radical change in the way we think about constructing, equipping, using, maintaining, altering and renewing our built environment” (GLA, 2021).

This section aims to set out the high-level strategy and approach(es) to circular economy by the development, refers to the relevant policy requirements and identifies which supporting information is required to facilitate circularity.

3 STRATEGIC APPROACH

This section aims to set out the high-level strategy and approach(es) to circular economy by the development, refers to the relevant policy requirements and identifies which supporting information is required to facilitate circularity.

3.1 Section 73 Update

The development's strategic Circular Economy approach and commitments included within GLA Table 1 remain as per the consented scheme, as detailed within the Circular Economy Statement dated June 2020 and is outlined in the next section. The changes noted in the Executive Summary set out the design decisions made to reduce the material content (i.e. lean design, as per UKGBC Circular Economy Strategies Diagram) of the development. This aligns with the approach set out by the consented scheme for this design stage (see 'Stage 3-4 – Developed and Technical Design' below).

3.2 Strategic Approach

Circular Economy considerations have been made from the outset of the project whereby reusing the existing building has been promoted whilst aiming to create an ambitious mixed-use scheme. As noted within the introduction section, this is supported by Grosvenor's corporate commitments which includes a strategic approach for circularity through setting out the following stage-by-stage approach:

Stage 0 – Strategic Definition

Ensure a presumption in favour of retaining parts of the asset.

Stage 1 – Preparation and Brief

Hold a preliminary workshop at Stage 1 with the project team to confirm the scope of the development and potential circularity strategies (standardisation, reuse, disassembly, materials optimisation, and servitisation).

Stage 2 – Concept Design

Undertake pre-demolition audit and develop materials inventory to evaluate how materials can be managed in line with the waste hierarchy.

Stage 3-4 – Developed and Technical Design

At the beginning of each RIBA Stage hold a review workshop with relevant stakeholders which revisits the UKGBC circular economy strategies diagram. Opportunities, commitments and metrics should be agreed and implemented where feasible. Design decisions should be factored in, using this process to document discarded options and reasons for non-viability, and should be monitored by the sustainability consultant. When selecting and designing components, a circular economy hierarchy can be applied.

Stage 5 – Construction

Hold a review workshop with relevant stakeholders including the Principal Contractor and key supply chain partners and revisit the UKGBC circular economy strategies diagram. Opportunities, commitments and metrics should be reconfirmed and implemented where feasible. Design decisions should be factored in, using this process to document discarded options and reasons for non-viability, and should be monitored by the sustainability consultant.

Stage 6 – Handover

Review Circular Economy as part of the Lessons Learnt workshop (with whole design team, Principal Contractor and relevant supply chain partners) and review against original objectives and metrics to include feedback of this process to handover to Grosvenor's Development Team to evaluate successes and limitations on the project.

Stage 7 – In Use

Ensure circular economy strategies that are relevant during operation (servitisation) and end of life (disassembly) are handed over to Grosvenor's Operations Team.

Circularity has been promoted to date through using BREEAM as a tool. This has facilitated the following considerations for considering opportunities for material efficiency, functional adaptability designing for disassembly and whole-life carbon considerations. The opportunities and discussions have been included within the appendices.

Following the GLA's Circular Economy Statement Guidance, Table 1 has been completed to set targets which align with the policy requirements of the London Plan and confirms the deliverable required to ensure that circular principles are implemented within the development's design, construction and operation. The targets set are applicable to all elements of the scheme, unless otherwise stated.

		Short life components		Long life components	
	Lifespan	0-5 years	5-10 years	20-30 years	30-300 years
	Example components	Internal finishes, furniture	Internal partitions, ceilings, floors, local services	Building services	Sub-structure, structure, floors, fabric
	Overall strategy	Match material to lifespan, design for disassembly and return to manufacturer	Design for reconfiguration, use modular systems	Design for maintenance, replaceability, remanufacture	Long life, loose fit Adaptable to different uses Temporary buildings designed to be relocatable
Principles and examples of application	Designing in layers	Ensure finishes allow access to services	Non-structural partitions	Services to be accessible and replaceable	Avoid interdependency of structural frame and facade
	Lean design	Inherent finishes	Exposed soffits Modular tea points	Design out systems	Lightweight structures
	Design out waste and use of reclaimed materials/ components	Remanufactured furniture; remanufactured paint	Reclaimed glass partitions	Modular systems, offsite manufacture to reduce site waste Challenge supply chain to provide remanufactured equipment	Offsite manufacture Standardised components Select grids that optimise material efficiency
	Partnership models and return to manufacturer	Lease components or arrange for return to manufacturer	Design interiors that can be reconfigured or disassembled	Leasing service arrangements for items such as lifts and lighting	Select elements that can be reused or returned to manufacturer
	Materials selection	Use biological materials that can be composted at end of life or certified products (e.g. C2C / Natureplus)	Use partitions made from bio -composites Use certified products (e.g. C2C / Natureplus)	Use plant and equipment that can be remanufactured Fabric ductwork	Structural elements with recycled content Certified facade systems
	Design for disassembly	Use furniture and fittings designed for disassembly	Dry-lay floor tiles Relocatable partitions	Equipment and distribution systems that are modular	Structure and facade that is designed with reversible mechanical fixings

Fig. 2: UKGBC Circular Economy Strategies Diagram

Aspect	Phase / Building/ Area	Steering Approach	Explanation	Target	Supporting analysis / studies / surveys / audits
Circular economy approach for the existing site	All areas	A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials in alignment with the waste hierarchy.	Policy SI7 (B 1.): "How all materials arising from demolition and remediation works will be re-used and/or recycled".	98% reusability/ recyclability	Pre-demolition audit
Circular economy approach for the new development	North & South Block	During Technical Design stage, a resource management plan will need to be developed in consultation with the design team and Contractors to quantify the amount of construction waste being generated by the development and identify methods for reducing waste.	Policy SI7 (B 3. & 5.): "Opportunities for managing as much waste as possible on site" & "How much waste the proposal is expected to generate, and how and where the waste will be handled".	8.5t/100m^2 GIFA	Resource management plan Material efficiency reviews
	All Other Areas			3.5t/100m^2 GIFA	
	All Areas	Engage with Contractors and the supply chain to facilitate opportunities for reviewing how 100% waste can be diverted from landfill.	Policy SI7 (B 3.): "Opportunities for managing as much waste as possible on site".	100% non-hazardous waste diverted from landfill	Resource management plan
	North & South Block	During Concept and Technical Design stages, a Whole-life Carbon assessment and options appraisal is to be undertaken to estimate the development's Whole-life Carbon, with the aim of reducing it.	Policy SI7 (B 5.): "How much waste the proposal is expected to generate, and how and where the waste will be handled	500 kgCO_2/m^2	Whole-life Carbon Assessment and Options Appraisal
	All Other Areas			15% reduction over existing building performance	
	All Areas	Follow the Stage-by-Stage Circular Economy approach set out by Grosvenor's Supply Chain Charter.	Policy SI7 (B 2.): "How the proposal's design and construction will enable building materials, components and products to be disassembled and re-used at the end of their useful life	Implementation of Grosvenor's Supply Chain Charter	Material Efficiency Reviews
Circular economy approach for municipal waste during operation	All Areas	Ensure Waste Management Strategy is appropriately sized and allows for segregation (as appropriate to each building type). Tenant and operator participation in the recycling process.	Policy SI7 (B 4.): "Adequate and easily accessible storage space to support recycling and re-use".	Zero biodegradable or recyclable waste to landfill by 2026	Waste Management Strategy Tenancy and operator agreements
				65% recycling rate by 2030	

Fig. 3: Circular Economy Strategic Approach – GLA Table 1

CIRCULAR ECONOMY COMMITMENTS

“At a more fundamental level the circular economy requires that buildings are used for as long as possible, designed for adaptability and repurposing. That is hardly new. Huge numbers of buildings in London, as in other historic cities, find a series of new uses. There is much to learn from them. Recycling is also nothing new. So, our economy is partially circular – the challenge is to make it truly circular.” (GLA, 2021).

This section summarises the key commitments that the development will implement in order to ensure that circular outcomes are achieved.

4 CIRCULAR ECONOMY COMMITMENTS

This section summarises the key commitments that the development will implement in order to ensure that circular outcomes are achieved.

4.1 Section 73 Update

The development's Circular Economy commitments included within GLA Tables 2-4 generally remain as per the consented scheme, with the following updates:

- **Bill of materials:** As a result of the design changes noted in the Executive Summary, the bill of materials has been updated to reflect the proposed design.
- **Pre-demolition Audit:** A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials. A copy of the report is included within Appendix D.

All other design aspects of the development remain as per the consented scheme as detailed within the Circular Economy Statement dated June 2020 and have been set out in the next sections.

4.2 Circular economy commitments

The high-level aims and targets identified in Fig. 4 is a key starting point for developing a Circular Economy strategy, however the next steps require shifting from strategy to action. This necessitates developing a deeper understanding of the feasible and the technical challenges posed by the existing and proposed developments to capitalise on the opportunities related to the policy requirements and targets.

