Detailed Circular Economy Statement

Juniper Building Revisions (PFS Site)

Camden Goods Yard

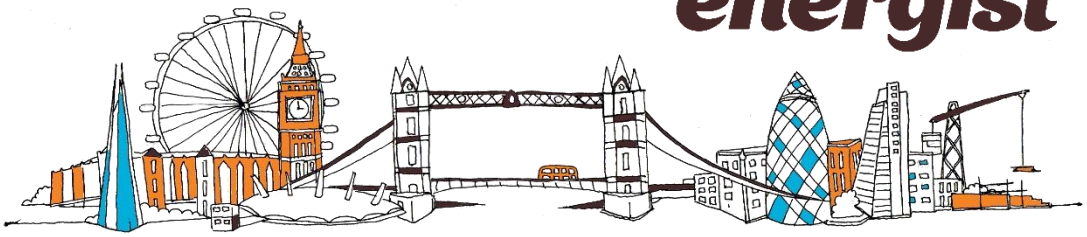
Chalk Farm Road, London NW1 8EH

On behalf of St George West London Ltd

SG.CGY.NW1

R01

Date: August 22



REVISION HISTORY

Revision	Issue Date	Description	Issued By	Checked By
R00	29/07/2022	Planning Issue	TW	JA
R01	15/08/2022	Revision 01	TW	

Calculations contained within this report have been produced based on information supplied by the Client and the design team. Any alterations to the technical specification on which this report is based will invalidate its findings.

All advice provided by Energist UK Ltd regarding the performance of materials is limited solely to the purposes of demonstrating compliance of the Circular Economy Statement. The performance of materials under other criteria, including but not limited to fire, structural, acoustics are not considered in our advice. It is the responsibility of the client to ensure the wider suitability of materials specified in our assessments.

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1. EXECUTIVE SUMMARY

This Circular Economy Statement has been produced by Energist UK on behalf of St George West London Ltd ('the Applicant') and demonstrates compliance with the requirements set out in the GLA London Plan Policy SI7 '*Reducing waste and supporting the Circular Economy*', following the guidance outlined in '*London Plan Guidance: Circular Economy Statements'* LPG (March 2022).

The Planning Statement prepared by Quod identifies the planning history for the application site. In summary, the Camden Goods Yard project was granted full planning permission in June 2018 (the 'June 2018 consented scheme') (planning reference: 2017/3847/P). That planning permission has subsequently been superseded by two minor material amendment applications, the 'May 2020 consented scheme'(reference: 2020/0034/P), and the 'December 2020 consented scheme' (reference: 2020/3116/P).

The proposed amendments now sought through the S73 application seek to amend the extant planning permission (the December 2020 consented scheme). This third minor material amendment application is for amendments to the PFS parcel only. No amendments are proposed to the Morrisons supermarket (MS) parcel consented proposals. The proposed amendments bring the planning permission up to date to enable the delivery of a high quality office building on the PFS parcel, in this important town centre location. The proposed amendments, identified in detail within the Design and Access Statement are summarised for ease of reference:

- Removal of Petrol Filling Station.
- Reconfiguration of ground floor layout of the proposed building (referred to as the Juniper building) to accommodate:
  Additional improved office and retail floorspace and back of house functions;
  - Enlarging the office lobby;
  - Introducing an office lobby-café;
  - Including a dedicated office cycle entrance;
  - Introducing an office mezzanine level; and
  - Replacing the Petrol Filling Station with an electric vehicle (EV) charging station (comprising four public bays).

- Extending the proposed building 6 metres resulting in the creation of additional office floorspace across all levels (2,207 sqm GIA) and an additional ground floor retail unit (50 sqm GIA).
- Introduction of a mezzanine level to the first floor of the proposed building.
- Ground floor windows added to the western elevation of the proposed building adjoining the consented Youth Space (also within PFS site) to the west.
- Adjustment of the proposed building footprint to the east (shifted 390mm westwards to improve pavement widths by 0.4m).
- Internal reconfiguration of the Corner Building by converting the retail (F&B) floorspace on Level 2 (197 sqm GIA) to office floorspace whilst retaining retail (F&B) at levels 1, 3 and 4 including the winter garden.
- Reconfiguration of Morrisons floorplan within the proposed building to widen the frontage by one bay and reduce depth of unit to facilitate improved trading and back of house operations.
- Rationalisation of plant space at the ground floor of the proposed building enabling the omission of plant from 2nd floor.
- Reconfiguration and optimisation of plant at roof level.
- Introduction of a rear ground floor office yard terrace.
- Minor extension to fifth floor office terrace.

2. INTRODUCTION

2.1 Development Summary

This report summarises the circular economy strategy for the Proposed Development of the Juniper Building (Former PFS) at Camden Goods Yard. It details the approach taken by the Applicant and Design Team to support a circular economy and to incorporate the GLA Circular Economy Core Principles within the Proposed Development design.

The proposed amendments now sought through the S73 application seek to amend the extant planning permission (the December 2020 consented scheme). This third minor material amendment application is for amendments to the PFS parcel only. No amendments are proposed to the Morrisons supermarket (MS) parcel consented proposals. The proposed amendments bring the planning permission up to date to enable the delivery of a high-quality office building on the PFS parcel, in this important town centre location.

Table 1 - Proposed floor area for the Juniper Building

Use	Consented (December 2020 ref: 2020/3116/P) Quantum of Development			Proposed Quantum of Development		
	GEA (sqm)	GIA (sqm)	NIA* (sqm)	GEA (sqm)	GIA (sqm)	NIA* (sqm)
Office[1]	8,114	6,873	6,585	9,398	9,080	8,766[2]
Retail (A1, A3, A4)	1,627	1,446	1,103	1,048[3]	1,013[4]	994

[1] GEA and GIA figures are inclusive of office lobby and office lobby café. Exclusive of core/circulation as itemised above.
[2] Excludes office lobby and lobby café as unlettable space.
[3] Excludes core and circulation. Inclusive of retail floorspace (272 sqm GEA), Morrisons Store (389 sqm GEA) and Restaurant/Café (387 sqm GEA).
[4] Excludes core and circulation. Inclusive of retail floorspace (263 sqm GIA), Morrisons Store (376 sqm GIA) and Restaurant/Café (374 sqm GIA).

Winter garden	329[5]	143[6]	98	100[7]	97[8]	96
Sub Total	**10,070**	**8,462**	**7,786**	**10,546**	**10,190**	**9,856**
Open sided covered area/service yard and EV Charging Station	1,118	0	0	339	339	-
Plant room	55	46	0	0	0	-
Primary Core/Circulation	0	0	0	1,571	1,518	-
Secondary Core/Circulation	0	0	0	513	495	-
BOH[9]	562[10]	534	0	828	800	-
Total	**11,805**	**9,042**	**7,786**	**13,797**	**13,342**	**-**

[5] Includes 5th floor void area and circulation (139 sqm GEA).
[6] Includes circulation space.
[7] Excludes secondary core, circulation and terrace.
[8] Excludes secondary core, circulation and terrace.
[9] BOH includes plant (excluding 46 sqm GEA and 46 sqm GIA plant room in consented scheme as already included above), refuse, cycle changing/showers, internal cycle storage but excluding service yard and EV charging station.
[10] GEA for BOH not provided within consented scheme accommodation schedule. St George have inserted a GEA figures at a GEA to GIA conversion of 95%.

Figure 1 - Site Layout Plan (Makeower Architects)

2.2 Circular Economy Definition

A Circular Economy is defined in the GLA London Plan (2021) Policy SI7 '*Reducing waste and supporting the Circular Economy*' as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste. The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible, requiring transformational change in the way that buildings are designed, built, operated, and deconstructed.

A circular economy stands in contrast to our current linear system, where materials are mined, manufactured, used, and thrown away. The '*Take, Make, Dispose*' model, or '*Linear*' economy, has fuelled rapid growth but is inherently unsustainable in the long term where resources are finite.

Figure 2 - Circular Economy Concept - migrating from a linear economy towards a circular economy. Source: Circular Flanders

Widespread adoption of circular economy principles would dramatically reduce the quantity of new material imported into London and the amount of waste needing to be managed, including that which is exported. Alongside this reduction in imported material and exported waste, smart technologies, infrastructure, and logistics can contribute significantly to reduced vehicle movements, air pollution, noise, and greenhouse gas emissions. Developers can also benefit from cost savings, for example by purchasing fewer materials and managing less waste.

Circular Economy Statements are intended to demonstrate how a development, including any public realm, and supporting infrastructure, will incorporate Circular Economy Principles into all aspects of the design, construction, and operation process. This will help to ensure that applicants:

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

2.3 Planning Policy

The Mayor of London wants to see London's homes, buildings and supporting infrastructure adopt innovative design. London Plan policies D3 '*Optimising site capacity through a design-led approach'*, and SI7 '*Reducing waste and supporting the Circular Economy'* set out a policy framework that supports the delivery of a circular built environment.

Policy SI7 of the London Plan also requires development proposals that are referrable to the Mayor of London to submit a Circular Economy Statement as part of a planning application.

Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

1. promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
2. encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
3. ensure that there is zero biodegradable or recyclable waste to landfill by 2026
4. meet or exceed the municipal waste recycling target of 65 per cent by 2030
5. meet or exceed the targets for each of the following waste and material streams:
    i. construction and demolition – 95 per cent reuse/recycling/recovery
    ii. excavation – 95 per cent beneficial use
6. design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

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

1. how all materials arising from demolition and remediation works will be re-used and/or recycled
2. how the proposal's design and construction will reduce material demands and enable building materials, components, and products to be disassembled and re-used at the end of their useful life opportunities for managing as much waste as possible on site

3. adequate and easily accessible storage space and collection systems to support recycling and re-use
4. how much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy
5. how performance will be monitored and reported

2.4 Method Statement

This circular economy report was developed in line with the London Plan Policy SI7, following the guidance outlined in '*London Plan Guidance: Circular Economy Statements'* LPG (March 2022).

This circular economy strategy has been developed in collaboration with the Applicant, and the appointed Design Team, to facilitate circular economy targets and to ensure these have been integrated into the design and implementation strategy. The structure of this circular economy statement identifies opportunities and measures incorporated into the Proposed Development design which minimise waste in line with the GLA Circular Economy Core Principles and the waste hierarchy for the existing Site, new Proposed Development, the Proposed Development in use and end of life.

3. CIRCULAR ECONOMY TARGETS

3.1 Circular Economy Aspirations

The Berkeley Group (of which St George forms part) has long been at the forefront of innovation when it comes to sustainability and climate change. Various processes and initiatives are already embedded within the Group, and further measures are being introduced as the circular economy is established within the construction sector.

As the Proposed Development progresses through detailed design and procurement, the circular economy commitments established in this document will be regularly reviewed and action will be taken to deliver on them. It is expected that this review will be part of quarterly project sustainability reviews.

At the start of the procurement process for each package a review meeting is held between the Applicant's commercial and sustainability team to discuss how the Circular Economy commitments will need to be integrated in contractor's scopes and materials sourcing. The sustainability team will then review the tenders that have a high impact on waste to ensure the principles of the circular economy guidance are followed. During construction of the Proposed Development Toolbox Talks and campaigns to raise awareness of the circular economy will be held.

The Applicant, and the Berkeley Group generally, has been proactive in its adoption of Circular Economy principles through work with the UK Green Building Council. The Applicant's approach to the circular economy is aligned with the wider Berkeley Group approach to Sustainability. As part of this work the Applicant has adopted the Ellen MacArthur Foundation's definition of the circular economy:

> *"A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems".*

This Circular Economy statement has been developed in line with the latest version of the GLA Circular Economy Statement Guidance (March 2022) and sets out how the Application aligns with the outcomes sought by London Plan 2021 Policy SI7.

3.2 Targets and Commitments

The Applicant is committed to achieving the following circular economy targets.

Table 2 - Circular Economy Targets: Waste

Waste Stream*	Policy Requirement**	Project Target**	Explanation
Demolition	95%	95%	A demolition audit will be conducted, confirming 95% of waste can be diverted from landfill. Demolition waste will be monitored and recorded in-line with the demolition audit, and target will form part of contractor obligations.
Excavation	95%	95%	Estimated excavation calculations have been carried out and show approximately 3,210 tonnes of excavation waste will be generated. (1824m³ total excavation, assumed 1760kg/m³ density = 3210tons. 0.24t/m2). Zero material will be removed from site as 100% will be re-used or recycled on site.
Construction	95%	95%	A Predicted Waste Management Plan has been provided identifying likely waste streams and end destination. Targets will be highlighted to all subcontractors and all end destinations will be requested to ensure this is met. Local community recycling programmes will be identified for certain waste streams e.g. for timber. The Berkeley waste data tool shall be completed monthly with all details of waste leaving site.
Municipal	65%	65%	Commercial – 25.09m³ total operational waste = 6.7 tonnes/ week = 352.26 tonnes in total (50% of which should be retained for the storage of separated waste for recycling).

** Non-hazardous waste*
*** Diverted from landfill and reused, recycled, or recovered*

On-site opportunities to re-use and manage waste shall be maximised where practicable. Where this is not possible and waste is sent off-site for recovery, reuse or recycling, the

Applicant shall endeavour to use local waste management facilities, as informed by the London Waste Map.

In addition to landfill diversion targets, the Applicant is committed to the following recycled content target.

Table 3 - Circular Economy Targets: Recycled Content

Circular Economy Target	Policy Requirement*	Project Target*	Explanation
Recycled Content	20%	20%	Utilising the *Berkeley Group Responsible Sourcing and Specification Policy,* the Applicant shall endeavour to ensure materials have a minimum 20% recycled content and are easily re-used or recyclable at the end-of-life stage to minimise the amount of virgin materials used. The concrete used on the project will have a high GGBS content to minimise the amount of cement used and reuse a waste material from another process. Recycled content targets shall be reviewed, and specific targets set as the detailed design develops.