Following the GLA's Core Principles set out within the Introduction section, the table overleaf confirms the development's proposals for circularity through setting out the approach for each building layer, as follows:

- 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

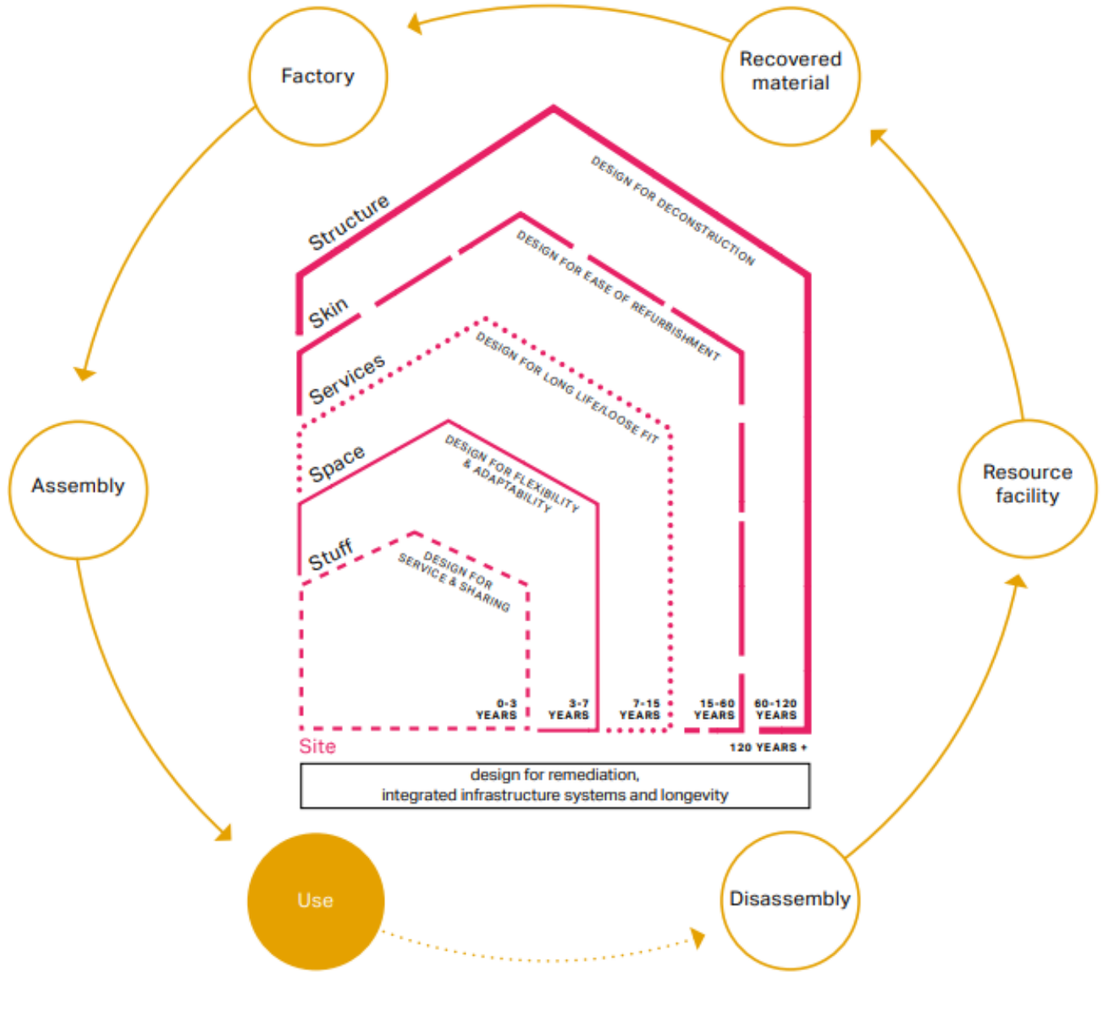


Fig. 4: 'Building in layers' diagram [1]

[1] https://www.london.gov.uk/sites/default/files/ggbd_circular_economy_statement_guidance_2020_web.pdf

	Site	Substructure	Superstructure	Shell/ Skin	Services	Space	Stuff	Construction Stuff	Summary	Potential Challenges	Counteractions + Who + When	Plan to prove and quantify
Section A: Conserve resources												
Minimising the quantities of materials used	*A whole-life cycle carbon assessment has been undertaken) and material efficiency workshops will be undertaken during future stages to ensure that:* *- The quantity of landscaping material is minimised, through interrogating the loading requirements of paving and associated sub-bases.*	*- The sub-structure design is efficient and maximises its recycled content, given the constraints associated with the nearby Crossrail development.*	*- The super-structure design is efficient, through interrogating the loading requirements and maximises its recycled content.*	*- Options for façade design are appraised.*	*- Ductwork and pipework lengths are minimised.*	*- A loose-fit strategy is implemented.* *- Green lease agreements will be put in place so that prospective tenants will have to carefully specify materials.*		*- Minimising material usage during construction works will be imposed on the Contractor during the Tender stages.*	*Whole-life cycle carbon assessment has been undertaken and material efficiency workshops are being carried out at each stage.*	*Opportunities for reducing materials are not explored in depth enough at this stage.*	*Project manager to programme in material efficiency workshops at each RIBA Stage involving the design team to ensure that opportunities are identified, targets are set (during Concept and Developed design) and implemented at the Technical design stage, where feasible.*	*Performance will be monitored at the point of specification and implementation will be verified based on the As Built information.*
Minimising the quantities of other resources used (energy, water, land)	*The development is situated on land which has been previously occupied.*	*As above for general resource use.*	*As above for general resource use.*	*The energy statement demonstrates how the shell and skin has been optimised to reduce energy demand.*	*The energy and sustainability statements demonstrate that efficient building services are proposed to reduce energy and water demands within the development and minimise consumption.*	*Green lease agreements will be put in place so that prospective tenants will have to comply with energy and water consumption targets.* *Energy and water meters will be provided to facilitate monitoring in use.*		*Requirements for reducing energy and water consumption during construction works will be imposed on the Contractor during the Tender stages.*	*Efficient design will allow for minimising resource use as well as imposing requirements on prospective tenants and tendering Contractors.*	*Higher initial capital costs as part of the tendering process.* *More onerous contracts for prospective tenants.*	*Client to ensure that focus is given to adding value to the development.* *Client to develop Contracts for tenants early on so as to interrogate its effectiveness.*	*Performance will be monitored prior to tender and implementation will be verified during Construction.*
Specifying and sourcing materials responsibly & sustainably	*Grosvenor's Supply Chain Charter sets out requirements for sourcing materials in a responsible and sustainable manner. This includes requirements by material selection type for recycled content, responsible sourcing certification, environmental product declarations and the promotion of reusing materials.*									*Grosvenor's Supply Chain Charter is not implemented during Construction.*	*Design Team to ensure that product selection at the point of specification complies with Grosvenor's requirements and include performance requirements within tender information.*	*Performance will be monitored at the point of specification and implementation will be verified based on the As Built information.*

	Site	Substructure	Superstructure	Shell/ Skin	Services	Space	Stuff	Construction Stuff	Summary	Potential Challenges	Counteractions + Who + When	Plan to prove and quantify
Section B: Design to eliminate waste (and for ease of maintenance)												
Designing for reusability / recoverability / longevity / adaptability / flexibility	*The development is situated on land which has been previously occupied, and the current proposals are not prohibitive of future reuse.*	*A deconstruction plan will be developed during future stages to demonstrate how deconstruction and recoverability of materials could be maximised at the end the structure's life.* *Pre-fabrication will be investigated in detail during the next stages as it could decrease upfront embodied carbon.*		*A deconstruction and façade maintenance plan will be developed during future stages to demonstrate how deconstruction and refurbishment could be facilitated.* *Pre-fabrication will be investigated during the next stages which would enable the façade being stripped back to the structure.*	*Allowance within the ventilation and toilet provision will be made to accommodate changes in use.* *A plant replacement strategy, setting out accessibility to plant without generating waste will be developed.* *Reversible connections will be utilised as far as possible.*	*Spaces are being designed as speculative; so, flexibility will be an essential design requirement and will foster a loose-fit strategy.* *Taking into account the existing building footprint, the aim will be to design to a grid and will include column free spaces.*	*Green lease agreements will be put in place to promote re-use of 'stuff' or to implement sharing / leasing agreements.*	*Optimising re-use or implementing sharing / leasing agreements for 'Construction stuff' will be included within Tender information.*	*Designing for reusability / recoverability / longevity / adaptability / flexibility will be considered as appropriate to the relevant 'building layer' to design to eliminate waste (and for ease of maintenance).*	*Developing an end of life/ deconstruction plan for each 'building layer' may be extensive and a lack of understanding on how to develop may limit opportunities.*	*Design team (as applicable to each 'building layer') to undertake precedent research during developed design stages.*	*Performance will be monitored at the point of specification and implementation will be verified based on the As Built information. The information will be included within the Operation & Maintenance ("O&M") manuals for future considerations.*
Designing out construction, demolition, excavation, industrial and municipal waste arising	*A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials in alignment with the following hierarchy:* *Reuse in-situ > Reuse on site > Reuse within Grosvenor's Estate > Reuse off-site > Recycling > Other (e.g. energy) recovery > Dispose*									*A lack of understanding of existing material and its quality impacting legalities and guarantees.*	*Design team to undertake research on how to overcome issues, such as testing materials.*	*Pre-demolition and strip-out audit.*
	During Technical Design stage, a resource management plan will need to be developed in consultation with the design team and Contractors to minimise excavation waste.	*Material efficiency workshops will be undertaken to evaluate how the substructure's design could be designed so as to minimise waste generation.*	*Pre-fabrication will be utilised where possible and column sizes will be designed to standard sizes to minimise construction waste.*	*Existing facades are being retained as far as possible.* *Pre-fabrication will be investigated during the next stages which would minimise construction waste.*	*Pre-fabrication will be utilised where possible to minimise construction waste.*	*Taking into account the existing building footprint, the aim will be to design to a grid so as to minimise construction waste through limiting off-cuts from tenant's fit-out.*	*Green lease agreements will be put in place to promote re-use of 'stuff' or to implement sharing / leasing agreements.*	*Requirements for minimising waste generation during construction works will be imposed on the Contractor during the Tender stages.*	*Development of a resource management plan, material efficiency workshops and requirements for tenants and Contractors will aim to minimise waste generation.*	*Opportunities for reducing waste are not explored in depth at this stage.*	*Project manager to programme in material efficiency workshops at each RIBA Stage involving the design team (including Contractor engagement) at an early enough stage to develop a resource management plan.*	*Resource management plan to be undertaken during Technical Stage.* *Performance will be monitored at the point of specification and implementation will be verified based on the As Built information.*

	Site	Substructure	Superstructure	Shell/ Skin	Services	Space	Stuff	Construction Stuff	Summary	Potential Challenges	Counteractions + Who + When	Plan to prove and quantify
Section C: Manage waste												
Demolition waste (how waste from demolition of the layers will be managed)	*A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials in alignment with the following hierarchy: Reuse in-situ > Reuse on site > Reuse within Grosvenor's Estate > Reuse off-site > Recycling > Other (e.g. energy) recovery > Dispose*									*A lack of understanding of existing material and its quality impacting legalities and guarantees.*	*Design team to undertake research on how to overcome issues, such as testing materials.*	*Pre-demolition and strip-out audit.*
Excavation waste (how waste from excavation will be managed)	*A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials in alignment with the following hierarchy: Reuse in-situ > Reuse on site > Reuse within Grosvenor's Estate > Reuse off-site > Recycling > Other (e.g. energy) recovery > Dispose*									*Technically difficult to reuse or recycle this waste stream type.*	*Using excavation waste as a resource within proposed development in accordance with the Definition of waste Code of Practice (DoWCoP).*	*Pre-demolition and strip-out audit.*
Construction waste (how waste arising from construction of the layers will be reused or recycled)	*During Technical Design stage, a resource management plan will need to be developed in consultation with the design team and Contractors to evaluate how materials can be recovered in line within the following hierarchy: Reuse in-situ > Reuse on site > Reuse within Grosvenor's Estate > Reuse off-site > Recycling > Other (e.g. energy) recovery > Dispose.*									*Opportunities for waste management in line with the waste hierarchy are not explored in depth.*	*Project manager to ensure that engagement with Contractors are undertaken at an early enough stage to develop a resource management plan.*	*Resource management plan to be undertaken during Technical Stage.* *Performance will be verified on the As Built information.*
Municipal and industrial waste (how the design will support operational waste management	*North & South Blocks: Waste storage will be provided within a centralised consolidated waste store at ground floor level within the North Block and will be primarily accessed from the South Block via the BoH corridors at Basement level. This waste storage area will be used to store all the retail and office waste generation within the development, with an allocation for recycling to allow for segregation.* *40-46 Brook Street: The main waste storage area will be provided at lower ground floor level.* *South Molton Street Properties: Tenants and Residents will be required to dispose of their waste at street level for collection, in line with Westminster's 'Bags off Streets' policy.*	*North & South Blocks and 40-46 Brook Street: Service lifts are proposed to enable access to their respective waste storage areas at the lower levels.*	*Tenanted Areas: All tenants will be required to provide a small temporary waste and recycling storage area within their demise.* *Residential Areas: Each residential unit will be provided with a segregated waste bin, which will be fixed into an appropriate kitchen unit.*	*Not applicable to Municipal Waste, see other sections above.*	*The waste management strategy has been developed in line with the London Plan and Westminster requirements, as set out in WCC's Recycling and Waste Storage Requirements (January 2019).*	*Participation of occupants within the recycling process.*	*Legal requirements included within the relevant tenancy leasing agreements with suitable penalties for non-compliances.* *Clear communication with the end user.*	*Tenant lease agreements.* *Development of non-technical building user manuals.*

Fig. 5: Circular Economy Key Commitments – GLA Table 2

4.3 Bill of Materials

The GLA's Circular Economy Statement Guidance requires developments to demonstrate that they have considered opportunities to conserve resources by applying lean design principles and source materials sustainably. The guidance notes that this information is to be captured in the form of a 'Bill of Materials' table, as included within the guidance.

Completion of the Bill of Materials will require estimating the quantity of materials used in each 'layer' of the building (in kg), the material intensity (in kg/m^2 GIA) and set targets for the minimum amount of recycled content to be used (% by value). As a minimum, the Bill of Materials must cover the structure, floors, façade, roof and an allowance for the internal partitions.

The Bill of Materials table has been completed using the information provided to complete the Whole-Life Carbon Analysis which supports this application. been developed for each parcel of the proposed development. This has been submitted as an Appendix to the Whole Lifecycle Carbon Assessment, however the material intensity for each parcel is shown below.

Parcel	North Building	South Building	Running Horse Pub	40-46 Brook Street	South Molton Street
Material Intensity (kg/m^2)	*2,684*	*2.244*	*364*	*694*	*505*

Fig. 6: Bill of Materials – GLA Table 3

4.4 Recycling and Waste Metrics

To minimise waste sent to landfill and maximise diversion in line with the waste hierarchy, the GLA's Circular Economy Statement Guidance requires estimating and reporting the total amount of waste / material generated during excavation, demolition, and construction.

The aim is to then indicate how much waste will be reused or recycled onsite, how much will be reused or recycled offsite, and the residual waste that will be sent to landfill. The following table lists the estimated waste generation and diversion from landfill targets.

Category	*Waste Estimate (tonnes/m^2)*	*% Reused or Recycled onsite*	*% Reused or Recycled offsite*	*% to landfill (or other)*	*Source of Information*
Excavation Waste	*500 tonnes*	*Resource Management Plan to be undertaken during Stage 4 to maximise opportunities for reusing and recycling excavation waste*		*>5%*	*Grosvenor 2030 Corporate Commitments*
Demolition Waste	*0.502 tonnes/m^2 (16,713 tonnes / 33,273m^2)*	*Maximise as per Pre-demolition audit included in appendix.*		*>2%*	*Pre-demolition audit* *Grosvenor 2030 Corporate Commitments*
Construction Waste	*0.085 tonnes/m^2 (8.5 tonnes / 100m^2)*	*Resource Management Plan to be undertaken during Stage 4 to maximise opportunities for reusing and recycling construction waste.*		*>2%*	*BREEAM Targets* *Grosvenor 2030 Corporate Commitments*
Municipal Waste	*1,509 t/annum*	*0%*	*65%*	*35%*	*Waste Management Strategy*

Fig. 7: Recycling and Waste Reporting – GLA Table 4

The Guidance also notes that written evidence is required to demonstrate that the destination landfill(s) have sufficient capacity to accommodate the anticipated waste streams. However, as the destination landfill will be dictated by the Contractor (and their sub-contractors), this information cannot be retrieved at this stage as they are not yet engaged. The requirement for ensuring that prospective landfill sites can accommodate the expected waste volumes and types will be included within the Tender requirements for the Contractor.

4.5 Circular Economy Narrative

This section aims to summarise how the targets established within the above tables and sections will be achieved during construction and operation and refers to each of the GLA's Circular Economy principles.

4.5.1 Minimise the quantities of materials used

APPROACH
In order to ensure that the quantities of materials used within the development have been, and will be minimised, a whole-life cycle carbon assessment has been undertaken (Appendix D), with the aim of appraising options to reduce the development's whole-life carbon. Further whole-life carbon assessments and options appraisals will be conducted throughout future design stages and at the 'As Built' stage. Material efficiency workshops will also be undertaken throughout future design stages and an example of the workshops carried out to date are included within Appendices A-C.

Since the initial planning submission, significant changes to the North & South Building's structural design has been achieved to reduce the weight of the structure and its associated impact on sub-structural loadings and in turn, reduces the development's total whole lifecycle carbon impact. The design team have investigated the potential of reducing the upper floor slab thicknesses, through changing the structural design to an innovative pre-fabricated concrete slab, which removes the steel decking and uses alternative (lighter) structural steel members. A key part of the design changes proposed as part of the Section 73 submittal involves increasing the height of the building. This has been identified as a key opportunity for further reducing structural steel tonnages and its associated impact on whole lifecycle carbon.

TARGETS
- North & South Blocks (i.e. new build): 650kgCO_2/m^2.
- All Other Areas (i.e. refurbishment): 15% improvement over baseline performance.

POTENTIAL CHALLENGES
A key challenge to ensuring that the above targets are achieved is where opportunities for reducing materials and their associated embodied carbon are not explored in depth enough at the appropriate stages.

COUNTERACTIONS
There will need to be sufficient allocation of resources and an allowance within the programme to ensure that the appropriate material efficiency workshops and whole-life carbon options appraisals are conducted during each RIBA Stage. The workshops and assessments will need to involve the entire design team to ensure that opportunities are identified, targets are set (during Concept and Developed design) and implemented at the Technical design stage, as far as possible.

PLANS FOR IMPLEMENTATION
As the project Sustainability Consultant, Twin&Earth will facilitate the material efficiency workshops and conduct the whole-life carbon appraisals during each design stage. Full coordination with the design team will be required to ensure that the maximum reduction in material usage and whole-life carbon is achieved.

As part of the Tender process, the design team will need to prescribe the appropriate requirements within their respective specifications (in addition to any relevant performance requirements). During the tender stage, Twin&Earth will verify the design and specifications and feedback to the design team as required to capture any updates. To ensure that the agreed measures for reducing resource use (e.g. recycled content) has been implemented, Twin&Earth will verify the Contractor's delivery notes at the 'As Built' stage.

With the inclusion of performance requirements within the relevant specifications, any deviation from the Tendered design that will impact material quantities and whole-life carbon will need to be approved by the relevant design consultant.

4.5.2 Minimise the quantities of other resources used (energy, water, land)

APPROACH
In addition to building upon previously developed land, the Energy Statement and Sustainability Appraisal issued for planning demonstrate how the development will minimise demand (through efficient design) and so will allow for minimising resource use. Examples of resource demand minimisation include an energy strategy which aligns with the GLA's Energy Hierarchy, the use of rainwater harvesting (North & South Blocks) and low consumption water appliances (all areas).

The above approach will be further enforced during construction and operation through imposing requirements on prospective tenants and tendering Contractors.

TARGETS
ENERGY & OPERATIONAL CARBON
- North & South Blocks (i.e. new build): 15% improvement on Building Regulation Part L2A 2016 from energy efficiency measures only and achieve zero carbon target with a minimum 35% improvement on Building Regulation Part L 2016 on site.
- All Other Areas (i.e. refurbishment): Estimate the carbon reductions of the refurbishment against a non-refurbished building using Building Regulations approved compliance software.

WATER
- North & South Blocks (i.e. new build): 55% improvement over BRE's baseline building.
- All Other Commercial Areas (i.e. refurbishment): 45% improvement over BRE's baseline building.
- South Molton Street Properties (i.e. residential): 105 litres per person per day.

POTENTIAL CHALLENGES
Minimising the demand on resources within developments will typically result in higher initial capital costs as more efficient technologies will be required. As a result, there is a risk that some of the efficient technologies, which are high cost (e.g. rainwater harvesting), could be value engineered out.

COUNTERACTIONS
The Client shall ensure that focus is given to how these technologies add value to the development, beyond their upfront capital cost. Grosvenor's Corporate Sustainability Goals meet this focus and demonstrates a commitment to ensuring that all resource use is minimised.

PLANS FOR IMPLEMENTATION
The plans for implementation of energy and water efficiency measures will follow the same principles as are set out for materials in section 4.4.1 above.

4.5.3 Specifying and sourcing materials responsibly & sustainably

APPROACH
Grosvenor's Supply Chain Charter sets out requirements for sourcing materials in a responsible and sustainable manner. This includes requirements by material selection type including the appropriate recycled content, responsible sourcing certification, environmental product declarations and the promotion of material reuse.

TARGETS
- All Areas: Compliance with Grosvenor's Supply Chain Charter.

POTENTIAL CHALLENGES
There is a risk that materials are installed which do not meet the requirements of Grosvenor's Supply Chain Charter.

COUNTERACTIONS
The design team will need to ensure that all requirements are included within the specifications and that selected materials are compliant with the Supply Chain Charter. With the inclusion of performance requirements within the relevant specifications, any deviation from the Tendered design that will impact responsible and sustainable sourcing will need to be approved by the relevant design consultant.