** By value for the whole building*

4. STRATEGIC DESIGN APPROACH

4.1 Circular Economy Goals and Strategic Approach

The figure below sets out a hierarchy for building approaches that maximises the use of existing materials. Diminishing returns are gained by moving through the hierarchy outwards, working through refurbishment and reuse through to the least preferable option of recycling materials produced by the building or demolition process.

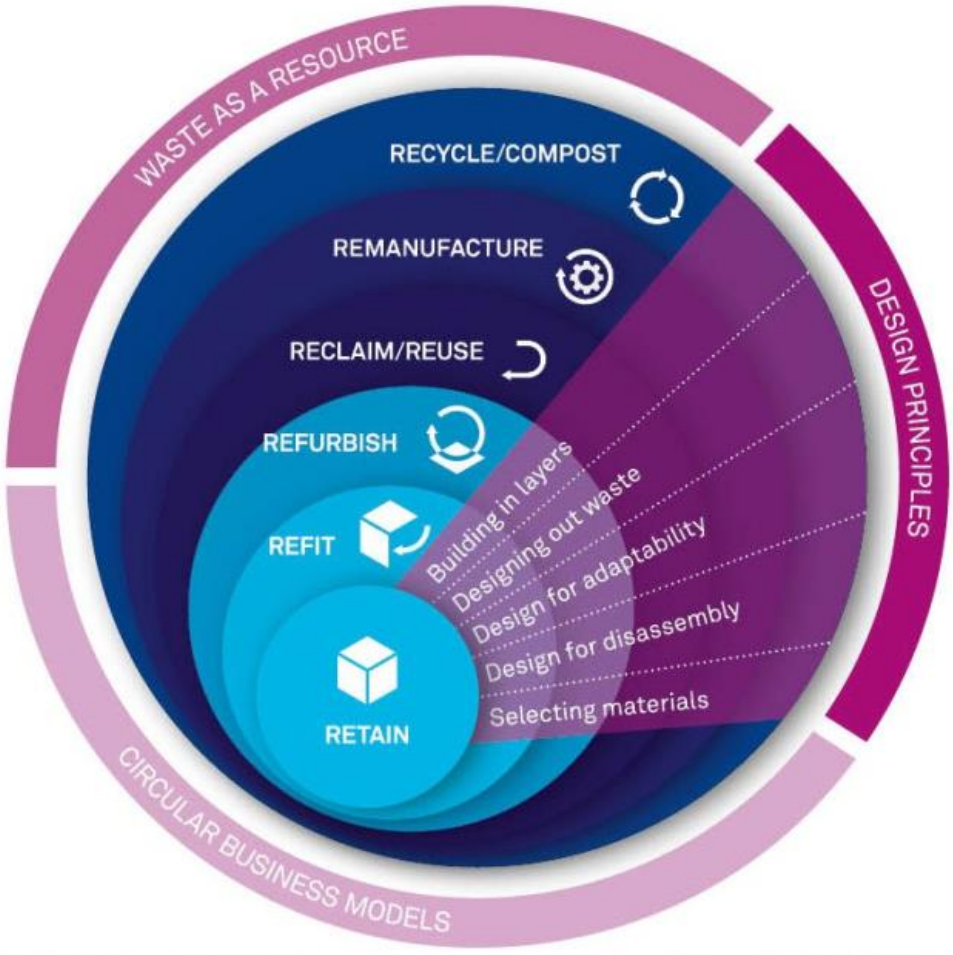

Figure 3 - Circular Economy Hierarchy, adapted from Building Revolutions (2016)

The Applicant's commitments to Circular Economy principles are described within the Berkeley Group Sustainability Policies and initiatives. These include:

- *Berkeley Group Responsible Sourcing and Specification Policy:* Berkeley Group highlight the requirement to preferentially select materials which have a low environmental impact and high recycled content or can be re-used.
- *Berkeley Group Sustainable Places Policy:* Within the Policy they commit to recognise existing good practice in design and construction, and trial and incorporate any new and emerging technologies and approaches in sustainable development.
- *Berkeley Group Sustainable Business Policy:* Within the Policy they commit to reduce the amount of waste produced from activities and aim to send zero waste to landfill.
- *Reuse of Land:* Berkeley Group are primarily a brownfield developer and have a demonstrated history reusing and rejuvenating unused land and successfully completing major urban regeneration schemes.
- *Reducing Waste:* Berkeley Group have a commitment to divert 95% of site waste (excluding hazardous waste) from landfill, increasing to 98% by 2025. In the 2019-20 reporting year the Applicant achieved a 94% waste reuse and recycling rate from on-site construction activities. From the earliest stages, they encourage design teams to consider opportunities to design out waste, while the production teams are responsible for evaluating how best to re-use or recycle materials.
- *Responsible Use of Resources:* Berkeley Group are committed to minimising carbon emissions and water consumption across operations. Berkeley Group have committed to science-based targets (December 2020) across Scope 1, 2, and 3 emissions. They aim to achieve the sustainability targets by using efficient technologies and implementing training and behaviour change initiatives.
- *Modern Methods of Construction (MMC):* Berkeley Group are committed to increasing the use of MMC on developments. In 2018 they committed to deliver the Berkeley Modular facility and developed an approach to considering both volumetric modular construction and off-site fabricated elements. The modular factory started production in 2021. The use of MMC will enable increased resource efficiency and reduce the amount of waste produced compared to traditional on-site construction methods.
- *Working with the Supply Chain:* Berkeley Group are partners of the Supply Chain School and aim to work with our contractors and suppliers to identify Circular Economy initiatives, close-loop recycling opportunities and other sustainability good practice.

4.2 Circular economy approach for the existing site

The Site is the former Morrisons petrol filling station that is currently in use as the temporary Morrisons supermarket.

The PFS site has planning permission for an office building (the Juniper Building) with retail uses. This Circular Economy Statement relates to proposed minor material amendments to the consented office building as outlined in the introduction to this report.