PLANS FOR IMPLEMENTATION
During the tender stage, Twin&Earth will verify the design and specifications and feedback to the design team as required to capture any updates. To ensure that the agreed measures for sourcing in line with the Supply Chain Charter (e.g. responsible sourcing certification) has been implemented, Twin&Earth will verify the Contractor's delivery notes at the 'As Built' stage.

4.5.4 Designing for reusability / recoverability / longevity / adaptability / flexibility

APPROACH
Designing for reusability / recoverability / longevity / adaptability / flexibility will be considered as appropriate to the relevant 'building layer' to design to eliminate waste (and for ease of maintenance).

TARGETS
- All Areas: Develop an end of life/ deconstruction plan and include within the O&M manuals.

POTENTIAL CHALLENGES
Developing an end of life/ deconstruction plan for each 'building layer' may be extensive and a lack of industry guidance on how to develop this plan may limit opportunities.

COUNTERACTIONS
Design team (as applicable to each 'building layer') to undertake precedent research during developed design stages to identify how best to develop the plan.

PLANS FOR IMPLEMENTATION
During each RIBA Stage, the design team shall commence the development of an end of life / deconstruction plan so that the design can be layered to maximise opportunities for reusability / recoverability / longevity / adaptability / flexibility as relevant to the building 'layer'. An 'As built' version of the end of life /deconstruction plan will be developed by each design consultant and will be included within the O&M manuals. Grosvenor will commit to ensuring that the document is updated as appropriate to reflect any future changes.

4.5.5 Designing out construction, demolition, excavation, industrial and municipal waste arisings

APPROACH
A pre-demolition audit has been undertaken by specialist demolition Contractor's McGee to assess the viability of reusing and maximising the recovery of materials in alignment with the following hierarchy:

- Reuse in-situ > Reuse on site > Reuse within Grosvenor's Estate > Reuse off-site > Recycling > Other (e.g. energy) recovery > Dispose Reuse in-situ
- Reuse on site
- Reuse within Grosvenor's Estate
- Reuse off-site
- Recycling
- Other (e.g. energy) recovery
- Dispose

Development of a resource management plan, undertaking material efficiency workshops and including requirements within tenants' lease agreements and within the Tender Requirements for prospective Contractors will aim to minimise waste generation.

TARGETS

- All areas: Maximise material recovery from the existing development in line with the waste hierarchy.
- North & South Blocks: 8.5 tonnes of construction waste per 100m^2 of GIFA.
- All other areas: 3.5 tonnes of construction waste per 100m^2 of GIFA.

POTENTIAL CHALLENGES
A lack of understanding of existing materials and their quality at the pre-planning stage impacts potential reuse opportunities, such as insurance and guarantees.

Opportunities for reducing waste are not explored in depth.

COUNTERACTIONS
To facilitate reuse of existing materials, the design team (as relevant to the applicable material) is to undertake research on how to overcome issues, such as testing existing materials, liaising with specialist insurers, etc.

The project manager will programme-in material efficiency workshops at each RIBA Stage, involving the design team, and will ensure that engagement with Contractors is undertaken at an early enough stage to develop a resource management plan, so that the targets can be interrogated.

PLANS FOR IMPLEMENTATION
The measures proposed, as part of the material efficiency workshops, to minimise waste generation will be tracked and included within the tender information for the Contractor and will be verified by Twin&Earth. The construction waste generation targets will also be included as a requirement for the Contractor within the Tender information and the Contractor will be required to report these figures at the 'As Built' stage.

4.5.6 Demolition waste (how waste from demolition of the 'layers' will be managed)

Comments are as per section 4.5.5.

4.5.7 Excavation waste (how waste from excavation will be managed)

APPROACH
Approach is as per section 4.4.5.

TARGETS

- Maximise material recovery from the existing development in line with the waste hierarchy.

POTENTIAL CHALLENGES
Challenges are generally as per section 4.5.5. It can also be technically difficult to re-use or recycle this waste stream type.

COUNTERACTIONS
Counteractions are generally as per section 4.5.5.

PLANS FOR IMPLEMENTATION
The plans for implementation are as per the counteractions noted above.

4.5.8 Construction waste (how waste arising from construction of the layers will be re-used or recycled)

Comments are as per section 4.4.5.

4.5.9 Municipal and industrial waste (how the design will support operational waste management)

APPROACH

The waste management strategy developed by WSP as part of the planning submission has been developed in line with the London Plan and Westminster requirements, as set out in WCC's Recycling and Waste Storage Requirements (January 2019).

TARGETS

- Zero biodegradable or recyclable waste to landfill by 2026.
- 65% recycling rate by 2030

POTENTIAL CHALLENGES

Ensuring that occupants of buildings within the development participate within the recycling process could be challenging.

COUNTERACTIONS

Include requirements within tenant lease agreements.

Development of non-technical building user manuals.

PLANS FOR IMPLEMENTATION

When developing the tenant leasing agreements, Grosvenor will include requirements for ensuring that the relevant recycling rates are achieved in use, with suitable penalties for non-compliances.

Clear communication with the end user will be key to facilitate recycling during operation. This will be in the form of simple-to-use non-technical building user manuals, as well dedicated facilities management personnel (for areas within Grosvenor's control).

4.6 End of Life Strategy

As noted within section 4.5.4 (Designing for reusability / recoverability / longevity / adaptability / flexibility), the design team shall commence the development of an end-of-life /deconstruction plan from Concept Design stage and continue to update it at each stage as the design develops. The plan's purpose will be to facilitate a design that can be 'layered' and to maximise opportunities for reusability / recoverability / longevity / adaptability / flexibility as relevant to the building 'layer'. Table 2 notes how each building layer will be designed so as to facilitate best practice circularity, as applicable to the element's building design life i.e. whether they have a short or long design life.

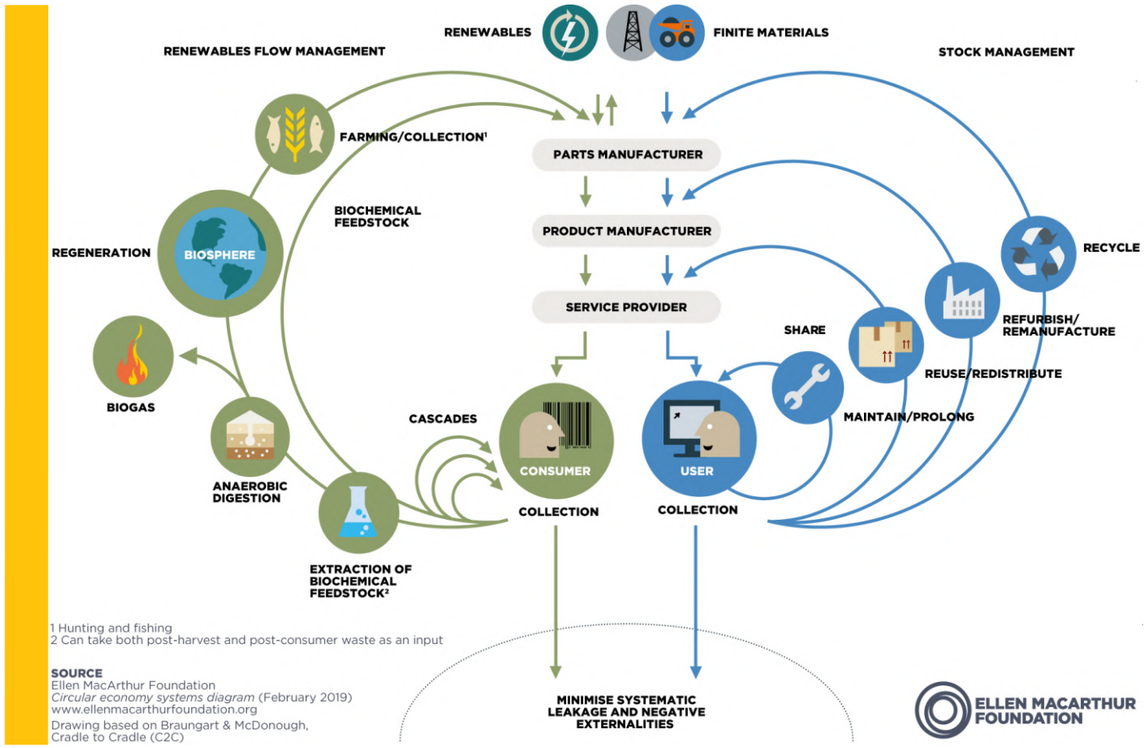
An 'As built' version of the end-of-life /deconstruction plan will be developed by each design consultant and will be included within the Operation and Maintenance manuals. Grosvenor commits to ensuring that the document is updated as appropriate to reflect any future changes.

APPENDICES

5 APPENDIX A – CIRCULAR ECONOMY

5.1.1 Definition

The Ellen MacArthur Foundation defines a Circular Economy as an economic system "based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems[2]". Achievability of a system which embeds this ethos is best illustrated below.



5.1.2 Why is it important?

Within the built environment, the circular economy and its principles aim to respond to the challenges brought about with the current linear economy of taking, making, using and discarding materials. The following sets out the scale of the challenge which further exacerbates the current climate emergency[3]:

- 400m tonnes of materials consumed by built environment sector in UK annually.
- 54% of waste in London generated by the built environment sector in 2015.
- 140m tonnes construction, demolition and excavation related waste annually = 60% of total UK waste.
- 20% of UK ecological footprint accounted to construction materials.
- 5% annual increase of construction material prices.
- £6bn lost value from £100bn annual industry turnover.

[2] https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy

5.1.3 Planning Targets

The following sets out the requirements within the London Plan for supporting a circular economy:

Policy SI7(B) Reducing waste & supporting the circular economy
Referable applications should promote circular economy outcomes and aim to be net zero-waste.

A Circular Economy Statement should be submitted, to demonstrate:

- how all materials arising from demolition and remediation works will be re-used and/or recycled.
- how the proposal's design and construction will 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 to support recycling and re-use
- how much waste the proposal is expected to generate, and how and where the waste will be handled.

5.2 Method Statement

The Circular Economy statement has been a collective approach undertaken by the project's internal design team for each parcel of the development from the outset. At project brief stage, Grosvenor's sustainability strategy to aide their corporate commitments for 'Becoming Zero Carbon' and 'Zero Waste' by 2030 has promoted circular outcomes through advocating retention and reuse of their buildings over demolition and new construction where feasible at a strategic level, which is reflected by the current design approach.