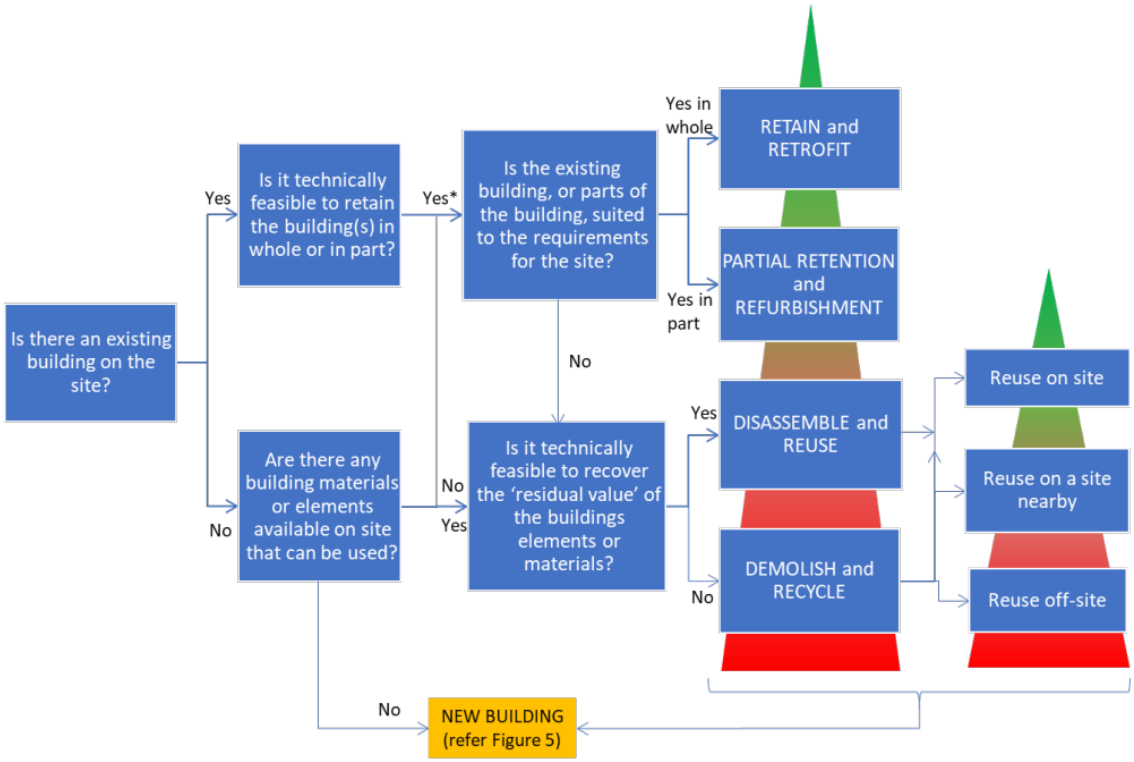

Figure 4 – GLA decision tree for design approaches for existing structures/buildings

This suitably underused existing commercial site, as a whole, has been selected to be redeveloped to provide an office building with retail units on ground and upper levels. As such, using the GLA decision making tree for the existing site the strategy is to demolish the existing on-site structures and to demolish and recycle materials as far as practicable in accordance with the waste hierarchy.

Demolition from existing unsuitable structures will see the re-use of demolished material where possible on site, in accordance with Materials Management Plan and Remediation Strategy, which will be captured by the demolition audit.

4.3 Circular economy approach for demolition and construction

The Development proposes to deliver a high-quality scheme that will result in significant regeneration of the Site. As a direct result of the Development proposals, the application will deliver a number of significant planning and public benefits for the local community and future occupiers.

The Applicant shall ensure that materials have a high recycled content and are easily recyclable to minimise the amount of virgin materials used (in-line with SI 7 minimum targets). The concrete used on the project will have a high GGBS content to minimise the amount of cement used and reuse a waste material from another process.

Service coordination and clash detection will be carried out at the detailed design stage to minimise site mistakes and clashes leading to wastage. Numerous coordination workshops have been held for service penetrations in floors, walls, and soffits.

The below decision tree for the new build elements has been used to determine the best approach to circular economy on a buildings layer basis. The proposed new Development is a long-life development.

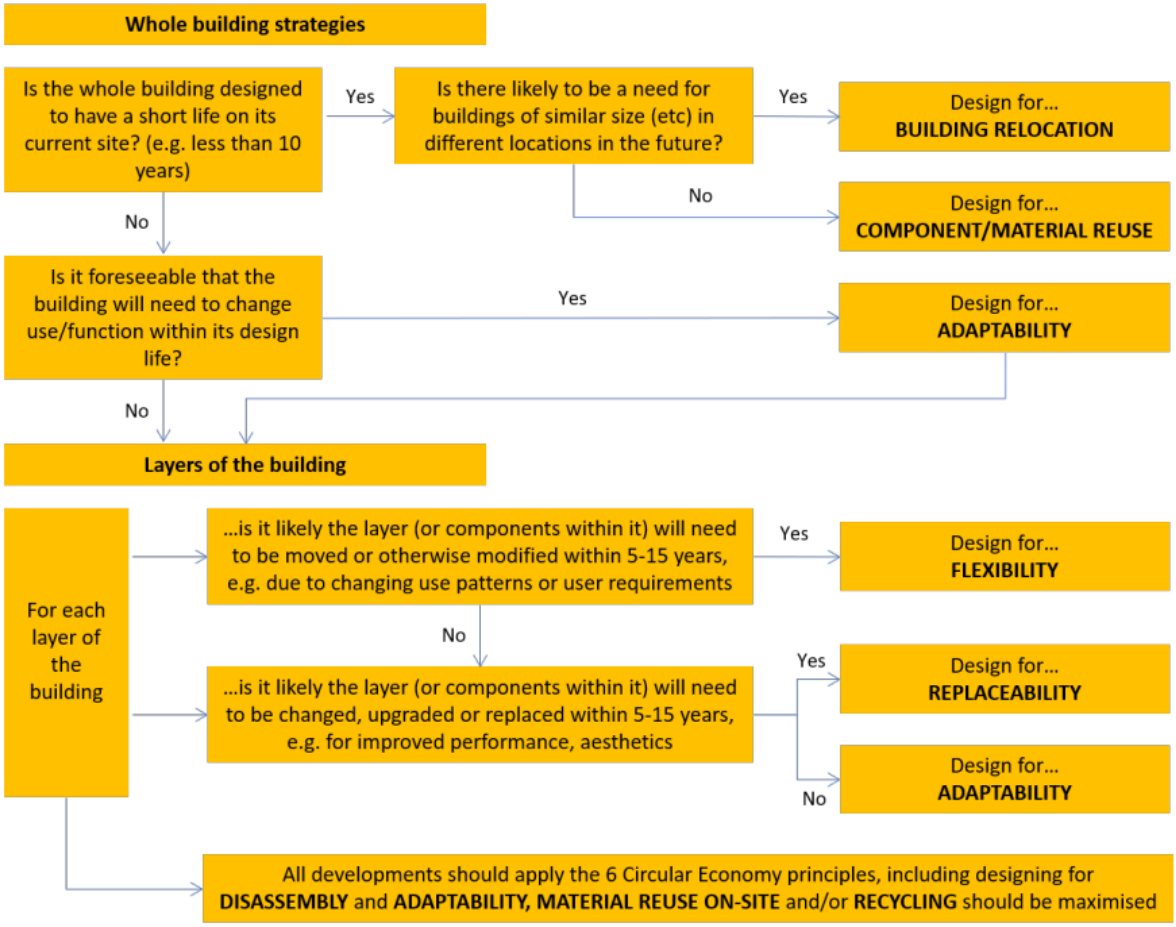

Figure 5 - GLA decision tree for design approaches for new buildings, infrastructure, and layers over the lifetime of development

Commercial spaces are more likely to undergo periodical changes, as such shall be guided by the principles of flexibility, replaceability, and adaptability. Commercial spaces are to be flexible to allow for changes in uses to meet the demands of the community at the time, and shall include designing to shell and core, and provision of spaces that allow for flexible internal layouts and services e.g. demountable partitions and modular M&E systems. Commercial spaces are being assessed against the BREEAM New Construction 2014 'Excellent' standard, and includes credits targeting water reduction, energy reduction, environmental impacts from construction products, durability and resilience design, and design for disassembly.