Fig. 8: Grosvenor corporate sustainability goals

Grosvenor's sustainability strategy also provides an outline methodology for the design team to implement throughout the design stages, which align with the principles identified within the GLA's Circular Economy Statement Guidance (March 2022) and the supporting Design for a Circular Economy Primer (March 2020). Key activities undertaken to date include:

- Material Efficiency Workshops and Reviews
- Functional Adaptability and Designing for Disassembly Workshops and Reviews
- Designing for Disassembly Workshops and Reviews

[3] https://www.london.gov.uk/sites/default/files/design_for_a_circular_economy_primer_ggbd_web2.pdf

- Whole-Life Cycle Assessment Workshops and Reviews

As the proposed development is prior to completion of the Concept Stages, the purpose of the above workshops and reviews was to identify the fundamental opportunities which could be evaluated during the next stages as to whether its implementation is feasible. The outputs of these are included within the Appendices. Parties involved in the design reviews included:

- AKT II (Structural Engineers)
- Hoare Lea (Services Engineers)
- Hopkins (Architects)
- Twin&Earth (Sustainability Consultants)

The Whole-life carbon assessment has also been included within Appendix D.

5.3 Circular Economy Aspirations

The GLA's Design for a Circular Economy Primer (March 2020) provides approaches for consideration to facilitate circularity within the design process. The following principles have been reviewed by the design team to develop this circular economy statement. How each theme has influenced the development is shown within the following sections (see Fig. 8 in particular).

5.3.1 New development

Design for longevity
Tailored to well-defined, long term needs while being durable and resilient or able to cope with change with little modification/no replacement of parts due to its 'loose fit', generous proportions and readiness for alternative technologies, different ways of living or working and a changing climate.

Design to minimise resource use and avoid waste
Seeking to design out waste and reduce embodied carbon and other resources.

Design for adaptability and flexibility
Designed to balance the needs of the present with how those needs will change in the future and designed for change through frequent reconfiguring or periodic remodelling.

Design for disassembly
Ensure that new build assets have the capacity to be deconstructed at the end of its life, so that material recovery can be maximised.

5.3.2 Existing developments and components

Reuse
Reuse is the use of a product in its original form with minimal reprocessing, that was originally destined for waste or recycling.

Refurbish
Redeveloped for similar needs and uses but meeting or exceeding current regulations and standards through restoring, refinishing and future proofing while minimising changes and avoiding replacement of any parts. Parts of historical significance are incorporated in the design and carefully preserved. Designed for longevity, adaptability, or flexibility to prolong the new life of the development.

Re-purpose
Redeveloped to accommodate different needs and/or uses (e.g. from industrial use to mixed use) but exceeding current regulations and standards through significant changes and replacement of shorter-life parts. Parts of historical significance are incorporated in the design and carefully preserved. Designed for longevity, adaptability or flexibility to prolong the new life of the development.

De-construct and reuse
Building/infrastructure disassembled, with the entire asset being reconstructed elsewhere, or individual components directly reused elsewhere.

Demolish and recycle
Traditional demolition, with elements and materials converted into new elements and materials and objects for use on the site or on another site nearby.

5.3.3 Building in layers

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

Designing in layers will therefore facilitate the uptake of other forms of circular economy approaches to be undertaken depending on the anticipated lifecycle of the relevant 'building layer'.

In general terms, the following approaches should be sought for 'building layers' by life:

Long life new 'building layers' (expected life over 25 years)
- Longevity
- Adaptability
- Flexibility

Short life new 'building layers' (expected life up to 25 years)
- Reusability
- Recoverability

5.3.4 Core Principles

The GLA's Circular Economy Statement Guidance (March 2022) notes that applying Circular Economy thinking to the built environment is highly complex, as there are many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole systems approach and should be applied from the top down.

These principles underpin the structure and content requirements of the GLA's Circular Economy Statements and support the reporting forms and metrics. This is intended to ensure that the development considers long term thinking and adopts a whole life perspective to the use of resources.

Principle 1 - Conserve resources and source ethically
Reducing the quantities of materials 'locked away' in the built environment is critical. The design of buildings, public realm and supporting infrastructure is important because it can influence the types and quantities of materials and other resources that will be used for many decades. This principle consists of:
- Minimising the quantities of materials used.
- Minimising the quantities of other resources used (energy, water, land).
- Specifying and sourcing materials and other resources responsibly and sustainably.

Principle 2 - Design to eliminate waste (and for ease of maintenance)
Minimising waste is about tackling waste reduction 'at source' and avoiding materials being classified as waste through careful design and specification. This should be considered in the context of the whole life cycle of the development, from strategic planning through to end of life. This principle consists of:
- Designing for longevity, adaptability or flexibility and reusability or recoverability.
- Design out construction, demolition, excavation and municipal waste arising.

Principle 3 - Manage waste sustainably and at the highest value

After considering opportunities to minimise the use of resources and design to eliminate waste, developers must demonstrate how they propose to manage any waste that does arise. This includes any waste arising during demolition, excavation, and construction (i.e. resulting from the process of developing the physical built environment), along with municipal waste (i.e. resulting from the activities of occupants) and industrial waste, if any. This principle consists of:

- Managing demolition waste.
- Managing excavation waste.
- Managing construction waste.
- Managing municipal waste (and industrial waste, if applicable).

6 APPENDIX B - MATERIAL EFFICIENCY OUTPUT

Concept Design Review

The following initiatives have been developed by the design team based on a set of questions relating to material efficiency produced by Twin&Earth and the wider SMT team. The methodology followed aligns with the process stipulated by BREEAM 2018 New Construction.

Date:	15.06.20	
Project:	SMT - North and South Blocks	
PARTICIPANTS		
Architect	HOPKINS	Andrew Morrison
Structural	AKT	Rob Bennett
MEP	HOARE LEA	Sam Ward
Sustainability	TWIN&EARTH	Alicia Freire Jack Millard

Hopkins Architects

HOARE LEA

akt II

ID	Initiatives reviewed	Initiatives	Feasible or potential	Stage 2 Actions	Responsibility
1	What materials could be retained?	Existing facades will be retained.	FEASIBLE	Calculate the % of retained facades.	HOPKINS FAÇADE CONSULTANT
2		Investigate the potential for retention of the existing retaining walls.	POTENTIAL	Investigate and confirm feasibility.	AKT
3	What materials could be reused somewhere else within the site?	Crush the existing concrete frame and reuse on site.	POTENTIAL	Investigate and confirm feasibility.	AKT
4		Reuse good quality materials and features from the existing buildings (ex. Parquet flooring from 56 Davies Street, fireplaces etc)	POTENTIAL	Grosvenor to develop a good quality materials/ features inventory (or to include its development within the scope of the pre-demolition audit).	GROSVENOR
5		Reuse of central plant items (ex. A/C units)	POTENTIAL	Hoare Lea to confirm next steps required to evaluate feasibility.	HOARE LEA
6	What design elements follow standard material dimensions?	Column sizes will be standard sizes as far as possible. Hopkins to design to standard grids within the offices. Will not occur adjacent to the retained facades.	FEASIBLE	Hopkins to provide Stage 2 drawings highlighting areas where a standard grid is being followed.	HOPKINS
7	Are there any further elements that could be designed to standard material dimensions?	As above.	FEASIBLE	As above.	HOPKINS
8	Can the utilisation factor be increased for any structural members?	Grouping column designs to increase the utilisation factor.	POTENTIAL	Future action for AKT to review the potential for increasing the utilisation factor - will naturally go through this process.	AKT
9	Are there any redundant materials that could be removed from the design?	Use of perforated beams to accommodate building services as well as to reduce material usage.	FEASIBLE	Provide relevant drawings at the end of Stage 2 demonstrating the use of perforated beams.	AKT
10		Use exposed ceilings (and not install suspended ceilings).	POTENTIAL	Grosvenor to confirm.	GROSVENOR
11	What materials that could be recycled or reused at the end of their service life could be used?	Use of steel beams to enable re-use after end of life.	FEASIBLE	Provide relevant drawings at the end of Stage 2 demonstrating the use of a steel structure.	AKT
12		Pre-cast concrete planks instead of a composite slab	POTENTIAL	AKT to review and confirm feasibility.	AKT
13		Investigate the potential for plug and play systems for building services.	POTENTIAL	Hoare Lea to review and confirm feasibility.	HOARE LEA
14		Explore options for the façade.	POTENTIAL	Façade consultant to suggest potential solutions.	FAÇADE CONSULTANT
15		Developing an end of life plan for good quality features and materials installed in the building (marble etc)	POTENTIAL	Grosvenor to develop such plan.	GROSVENOR
16	What recycled or reclaimed materials could be used?	Use of blockwork with a recycled content. Initiative in line with project's KPIs.	POTENTIAL	Consult with suppliers on what % recycled content is good practice and which one is the maximum achievable.	HOPKINS
17		Use of structural steel with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		AKT
18		Use of plasterboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		HOPKINS
19		Use of chipboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		HOPKINS
20		Use of GGBS as cement replacement.	POTENTIAL		AKT
21		Use of concrete paving, stones, slabs & blocks with recycled content. initiative in line with project's KPIs.	POTENTIAL		HOPKINS
22	Are there any areas/elements that could be designed for deconstruction and material reuse?	No other solutions deemed feasible.	-	-	-
23	Are there any opportunities for the use of pre-fabricated elements?	Use of pre-fabricated facades system.	POTENTIAL	Façade consultant to suggest potential solutions.	FAÇADE CONSULTANT
24		Use of pre-fabricated building services - risers.	POTENTIAL	Confirm feasibility.	HOARE LEA
25		Use of pre-fabricated WC pods.	POTENTIAL	Confirm feasibility.	HOPKINS
26	Could an 'exposed thermal mass' design strategy be followed in any areas?	Use exposed ceilings (and not install suspended ceilings).	POTENTIAL	Grosvenor to confirm.	GROSVENOR
27	How will be ensured that over-specification of predicted loads will be avoided?	Investigate opportunities to deviate from standard design codes. Design structures for specific (lower) loads in areas where feasible (plant rooms etc).	FEASIBLE	Provide design criteria detailing areas with bespoke load assumption. Loading diagrams with further detail will be developed during Stage 3.	AKT
28		Façade loading to be investigated.	POTENTIAL	Façade consultant to suggest potential solutions.	FAÇADE CONSULTANT
29	Can lightweight structural design strategies be used?	Specification of a steel composite frame for superstructure.	FEASIBLE	Provide relevant drawings at the end of Stage 2 demonstrating the use of a steel composite frame for superstructure.	AKT
30		Specification of a steelwork frame for basement (currently concrete)	POTENTIAL	Evaluate feasibility.	AKT
31	Are there any bespoke structural elements that could be used that will reduce overall material use?	No solutions deemed feasible.	NOT FEASIBLE	-	-
32	Rationalisation' of structural elements	The use of 'Rationalisation' will contradict the material reduction achieved through improvement on utilisation factor. Additionally, the scheme does not lend itself to the use of extended rationalisation for material efficiency.	NOT FEASIBLE	-	-
33	How will the foundation design be optimised for embodied environmental impact?	Re-use of retained walls. Covered earlier in this report.	-	-	-
34	How will the foundation design be optimised for embodied environmental impact?	Combine retaining walls with support from the superstructure.	POTENTIAL	Evaluate feasibility.	AKT
35	Are there any other design or construction initiatives that could result on the reduction of materials used for the project?	No other solutions deemed feasible.	-	-	-

BREEAM RFO 2014 - Mat 06 - Material efficiency strategy

Concept Design Review

The following initiatives have been developed by the design team based on a set of questions relating to material efficiency produced by Twin&Earth and the wider SMT team. The methodology followed aligns with the process stipulated by BREEAM 2018 New Construction, but has been adapted to reflect the refurbishment scope of works proposed.