Dynamic Simulation modelling has been undertaken in accordance with CIBSE TM59 '*Design methodology for the assessment of overheating risk in homes*', TM52 '*The limits of thermal comfort: avoiding overheating in European buildings'*, and a ventilation strategy has been

developed to demonstrated successful mitigation from the risks of overheating in accordance with CIBSE TM49 weather data climate scenarios.

The proposed energy strategy is to utilise highly efficient communal Heat Pumps, which will provide significant carbon reductions and affordable running costs to Occupants. This will supply efficient and low carbon space heating and hot water to all units. The design shall incorporate 12 air source heat pumps to supply heat from the network. These shall be designed to supply 90% of the annual heat demand, and an SCOP of >2.8 is targeted. The manufacturer has provided calculations and datasheets detailing a SCOP of 3.1 and the mechanical design team will work with the manufacturer throughout the detailed design to maximise contribution and efficiency of the heat pump units.

The renewables contribution will be further enhanced via the inclusion of solar photovoltaics (PV) to suitable roof spaces. This will ensure significant carbon savings are achieved over the Part L baseline and reduce the Site energy consumption through a highly efficient building fabric design. This energy strategy is electricity-led and shall take advantage of the decarbonisation of the national grid as it continues to become 'greener' through increased renewable energy contributions.

As far as practicable, the Applicant shall seek to maximise the use of recycled content within the Proposed Development where feasible. The use of pre-fabricated elements shall be prioritised, as these reduce construction waste, and include the use of precast floors and stairs.

Further details of how the new build element of the Site incorporates circular economy principles are provided in Section 5 below.

4.4 Circular economy approach for municipal waste during occupation

The Applicant shall provide refuse and waste storage in accordance with the London Borough of Camden Local plan requirements. Easily accessible communal waste storage shall be provided, with each unit having its own waste and recycling stores. Waste storage shall be segregated by waste streams to maximise recycling rates. Bin stores shall be provided to neatly accommodate Berkeley Group standards and Local Authority recycling and waste

containers to encourage recycling rates. Commercial waste provisions shall be targeted under BREEAM WST03 ‘Operational Waste’ to maximise waste recovery.

Furthermore, the Applicant is committed to delivering a management framework, which shall be developed for waste management, energy monitoring, and water monitoring for the Site in operation. This shall help deliver the 65% recycling of municipal waste by 2030 target.

5. CIRCULAR ECONOMY DESIGN PRINCIPLES

5.1 Circular Economy Narrative

A number of key commitments, metrics, targets, and design strategies have been identified which have been incorporated into the Proposed Development, and which contribute towards a circular economy. Full details are provided in the GLA circular economy template spreadsheet, and follow the GLA Circular Economy Core Principles. A summary has been provided below of the outline strategy for each principle.

5.2 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, life span, and relevant circular economy design approaches. To support reuse and recycling, the different layers should be independent, accessible, and removable whilst maintaining their value, where possible. This is especially important for layers that may need more frequent replacement, such as building services and internal fit-outs.

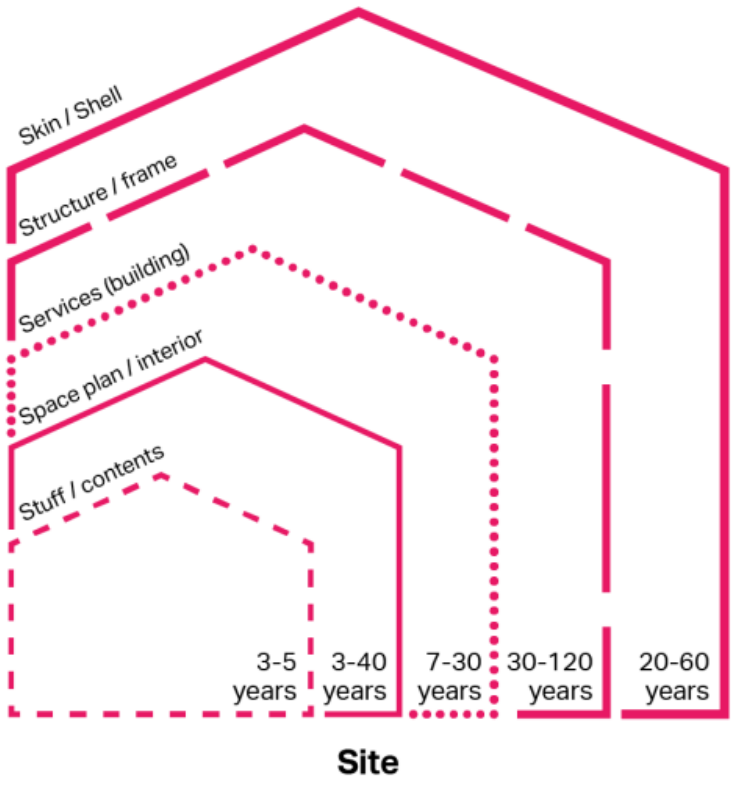

Figure 6 - GLA building layers and their indicative lifespans

The Applicant and Design Team have reviewed the following circular economy principles on a building layers basis and provided full details within the GLA circular economy reporting template spreadsheet which accompanies this report.

5.3 Designing out Waste

Module A: Product Sourcing and Construction Stage

This module concerns carbon emissions from the sourcing, transportation, fabrication and construction of all materials and products used within the Proposed Development. To ensure that the choices that are made will help reduce future carbon emissions through subsequent life-cycle stages, a close understanding of the supply chain is needed.

The following points highlight the design decisions which have been made to reduce waste during Module A:

- The Applicant shall ensure that materials have a high recycled content and are easily recyclable to minimise the amount of virgin materials used (in-line with SI 7 minimum targets).
- Service coordination and clash detection will be carried out at the detailed design stage to minimise site mistakes and clashes leading to wastage. Numerous coordination workshops will be held for service penetrations in floors, walls, and soffits. The Applicant shall ensure that materials have a high recycled content and are easily recyclable to minimise the amount of virgin materials used (in-line with SI 7 minimum targets).
- The Applicant's Sustainable Specification and Procurement Policy, alongside a Responsible Sourcing and Specification guidance, enables the Commercial Team to specify at tender stage what circular economy requirements are applicable to the Proposed Development, such as the evidence required to ensure that materials are responsibly sourced. These will be reviewed periodically by the Sustainability Advisor to make sure that what has been specified is being applied on site. This will be a challenge to monitor and ensure what was specified is being implemented. In order to overcome this, a procedure will be trialled in the coming months on different projects to monitor and review commitments.

- The Applicant works with suppliers to minimise packaging for construction deliveries and promote re-use, as well as implementing careful storage and management of on-site materials to prevent damage and consequent wastage.
- Detail design to be based on specific ground investigation results, to optimise the substructure and minimise material required.
- Pile matt to be designed to be incorporated into the sub structure of the floor to avoid removal.
- The structural frame and substructure have been optimised for minimum depth while not requiring excessive reinforcement. This has resulted in slab thicknesses at typical levels of 260mm.
- Structural frame to be optimised during detail design phase to minimise material use.
- Rebar quantities will be reduced where possible.

A pre-demolition audit will be undertaken to maximise opportunities for re-use and recycling of materials, for on-site and off-site applications. A review into the use of pre-fabricated reinforced concrete elements such as columns, staircases and use of twin wall to reduce the waste concrete works on site is to be conducted as the design progresses.

Landscape materials are to be sourced from reputable sources, and the over specification of materials shall be avoided, for example paving sub-bases, landscape soil depths etc. are to be as required and not greater. Specified landscaping materials shall utilise recycled materials where practicable, thus reducing the amount of concrete associated with the landscaping design. All soft landscape trees & shrubs specified are to suit the ambient micro-climatic conditions, aiming to improving success rate of planting scheme.

Module B: In-Use Stage

The objective of this module is to understand, at the design stages, how the building will perform post-construction; and how to ensure that in-use emissions will be minimised.
Responsible Use of Resources: Berkeley Group are committed to minimising carbon emissions and water consumption across operations. Berkeley Group have committed to science-based targets (December 2020) across Scope 1, 2, and 3 emissions. They aim to achieve the sustainability targets by using efficient technologies and implementing training and behaviour change initiatives.

Use of a reinforced concrete frame which will last for at least the design life of the Development and can be extended with sufficient maintenance.

Fabric first approach to the energy strategy ensures high performance u-values across the development, to minimise heating and cooling demand. The Development is targeting to better the GLA London Plan SI 2 policy requirements. The commercial areas shall surpass the 15% carbon emission reduction from building fabric alone.

Glazing solar gains have been carefully balanced between the energy strategy to benefit heating demands in the winter, and the overheating strategy to reduce solar gains during the summer.

The proposed energy strategy is to implement a site-wide air source heat pump network with the heating demand supplied by high efficiency heat pumps. This will supply efficient and low carbon space heating and hot water to all units, whilst minimising heat loss associated with traditional heat networks. The renewables contribution will be further enhanced via the inclusion of solar photovoltaics (PV) to suitable roof spaces.

Furthermore, enhanced energy modelling can be carried out as part of the commercial BREEAM assessment, in accordance with CIBSE TM54 ‘Evaluating operational energy use at the design stage’ which seeks to address the performance gap between Part L building regulation compliance and energy consumption in-use. This would allow for detailed analysis of predicted energy loads and allow for the design to be tailored.
Under BREEAM the commercial element shall achieve three credits under WAT01 (a 40% improvement over the baseline case) as well as targeting water conservation through water monitoring and leak detection (WAT02, WAT03 & WAT04).

Metering strategy in place via BREEAM and CIBSE TM39 to provide sub-metering to all units. This will allow careful monitoring and reporting of energy, heat, and water being consumed in each space of the development and allow for data analysis to pinpoint areas of inefficient operation in-use.

Module C: End-of-Life Stage

This module captures the emissions from when the building has reached the end of its useful life, i.e. at the end of the 60-year reference study period. It covers deconstruction and demolition, transport, waste processing for reuse, recovery or recycling, and disposal, until the Site is cleared, level and ready for further use

Building Information Modelling will be stored to facilitate end-of-life strategy, disassembly, future reuse, waste avoidance, waste reduction etc. which will be outlined in the Operations and Maintenance manuals.

Module D: Benefits and Loads Beyond the System Boundary

Deciding what will happen to a building after it has been dismantled or demolished many years in the future is clearly speculative. However, in order to transform London to a resource-efficient, zero-carbon economy, it is essential that these issues are given careful consideration at the design stage. The principle is that for a project that follows the 'end of life' of the applicant's project, the future carbon emissions from making a component will be avoided and the saving will be equivalent to providing a new component or system.

The Proposed Development has been designed for longevity, however durable external works materials, which can be re-used, have been maximised. High strength paving materials have been applied to high traffic areas to reduce breakage.

5.4 Designing for Longevity

The proposed new Development is a long-life development. It is not intended for regular change and as such shall primarily be guided by the requirements for longevity. As such these sections of the Proposed Development shall be designed to meet long term needs while being durable and resilient to a changing climate.

The specified landscape materials are a durable, low maintenance proven palette of hard landscape materials, which are designed for longevity. The soft landscaping is to be provided with adequate soil depths to ensure future development and longevity, whilst species selection of locally appropriate plants shall ensure resilience to climate change.

5.5 Designing for Adaptability or Flexibility

"The Proposed Development has been designed primarily for longevity"; however, the commercial areas are more likely to undergo change more frequently. Within the commercial element, the BREEAM assessment shall target key credits relating to adaptability and flexibility, such as HEA04 '*design for future comfort*', ENE01 '*energy performance*', MAT05 '*designing for durability and robustness*', WST05 '*resilience of structure, fabric, building services*', and WST06 '*design for disassembly and functional adaptability*', all of which address the impacts of climate change and material selection to ensure durability and robustness.

Commercial spaces are designed to allow flexibility and have been designed to allow conversion into flexible spaces.

"The structural frame has been developed to allow flexibility for future uses by allowing for the re-configuration of party and walls and apartment internal configurations". Tall ground floor spaces have been provided in the proposed scheme. This means uses are not constrained by spatial configuration. Spaces also allow flexibility for a range of activities and fit-out options.

5.6 Designing for Disassembly

Components and products will be designed and selected to allow for disassembly and reuse at the end of their useful life. Building information will be stored to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. There shall be a requirement for method statements on end of life from contractors and sub-contractors to be provided in the Operation and Maintenance Manuals - this shall form part of contractual obligations.

Disassembly is facilitated by principles allowing the building or parts of the building to be easily disassembled at the end of its life, or to be refurbished rather than demolished. The following measures shall be implemented to facilitate disassembly at end of life:

- Improve durability of materials where practicable in common areas
- Use reversible and/or mechanical connections where practicable, to facilitate disassembly and ensure materials can be recovered in a high value state

- Utilise layer independence where practicable (designing building systems and components in layers so that removal, adjustment, or replacement of some elements is feasible, especially when different components have different life spans and maintenance needs)
- Utilise standardised products and/or modular systems, including pre-fabricated elements

5.7 Using Systems, Elements or Materials that can be Re-used and Recycled

The Berkeley Group are committed to increasing the use of Modern Methods of Construction on their developments. In 2018 they committed to deliver the Berkeley Modular facility and developed an approach to considering both volumetric modular construction and off-site fabricated elements. The use of MMC enables the Applicant to increase resource efficiency and reduce the amount of waste produced compared to traditional on-site construction methods. Across the whole Development, these include:

- Reusable fire doors during the construction stage
- Berkeley Group wide Materials Exchange Board to be utilised for the reusing of surplus materials

6. PRE-REDEVELOPMENT & PRE-DEMOLITION

6.1 Pre-Redevelopment

A pre-redevelopment audit is a tool for understanding whether existing buildings, structures and materials can be retained, refurbished, or incorporated into the new Proposed Development. If there are existing buildings on a site, a third-party, independently verified or peer-reviewed pre-redevelopment audit is strongly encouraged, including analysis that fully explores options for retaining existing structures, materials, and the fabric of existing buildings into the new Proposed Development; and the potential to refurbish buildings before considering substantial demolition.