The project is being assessed as a BREEAM RFO Parts 2 (core services), 3 (local service) and 4 (interior design), therefore only initiatives relating to these parts have been investigated.

Date	15.06.2020	
Project	40-46 BROOK STREET - HOTEL	
PARTICIPANTS		
Architect	HOPKINS	Andrea Boito
MEP	HOARE LEA	Callum Frank
Sustainability	TWIN&EARTH	Jack Millard

ID	Initiatives reviewed	Initiatives	Feasible or potential	Next steps	Responsibility
1	What materials that could be recycled or reused at the end of their service life could be used?	Investigate the potential for using plug and play systems for building services.	POTENTIAL	MEP Consultant to review and confirm feasibility during future stage.	MEP CONSULTANT
2		Developing an end of life plan for good quality features and materials installed in the building (marble etc)	POTENTIAL	Hotel Operator to confirm the feasibility to develop such a plan.	HOTEL OPERATOR
3	What recycled or reclaimed materials could be used?	Use of blockwork with a recycled content. Initiative in line with project's KPIs.	POTENTIAL	Architect to consult with suppliers on what % recycled content is good practice and which one is the maximum achievable.	ARCHITECT
4		Use of plasterboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		ARCHITECT
5		Use of chipboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		ARCHITECT
6		Use of concrete paving, stones, slabs & blocks with a recycled content. initiative in line with project's KPIs.	POTENTIAL		ARCHITECT
7	Are there any opportunities for the use of pre-fabricated elements?	Bespoke nature of the development makes this difficult, however potential for furniture to be pre-fabricated.	POTENTIAL	Architect to confirm/ investigate potential opportunities for using pre-fabricated building elements.	ARCHITECT
		Potential for pre-fabricated service risers and bathroom pods to be investigated.	POTENTIAL	MEP Consultant to review and confirm opportunities during future stage.	MEP CONSULTANT
8	Could an 'exposed thermal mass' design strategy be followed in any areas?	Use exposed ceilings (and not install suspended ceilings).	POTENTIAL	Hotel Operator to confirm.	HOTEL OPERATOR
9	How will over-specification of predicted loads be avoided?	Investigate opportunities for deviating from standard design codes to reduce loading requirements.	POTENTIAL	Provide design criteria detailing areas with bespoke load assumption. Loading diagrams with further detail will be developed during Stage 3.	ARCHITECT

Hopkins Architects

HOARE LEA

TWIN&EARTH

BREEAM RFO 2014 - Mat 06 - Material efficiency strategy

Concept Design Review

The following initiatives have been developed by the design team based on a set of questions relating to material efficiency produced by Twin&Earth and the wider SMT team. The methodology followed aligns with the process stipulated by BREEAM 2018 New Construction, but has been adapted to reflect the refurbishment scope of works proposed.

Date:	15.06.20	
Project:	SOUTH MOLTON STREET	
PARTICIPANTS		
Architect	HOPKINS	Emily Willig
Structural	AKT	Simone Colella
MEP	HOARE LEA	Callum Franck
Sustainability	TWIN&EARTH	Jack Millard

Hopkins Architects

HOARE LEA

TWIN&EARTH

akt II

ID	Initiatives reviewed	Initiatives	Feasible or potential	Stage 2 Actions	Responsibility
1	What materials could be retained?	Existing facades will be retained.	FEASIBLE	Calculate the % of retained facades.	HOPKINS FAÇADE CONSULTANT
2		Investigate the potential of retention of the existing retaining walls.	POTENTIAL	Investigate and confirm feasibility.	AKT
3	What materials could be reused somewhere else within the site?	Reuse good quality materials and features from the existing buildings.	POTENTIAL	Grosvenor to develop a good quality materials/ features inventory (or to include its development within the scope of the pre-demolition audit).	GROSVENOR
4	What design elements follow standard material dimensions?	For areas of new construction, column sizes will be standard. Window sizes and brick to match may not be standard.	FEASIBLE	Hopkins to provide Stage 2 drawings highlighting areas where a standard grid is being followed.	HOPKINS
5	Are there any further elements that could be designed to standard material dimensions?	As above.	FEASIBLE	As above.	HOPKINS
6	Can the utilisation factor be increased for any structural members?	Not applicable.	NOT FEASIBLE	-	-
7	Are there any redundant materials that could be removed from the design?	Use exposed ceilings (and not install suspended ceilings).	POTENTIAL	Grosvenor to confirm during Stage 2 the potential for loose fit retail spaces.	GROSVENOR
8	What materials that could be recycled or reused at the end of their service life could be used?	Use of steel beams to enable re-use after end of life.	FEASIBLE	Provide relevant drawings at the end of Stage 2 demonstrating the use of a steel structure.	AKT
		Pre-cast concrete planks instead of a composite slab	POTENTIAL	AKT to review and confirm feasibility.	AKT
		Investigate the potential for plug and play systems for building services.	POTENTIAL	Hoare Lea to review and confirm feasibility.	HOARE LEA
		Developing an end of life plan for good quality features and materials installed in the building (marble etc)	POTENTIAL	Grosvenor to develop such plan.	GROSVENOR
9	What recycled or reclaimed materials could be used?	Use of blockwork with a recycled content. Initiative in line with project's KPIs.	POTENTIAL	Consult with suppliers on what % recycled content is good practice and which one is the maximum achievable.	HOPKINS
		Use of structural steel with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		AKT
		Use of plasterboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		HOPKINS
		Use of chipboard with a recycled content. Initiative in line with project's KPIs.	POTENTIAL		HOPKINS
		Use of GGBS as cement replacement.	POTENTIAL		AKT
		Use of concrete paving, stones, slabs & blocks with a recycled content. initiative in line with project's KPIs.	POTENTIAL		HOPKINS
10	Are there any areas/elements that could be designed for deconstruction and material reuse?	No other solutions deemed feasible.	-	-	-
11	Are there any opportunities for the use of pre-fabricated elements?	Use of pre-fabricated building services - risers.	POTENTIAL	Confirm feasibility.	HOARE LEA
		Use of pre-fabricated WC pods.	POTENTIAL	Confirm feasibility.	HOPKINS
12	Could an 'exposed thermal mass' design strategy be followed in any areas?	Use exposed ceilings (and not install suspended ceilings) to be investigated.	POTENTIAL	Grosvenor to confirm during Stage 2 the potential for loose fit retail spaces.	GROSVENOR
13	How will be ensured that over-specification of predicted loads will be avoided?	Façade loading to be investigated.	POTENTIAL	Façade consultant to suggest potential solutions.	FAÇADE CONSULTANT
14	Are there any bespoke structural elements that could be used that will reduce overall material use?	No solutions deemed feasible.	NOT FEASIBLE	-	-
15	How will the foundation design be optimised for embodied environmental impact?	Re-use of retained walls. Covered earlier in this report.	-	-	-
16	Are there any other design or construction initiatives that could result on the reduction of materials used for the project?	No other solutions deemed feasible.	-	-	-

7 APPENDIX C – DESIGNING FOR ADAPTABILITY & DISASSEMBLY WORKSHOP OUTPUT

BREEAM NC 2018 - Wst 06 - Functional adaptability and design for ease of disassembly

Concept Design Review

Hopkins Architects

HOARE LEA

akt II

The following initiatives have been developed by the design team based on a set of questions relating to designing for adaptability and ease of disassembly produced by Twin&Earth and the wider SMT team. The methodology followed aligns with the process stipulated by BREEAM 2018 New Construction.

Date:	04.06.20	
Project:	SMT - North and South Blocks	
PARTICIPANTS		
Architect	HOPKINS	Andrew Morrison
Structural	AKT	Rob Bennett
MEP	HOARE LEA	Sam Ward
Sustainability	TWIN&EARTH	Alicia Freire Jack Millard

FUNCTIONAL ADAPTABILITY

Designing with future adaptability in mind eases the ability for changes to the building's function to be achieved in future (where required), whilst minimising material waste.