The PFS Site has been allocated by LBC as a site suitable for redevelopment for commercial space. Many of the existing structures are not suitable for re-use, however, where practicable materials shall be reclaimed and re-used on-site.

6.2 Pre-Demolition

A pre-demolition audit will be undertaken and will provide a detailed inventory of the materials in the building that will need to be managed upon demolition. The audit will be undertaken by a third-party independent specialist with expertise in reclamation of components and materials and experience in preparing these types of reports.

A pre-demolition audit will be undertaken by a third-party independent specialist, which will aim to provide an understanding of the materials arising during the refurbishment and demolition phases of a redevelopment, and to help with the development of a resource management plan. The Audit identifies products and/or materials that could be incorporated into subsequent development, and ensures the management of material from the demolition/refurbishment process is in line with the waste hierarchy i.e. maximise reuse and closed loop recycling and minimise waste to landfill.

7. BILL OF MATERIALS

As part of the GLA guidance outlined in '*London Plan Guidance: Circular Economy Statements'* LPG (March 2022) document, the Applicant should demonstrate that they have considered opportunities to conserve resources by applying lean design principles and to source materials sustainably.

Detailed Circular Economy Statements must include a completed Bill of Materials which estimates the quantity of materials used in each 'layer' of the building (kg), the material intensity (kg/m2 GIA) and set targets for the minimum amount of recycled content to be used (% by value). Applicants should identify opportunities for use of reused or recycled materials and set individual targets of at least 20% by value of materials.

The purpose of reporting material intensity is twofold: first, to gather evidence about the material intensity of different structural systems and development types; and second, to ensure that material optimisation is considered as part of the design process.

The Bill of Materials Table has been completed using building calculations provided by consultants Ramboll as part of the production of the planning Whole Life-Cycle Carbon Assessment report. The reported data are based on a best estimate and shall be reviewed as the detailed design develops. The Bill of Materials can be found within Appendix 2.

8. END-OF-LIFE STRATEGY

The end of the life of the building has been considered from an early stage to ensure it can be simply deconstructed.

The first priority is to ensure the building lasts beyond its design life. The Juniper Building is built out of a conventional reinforced concrete flat slab frame. Materials, when properly maintained and looked after, can outlast the proposed design life of the Proposed Development. As such, at the end of its design life, the building would be suitable for refurbishment.

To aide this, there are a number of techniques that can be used to extend the life of key materials. It is likely over the lifetime of the Proposed Development further techniques will be developed to extend the life of the materials as well. Information on these techniques will be included in the Operation and Maintenance manuals.

When dissembling the building, the key structural materials are all recyclable, re-useable or can be re-used on site as crushed aggregate for future developments. Guidance on disassembly and disposal of key materials will be provided within the Operation and Maintenance manuals.

The following sections detail principles which shall be implemented to facilitate material recovery at the end of life stage.

8.1 Durability

Durable materials shall be specified in all areas that are subject to high pedestrian movement, such as communal spaces. This will extend the lifespan of building materials, in particular those that are exposed, thereby reducing the need for replacement over the building's lifecycle.

8.2 Layer Independence

The Proposed Development has been designed with the RICS 'building layers' in mind, and where practicable building elements and components with different lifespans will form independent layers. This will ensure those layers with shorter lifespans can be replaced without causing damage to layers which have longer lifespans.

8.3 Standardisation

Standard-size materials shall be used where practicable to accommodate and facilitate multiple uses, reuse and upgrading. Additionally, standard types of connections shall be specified, as these can be separated and reused more easily. A review of standardisation has been carried out and it is proposed to use standard methods across the whole Development such as prefabricated components precast stairs & ramps. Standardisation and modularity allow elements to be slotted together or taken apart to promote disassembly and flexible environments, as well as reducing construction waste. The feasibility of inclusion of modular elements will be fully evaluated as the design continues to progress.

9. OPERATIONAL WASTE MANAGEMENT

An operational waste management plan has been developed to demonstrate that the Proposed Development will achieve the relevant targets set out in London Plan Policy SI 7. This includes shared, adequate, flexible, and easily accessible storage space and collection systems, as required by London Plan policies D3, SI 7 and D6. This will help the Site to achieve the Policy SI 7 65 % municipal waste recycling target by 2030.

An Operational Waste Management Plan will be provided.

Waste storage capacities have been calculated as per the LBC Waste and Recycling Planning Guidance, taking into account all required waste streams including residual, recycling, paper/cardboard, and food waste.

10. RECYCLING AND WASTE REPORTING

In order to minimise waste streams sent to landfill, and in an effort to maximise diversion in line with the waste hierarchy, the GLA guidance outlined in '*London Plan Guidance: Circular Economy Statements'* LPG (March 2022) document requires estimating and reporting the total amount of waste/ material generated during demolition, excavation, construction, and operation (in-use).

Detailed Circular Economy Statements must complete the Recycling and Waste Reporting Table (within the GLA circular economy reporting template spreadsheet) with clearly defined activities and targets relating to the following London Plan policy targets:

- 95% reuse/recycling/recovery of construction and demolition waste
- 95% beneficial use of excavation waste
- 65% recycling of municipal waste by 2030

The Applicant's target is to reuse or recycle a minimum of 95% of all the demolition, excavation, and construction waste generated from the Proposed Development. This target will be monitored through the use of the Applicant's Waste Data Tool whereby waste is logged against the contractor producing the waste, the end destination and the type of waste generated. Prior to a new contractor joining the Site they will be required to provide copies of the appropriate licences for their intended waste carriers and proof that as far as possible the end destinations are Material Recovery Facilities. Where material is able to be reused on site this will also be entered into the Waste Data Tool. The information contained within the Waste Data Tool is audited every 8 weeks as part of a site wide Sustainability Audit from initial start of construction until the completion of the final home.

During construction a Timber Tracker will be used on site to record the source of all timber brought to site by all contractors. As part of our procurement process all contractors will be required to use only FCS or PEFC certified timber on site. The chain of custody certificates must be submitted to the Applicant before a supplier will be allowed onto site and all deliveries cross referenced with these. The Timber Tracker is also audited every 8 weeks as part of a site wide Sustainability Audit.

11. CONCLUSION

This report summarises the Circular Economy Strategy for the Proposed Development of Camden Goods Yard, in order to meet the sustainability requirements of the GLA London Plan Policy SI7 '*Reducing waste and supporting the Circular Economy'*, following the guidance outlined in '*London Plan Guidance: Circular Economy Statements'* LPG (March 2022) document.

This Detailed Circular Economy Statement was developed in collaboration with the Applicant and Design Team following virtual workshops held on 11th February 2022. These workshop minutes are detailed in the Appendices. An overall strategic approach has been identified for both the existing building and structures on the Site and the proposed new Development.