ID	Themes	Questions	Feasible or Potential?	Initiatives	Stage 2 Actions	Responsibility
1	Feasibility	What alternative building uses are possible for the development in future? E.g. how could the proposed office be converted to an hotel?	FEASIBLE	Occupancy: Office areas have a higher occupancy rate than other uses, therefore converting to Residential/ Hotel would be possible.	No action.	-
2			FEASIBLE	Structure: Higher loading requirements for offices, therefore the current design would allow for future changes to its use. Floor to ceiling heights in residential spaces are smaller than the requirements for offices, therefore the current design could facilitate this.	No action.	-
3		How will this impact the building's demand (occupancy, servicing, structural)?	FEASIBLE	Services: Ventilation rates are above the requirement for BCO which are beyond the requirements of Building Regulations.	Provide Stage 2 report confirming the ventilation flow rates and standards followed.	HOARE LEA
4			POTENTIAL	Services: For hotel uses, the lift requirements would be more onerous. Designing for additional capacity in future could be facilitated through the inclusion of soft spots in the location of the toilet cores.	Investigate and confirm feasibility.	AKT II
5		How could spaces be used more efficiently to allow for any increase in occupancy.	FEASIBLE	Toilets: The toilet cores are situated in such a way that would allow for future extension, if required.	Provide GAs confirming the location of the toilet cores which demonstrate the sufficient space for future extension.	HOPKINS
6			FEASIBLE	Ventilation: The proposed system provides rates which are better than the industry standard (1 in 8 +10%), which is higher than building regs so could also accommodate future expansion.	Provide Stage 2 report confirming the ventilation flow rates and standards followed.	HOARE LEA
7	Versatility	What measures are in place which could facilitate any changes to meet this demand?	POTENTIAL	Lifts: To meet the increased lift demand from the potential future change of use to a Hotel, the structure could accommodate soft spots within the core to allow for the inclusion of additional lift shafts within the core. This will increase the amount of material required for the structure.	Confirm if the structural design should include soft spots for the capacity to allow for additional lift services in future.	GROSVENOR
8			FEASIBLE	Ventilation: Designed at a rate of 1 in 8 +10% surplus (i.e. above BCO requirements of 12l/s/person, which is higher than Building Regulations).	Provide Stage 2 report confirming the ventilation flow rates and standards followed.	HOARE LEA
9			FEASIBLE	Toilets: Designed at a rate of 1 in 10 +20% surplus (60% male and 60%female). Positioned in the core so that they could be expanded very easily.	Provide GAs confirming the location of the toilet cores which demonstrate the sufficient space for future extension.	HOPKINS
10	Adaptability	Will the servicing strategy be sufficient to meet the building's needs in future?	POTENTIAL	As above.	As above.	-
11	Convertibility	Can structural components be located in areas which could allow for easy alterations?	FEASIBLE	Offices are to be designed on a grid as far as possible, so could facilitate a refit. Not much that can be done for a change of use.	AKT II/ Hopkins to provide drawings highlighting areas where a standard grid is being followed.	AKT II HOPKINS
12		Can column free spaces be utilised?				
13		Can spaces be designed so that they accommodate standard sized finishes (e.g. partitions, floor and ceiling finishes)?				
14	Expandability	Can the building be extended horizontally or vertically?	POTENTIAL	The site is compact, therefore horizontal expansion is considered not feasible.	No action.	-
15		Could the structural design accommodate this?		Vertical expansion is technically possible, however as the proposed development's massing has been carefully detailed within the context of the site, vertical expansion is not considered feasible.	No action.	-
16	Refurbishment potential'	Could the façade design be stripped back to the structure?	POTENTIAL	The façade design will need to be investigated during the next stages of design to enable this.	Investigate and confirm feasibility.	FAÇADE CONSULTANT
17	Accessibility	Where is central plant located? How will it be accessed?	FEASIBLE	Central plant will be located in the basement and on the roof.	Develop plant replacement strategy at Stage 3.	HOARE LEA
18			FEASIBLE	Basement plant will be accessed via goods lifts.	As above.	HOARE LEA
19			FEASIBLE	Plant replacement at roof level will be undertaken via crane.	As above.	HOARE LEA
20		Where will local plant and services be located? How will it be accessed?	FEASIBLE	Some tenant plant will be located on the roof, so will be accessed as above.	As above.	HOARE LEA
21			FEASIBLE	Raised floors on office floor plates.	Provide drawings confirming the inclusion of raised floors to Office Areas.	HOPKINS
22		Can non-structural and moveable panels be included?	FEASIBLE	Raised floors for offices. Access arrangements for building services plant will be investigated further during the next stages.	Develop plant replacement strategy at Stage 3.	HOARE LEA
23		Can lifting beams/ hoists be provided?	FEASIBLE	Lifting beams and hoists to basement plant room is proposed.	As above.	HOARE LEA

EASE OF DISASSEMBLY

Designing with disassembly in mind enables materials to be recovered more easily at the end of their design life.

ID	Themes	Questions	Feasible or Potential?	Initiatives	Stage 2 Actions	Responsibility
24	Exposed and reversible connections	Can welding be avoided so that connections have the potential to be disassembled?	FEASIBLE	The structure and services are designed to avoid welding.	Include requirements within the specifications.	AKT II HOARE LEA
25			FEASIBLE	Welding will only take place as a last resort to make on site adjustments.	Twin&Earth to include requirements within the Contractor's Responsibilities Report.	TWIN&EARTH
26	Durability	Can durable materials be used, to facilitate re-use?	POTENTIAL	Developing an end of life plan for good quality features and materials installed in the building (marble etc)	Grosvenor to develop such a plan.	GROSVENOR
27	Avoidance of toxic treatments	Can non-toxic materials be used to allow for reuse?	FEASIBLE	Use of low VOC paints.	Include the low VOC paint requirements within the specifications.	HOPKINS
28			POTENTIAL	Non-toxic intumescent paints to be investigated.	Investigate and confirm feasibility of using a non-toxic solution for fire protection.	HOARE LEA
29	Standardisation	Can spaces be designed so that they accommodate standard sized finishes (e.g. partitions, floor and ceiling finishes)?	FEASIBLE	Offices are to be designed on a grid as far as possible so it would be feasible to undertake a refit in future.	AKT II/ Hopkins to provide drawings highlighting areas where a standard grid is being followed.	AKT II HOPKINS
30	Layer independence	Which elements could be installed so that they are independent of one another.	POTENTIAL	Investigate the use of pre-cast concrete floor planks, as these could be removed in future.	Investigate and confirm feasibility of using pre-cast concrete floor planks.	AKT II
31			POTENTIAL	Structural beams could be designed to be independent of one another (rather than working together) to allow for individual beams to be removed in future, if required. This will create inefficiencies in the structural design.	AKT II to liaise with Grosvenor to confirm if structural beams should be designed independently of one another to allow for future alterations.	GROSVENOR AKT II
32			FEASIBLE	Façade design could be stripped back to the structure (to be confirmed by the facade consultant).	Façade consultant to review and confirm if the façade design can be stripped back to the structure.	FAÇADE CONSULTANT
33	Accessibility	Comments as per functional adaptability section above.				

BREEAM RFO 2014 - Wst 06 - Functional adaptability and design for ease of disassembly

Concept Design Review

The following initiatives have been developed by the design team based on a set of questions relating to designing for adaptability and ease of disassembly produced by Twin&Earth and the wider SMT team. The methodology followed aligns with the process stipulated by BREEAM 2018 New Construction, but has been adapted to reflect the refurbishment scope of works proposed.

The project is being assessed as a BREEAM RFO Parts 2 (core services), 3 (local service) and 4 (interior design), therefore only initiatives relating to these parts have been investigated.

Date:	04.06.20	
Project:	40-46 Brook Street	
PARTICIPANTS		
Architect	HOPKINS	Andrea Boito
MEP	HOARE LEA	Callum Frank
Sustainability	TWIN&EARTH	Jack Millard

Hopkins Architects

HOARE LEA

TWIN&EARTH

FUNCTIONAL ADAPTABILITY

Designing with future adaptability in mind eases the ability for changes to the building's function to be achieved in future (where required), whilst minimising material waste.

ID	Themes	Questions	Feasible or Potential?	Initiatives	Stage 2 Actions	Responsibility
1	Feasibility	What alternative building uses are possible for the development in future? E.g. how could the proposed hotel be converted to an office? How will this impact the building's demand (occupancy, servicing, structural)?	POTENTIAL	Structure: Although offices have higher occupancy and loading requirements than the proposed Hotel, the existing development is currently an office so will be able to accommodate reverting back to an office in future.	No action.	-
2			POTENTIAL	Services: Ventilation rates are influenced by the plant space available, which is dictated by the building's heritage constraints. The potential for removing the commercial kitchen would provide an opportunity to provide more plant space.	Investigate the potential for future replacement of commercial kitchen to accommodate plant.	MEP CONSULTANT
3			FEASIBLE	Services: For office uses, the lift requirements would be less onerous than hotels, therefore there's no action.	No action.	-
4		How could spaces be used more efficiently to allow for any increase in occupancy to accommodate a potential future change in use.	NOT POSSIBLE	Additional WC capacity: Due to the limitations of the retained building, it would not be possible to accommodate space for additional WC capacity.	No action.	-
5			POTENTIAL	Additional central plant capacity: Plant space is limited due to the building's heritage constraints, however the potential for removing the commercial kitchen would provide an opportunity to provide more plant space.	Investigate the potential for future replacement of commercial kitchen to accommodate plant.	MEP CONSULTANT
6	Versatility	What measures are in place which could facilitate any changes to meet this demand?	POTENTIAL	To be investigated if the kitchen could be adapted in future to accommodate more plant space, if required.	Investigate the potential for future replacement of commercial kitchen to accommodate plant.	MEP CONSULTANT
7	Convertibility	Can spaces be designed so that they accommodate standard sized finishes (e.g. partitions, floor and ceiling finishes)?	NOT POSSIBLE	Due to the elements being retained, it's not possible for spaces to be designed on a grid.	No action.	-
8	Expandability	Can the building be extended horizontally or vertically?	NOT POSSIBLE	The site is compact, therefore horizontal expansion is considered not feasible.	No action.	-
9			NOT POSSIBLE	Vertical expansion would be technically possible, however as the building is listed, vertical expansion is not considered possible.	No action.	-
10	Accessibility	Where will local plant and services be located?	FEASIBLE	Plant location and access arrangements are dictated by the listed nature of the development.	Develop plant replacement strategy at Stage 3.	MEP CONSULTANT
11		Can non-structural and moveable panels be included?	FEASIBLE	Review the potential to incorporate access hatches to basement plant areas.	As above.	MEP CONSULTANT
12		Can lifting beams/ hoists be provided?	FEASIBLE	Review the potential to incorporate lifting beams and hoists to plant areas.	As above.	MEP CONSULTANT

EASE OF DISASSEMBLY

Designing with disassembly in mind enables materials to be recovered more easily at the end of their design life.

ID	Themes	Questions	Feasible or Potential?	Initiatives	Stage 2 Actions	Responsibility
13	Exposed and reversible connections	Can welding be avoided so that connections have the potential to be disassembled?	FEASIBLE	Services are designed so that welding will not be required.	Include requirements within the specifications.	MEP CONSULTANT
14			FEASIBLE	Welding will only take place as a last resort to make on site adjustments.	Include requirements within the Contractor's Responsibilities Report.	SUSTAINABILITY CONSULTANT
15	Durability	Can durable materials be used, to facilitate re-use?	POTENTIAL	Developing an end of life plan for good quality features and materials installed in the building (marble etc)	Hotel operator to confirm the feasibility to develop such plan.	HOTEL OPERATOR
16	Avoidance of toxic treatments	Can non-toxic materials be used to allow for reuse?	FEASIBLE	Use of low VOC paints.	Include the low VOC paint requirements within the specifications.	ARCHITECT
17	Standardisation	Can spaces be designed so that they accommodate standard sized finishes (e.g. partitions, floor and ceiling finishes)?	POTENTIAL	Due to the elements being retained, it's not possible for spaces to be designed on a grid, however investigations will need to be undertaken to see if elements can be designed to standard sizes (e.g. new doors).	Investigate the potential for using elements with standard design sizes.	ARCHITECT
18	Layer independence	Which elements could be installed so that they are independent of one another?	FEASIBLE	Ethos of the build is to be able to return the asset back to its original condition, so being layer independent will be key. Potential for bathroom pods to be lightweight and modular.	Investigate the potential for using elements which are demountable / layer independent (e.g. partitions / bathroom pods, etc.).	ARCHITECT

8 APPENDIX D – PRE-DEMOLITION AUDIT

PRE-DEMOLITION AUDIT
WST01.1: CONSTRUCTION WASTE MANAGEMENT: CONSTRUCTION RESOURCE EFFICIENCY

Site Name and Location:	South Molton Triangle 1-8 Davies Mews London W1K 5JE	**Project No:**	001	
Start / End Date:	2023	**Duration:**	40	Weeks
Project Value:	£TBC	**Status:**	Deconstruction	Pre Construction + Construction
Floor Area / Site Area:	Total site area = 3853m2	**Project Type:**	Deconstruction	
Author:	Tamil Uddin	**Date Completed:**	05.11.2021	
Project SIC Code:	-	**Mobilengine in use?**	N	
Client:	Grosvenor	**Principal Contractor:**	McGee Group Holdings Ltd	

Project Description

The site is located within the prestigious Mayfair area, surrounded by highly sensitive receptors such as Claridges Hotel, South Molton Lane, Brook Street, and Cross Rail Bond Street development.

The project involves the demolition of existing structures, with some deconstructed facades and some façade retention systems. The proposed buildings include a double storey basement, with new commercial spaces above, with multi storey offices above. The buildings will be deconstructed on a floor by floor basis, to enable reuse of the existing building materials.

Background (a brief statement of why the building is being demolished)

The existing buildings are not fit for purpose and have come to the end of their usable life.

Responsibilities

	Name	Position	Company	Contact Details
Responsibility for drafting the SWMP	**Tamil Uddin**	**Environmental Manager**	**McGee**	**02089981101**
Responsibility for implementing the SWMP	**Aaron Donovan**	**Project Manager**	**McGee**	**02089981101**
Overall responsibility for Health Safety and Environment	**Nick Wing**	**Health & Safety Director**	**McGee**	**02089981101**

Forecast

Please Note: text in green/orange is for reference only, please amend as per project specifics.

Activity	Waste Type	EWC	Collection Method	Tonnes	DRI – Good or Best Practice	Demolition Recovered Material Potential - Tonnes	Waste Hierarchy: Reduce, Reuse, Recycle
Demolition	Mixed Building Waste	17.09.04	73 x 40yrd bins	= 1963.29	95%	1924.02	98% Recovery 2% Landfill
	Mixed Hardcore	17.01.07	19 x 40yrd bins	= 500	100%	500	100% Recycle
	Concrete	17.01.01	2567 x 8 Wheel tipper	= 5200	100%	5200	100% Recycle
	Bricks	17.01.02	2271 x 8 Wheel tipper	= 4600	100%	4600	54% Recycle 46% Reuse
	Mixed Metals (rebar / concrete)	17.04.07	326 x 40 yard bins	=3300	100%	3300	100% Recycle
	Timber	17.02.01	54 x 40 yard bins	= 360	100%	360	100% Recycle

Activity	Waste Type	EWC	Collection Method	Tonnes	DRI – Good or Best Practice	Demolition Recovered Material Potential - Tonnes	Waste Hierarchy: Reduce, Reuse, Recycle
	Plasterboard	17.08.02	35 x 40 yard bins	= 270	100%	270	100% Recycle
	Tiles and Ceramics	17.01.03	10 x 40 yard bins	= 20	100%	20	100% Recycle
	Plastic	17.02.03	13 x 40 yard bins	= 20	100%	20	100% Recycle
	Insulation Materials	17.06.04	4 x 40 yard bins	= 20	100%	20	100% Recycle
	Furniture	20.03.07	10 x 40 yard bins / flat bed for reuse	= 80	100%	80	50% Reuse 50% Recycle
	Glass	17.02.03	40 x 40 yard bins	= 360	100%	360	100% Recycle
	Floor coverings	20.01.11	Flat bed lorry on pallets.	= 20	100%	20	70% reuse 30% recycle
Hazardous	Asbestos	17.06.05*	McGee Environmental Services Ltd	= TBC	N/A	N/A	N/A
	Degreasers	11.01.03*	COSHH Collection	=10kg	N/A	N/A	N/A
	Cleaning Chemicals	20.01.29*	COSHH Collection	=20kg	N/A	N/A	N/A
	Hydraulic Oil	13.01.09*	COSHH Collection	=500kg	N/A	N/A	N/A
	Diesel Oil	13.07.01*	COSHH Collection	=500kg	N/A	N/A	N/A

Activity	Waste Type	EWC	Collection Method	Tonnes	DRI – Good or Best Practice	Demolition Recovered Material Potential - Tonnes	Waste Hierarchy: Reduce, Reuse, Recycle
Totals				Total – Tonnes (non hazardous)		Total Tonnes Recovered (non hazardous)	% divert Landfill = **99.6%**
				16713.3		**16716.3**	0.4%

Material	Standard DRI %	Good Practice DRI %	Best Practice DRI %
Concrete	**75**	**95**	**100**
Ceramics (e.g. masonry such as bricks)	**75**	**85**	**100**
Metals	**95**	**100**	**100**
Timber	**57**	**90**	**95**
Inert	**75**	**95**	**100**

Duty of Care Register

Waste Management Contractor Name	Waste Management Contractor Address	Waste Management Service Provided (carrier/broker/transfer facility/material processing)	Waste Carrier License Number and Expiry	Waste Management License Number	Average Recovery Rate	Waste Streams EWC
X-Bert Haulage (Glynns) Tumbledown Recycling Centre	**Unit 6, Neasden Goods Yard, Neasden, London, NW10 2UG**	**Carrier / Transfer station**	**CB/DU140814 13/11/2022**	**ZP3497NS/V002**	**95%**	**Mixed Waste 17.09.04**

Waste Management Contractor Name	Waste Management Contractor Address	Waste Management Service Provided (carrier/broker/transfer facility/material processing)	Waste Carrier License Number and Expiry	Waste Management License Number	Average Recovery Rate	Waste Streams EWC
McGee Group Ltd	340-342 Athlon Road, Wembley, HA0 1BX	Carrier	CB/DU51912 10/01/2022	N/A	N/A	N/A
EMR - Brentford	Private Sidings, Transport Avenue, Brentford, Middlesex, TW8 9HA	Recycling	N/A	YP3091NU/V002	100%	Metals 17.04.07 / 17.04.05 / 17.04.11
EMR - Canning Town	29, Bidder Street, Canning Town, London, E16 4SZ	Recycling	N/A	QP3796NY/V002	100%	Metals 17.04.07 / 17.04.05 / 17.04.11
EMR - Scrubbs Lane	106, Scrubs Lane, Willesden, London, NW10 6QY	Recycling	N/A	FB3205MK/V002	100%	Metals 17.04.07 / 17.04.05 / 17.04.11
EMR - Wandsworth	Private Sidings, Pensbury Place, Wandsworth, London, SW8 4TR	Recycling	N/A	RP3890EL/V003	100%	Metals 17.04.07 / 17.04.05 / 17.04.11
Paramount	Royal Naval Place, Amersham Vale, New Cross, SE14 6LE	Carrier	CB/DU123027 08/08/2022	06308031	N/A	-
Downe Barns Farm	West End Road, Northolt, Hillingdon, UB5 6RB	Reuse	N/A	EPR/NP3599VM	100%	Inert / concrete / soils / bricks / bentonite clay

Waste Management Contractor Name	Waste Management Contractor Address	Waste Management Service Provided (carrier/broker/transfer facility/material processing)	Waste Carrier License Number and Expiry	Waste Management License Number	Average Recovery Rate	Waste Streams EWC
						17.01.07 / 17.05.04 / 17.01.01 / 17.01.02
Ingrebourne Links	Rainham, Essex, RM13 9ED	Recycling	NA	LP3995VS/A001	100%	Inert 17.01.07
RMS- Silvertown	Sunshine Wharf, Bradfield Road, E16 2AX	Recycling	CB/DU149396 09/01/2023	KB3136AM/V004	100%	Concrete / inert / soils 17.01.01 / 17.01.07 / 17.05.04
B.D Haulage	Rockware Avenue, Greenford, UB6 0AA	Carrier	CBDU107693 12/05/2022	N/A	-	-
Westminster Waste	34 – 40 Verney Road, London, SE16 3DH	Transfer Station	CB/DU143849 28/12/2022	EB3505LC/V003	98%	Mixed Waste 17.09.04
B.F.A Recycling	New Years Green Lane, Harefield, UB9 6LX	Recycling	N/A	EB3931RY/A001	100%	Metals 17.04.07 / 17.04.05 / 17.04.11
Dafcon	35 Croft Gardens, Ruislip, HA4 8EY	Carrier	CB/DU137488 25/10/2022	N/A	N/A	N/A
Henry Streeter – Harleyford Sipson	Sipson Lane, Off Sipson Road, Sipson, West Drayton, Middlesex, UB7 0JG	Recycling	N/A	TP3597NJ/V003	100%	Concrete / inert / soils 17.01.01 / 17.01.07 / 17.05.04

Waste Management Contractor Name	Waste Management Contractor Address	Waste Management Service Provided (carrier/broker/transfer facility/material processing)	Waste Carrier License Number and Expiry	Waste Management License Number	Average Recovery Rate	Waste Streams EWC
Ingrebourne Valley Limited – Orsett Quarry	Buckingham Hill Road, Stanford-le-hope, Essex, SS17 0PP	Recycling	N/A	DB3102UX/A001	100%	Soils 17.05.04
Brett - Hithermoor	Leylands Lane, Stanwell Moor, Stanwell, Surrey, TW19 6AZ	Recycling	N/A	CB3736RB/A001	100%	Concrete / inert / soils 17.01.01 / 17.01.07 / 17.05.04
Glynns – Skips	Unit 6 Neasden Goods Yard Neasden Lane Neasden, London, NW10 2UG	Carrier	CBDU140814 13/11/2022	N/A	N/A	Inert/ Mixed Waste/ Metal/ Timber 17.01.07/ 17.09.04/ 17.04.05/ 17.02.01
Mick George	St John's Innovation Park, Cowley Rd, Milton, Cambridge, CB4 0WZ	Carrier	CBDU87105 28/02/2022	N/A	N/A	-

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