A number of key commitments and design strategies have been identified to ensure the Proposed Development will contribute towards a circular economy. These involve design decisions to minimise resources used, minimise waste and strategies to manage waste effectively. The Strategic Approach has been defined following the Circular Economy Core Principles. This report should be read in conjunction with the submitted GLA circular economy template spreadsheet.

APPENDIX 1: CIRCULAR ECONOMY WORKSHOP MINUTES

CIRCULAR ECONOMY WORKSHOP MEETING 01

Project:	Camden Goods Yard
Date:	11th February 2022
Location:	Online (Microsoft Teams)
Attendees:	
Richard Syddall	St George
Katie Sampford	St George
Jack Landor	St George
David Udall	St George
Charles Scott	Waterman Group
Peter Downing	Waterman Group
Ralph Kanfer	Makower Architects
Antonia Vavanou	Ramboll
Maria Voukia	Ramboll
Tracey Walsh	Energist UK
Juliano Mandinga	Energist UK
Apologies:	None
Distribution:	As above

	Item	**Action**
1.0	***Introduction to Circular Economy***	
1.1	TA introduced the concept of the circular economy and provided the GLA definition and how it can be considered within the built environment and to resolve issues surrounding a linear economy. The core guiding principles of the circular economy were explained and how these relate to the built environment on a 'building layer' basis.	
2.0	***Targets***	
2.1	Targets for the site were discussed and comparison drawn to BREEAM credits for adaptation studies and waste management. It was noted that the site is brownfield land. The existing building is not suitable for re-purposing, as such the existing site shall be demolished and redeveloped. A demolition audit shall be required prior to start on site to ascertain quantities of materials and identify the most valuable end-use for wastes streams.	**STG**

2.2 TW confirmed that the GLA circular economy targets are for a 95% diversion from landfill for demolition, construction, and excavation waste, as well as a 65% target for operational municipal waste. *Noted that St George have a 95% in-house diversion target.*

2.3 It was discussed that the GLA have a target for a minimum of 20% recycled or reused materials for each building element.

Post Meeting Note:
Applicants can either report against targets for different building layers (for example, structure, shell/skin, and space) or for different materials (for example, metals, plastic, timber). If reporting by material, calculations should focus on those with the highest value and aim to address at least 80% of the material used (i.e., 80% by value). If reporting by building layer, applicants should focus on the 'structure', 'shell/skin' and 'space' as a minimum.

3.0 Strategic Approach

3.1 With reference to the GLA decision tree, it was discussed that the strategic approach for the site was to redevelop the existing site as the existing building is not suitable for re-purposing. The strategy for the building design shall thereafter be to maximise flexibility, adaptability, and longevity principles for the respective building layers.

3.2 A review of the design strategies and design features incorporated into the design were reviewed against the GLA Circular Economy 'Core Principles'. A number of key commitments and design strategies were identified to ensure the development will contribute towards a circular economy. These involve design decisions to minimise resources use, minimise waste and strategies to manage waste effectively.

3.3 Strategic Approach 'Table 1' to be shared with wider design team for further input. **EUK**

APPENDIX 2: BILL OF MATERIALS

LAYER	ELEMENT	MATERIAL QUANITY (kg)	MATERIAL INTENSITY (kg/m2 GIA)	RECYCLED CONTENT (% by value)	REUSED CONTENT (% by value)	ESTIMATED REUSABLE MATERIALS (kg/m2)	ESTIMATED RECYCLABLE MATERIALS (kg/m2)
Substructure	*Aggregate*	2,086,732	157.6	*0%*	*n/a*	*n/a*	*n/a*
	Cement mortar	7,186	0.5	*100%*	*n/a*	*n/a*	*n/a*
	Concrete 25% GGBS	6,785,594	512.4	*100%*	*n/a*	*n/a*	*n/a*
	Plastic film for damp proofing	221	0.0	*0%*	*n/a*	*n/a*	*n/a*
	Screed	195,953	14.8	*100%*	*n/a*	*n/a*	*n/a*
	Formwork	3,539	0.3	*0%*	*n/a*	*n/a*	*n/a*
	Reinforcement	308,033	23.3	*100%*	*n/a*	*n/a*	*n/a*
	PIR insulation boards	920	0.1	*0%*	*n/a*	*n/a*	*n/a*

Superstructure	*Concrete Frame 25% GGBS*	3,074,347	232.1	*100%*	*n/a*	*n/a*	*n/a*
	Formwork	19,588	1.5	*0%*	*n/a*	*n/a*	*n/a*
	Reinforcement	156,744	11.8	*100%*	*n/a*	*n/a*	*n/a*
	Structural Steel	212,956	16.1	*100%*	*n/a*	*n/a*	*n/a*
	Intumescent fire-resistant coating, for steel structure	7,783	0.6	*0%*	*n/a*	*n/a*	*n/a*
Superstructure (upper floors)	*Concrete 25% GGBS*	8,732,703	659.4	*100%*	*n/a*	*n/a*	*n/a*
	Formwork	42,561	3.2	*0%*	*n/a*	*n/a*	*n/a*
	Reinforcement	349,377	26.4	*100%*	*n/a*	*n/a*	*n/a*
Superstructure (roof)	*Concrete 25% GGBS*	944,357	71.3	*100%*	*n/a*	*n/a*	*n/a*
	Formwork	4,600	0.3	*0%*	*n/a*	*n/a*	*n/a*
	Reinforcement	36,754	2.8	*100%*	*n/a*	*n/a*	*n/a*

	XPS insulation	35,578	2.7	*0%*	*n/a*	*n/a*	*n/a*
	Green roof drainage layer	2,058	0.2	*0%*	*n/a*	*n/a*	*n/a*
	Plastic pedestals	2,396	0.2	*0%*	*n/a*	*n/a*	*n/a*
	Precast concrete pavers	169,567	12.8	*100%*	*n/a*	*n/a*	*n/a*
	Waterproofing membranes	36,415	2.7	*0%*	*n/a*	*n/a*	*n/a*
	Geotextile	285	0.0	*0%*	*n/a*	*n/a*	*n/a*
	Green roof substrate	75,905	5.7	*100%*	*n/a*	*n/a*	*n/a*
	Glass balustrades	3,567	0.3	*100%*	*n/a*	*n/a*	*n/a*
Superstructure (Stairs and Ramps)	*Steel staircase*	2,598	0.2	*100%*	*n/a*	*n/a*	*n/a*
	Stainless steel handrail	476	0.0	*100%*	*n/a*	*n/a*	*n/a*
	Precast concrete staircase	484,923	36.6	*100%*	*n/a*	*n/a*	*n/a*

Superstructure: External Walls	*Aluminium*	8,528	0.6	*100%*	*n/a*	*n/a*	*n/a*
	Brick	192,248	14.5	*100%*	*n/a*	*n/a*	*n/a*
	Glass facades and glazing	292,917	22.1	*100%*	*n/a*	*n/a*	*n/a*
	Mortar bricklaying	31,070	2.3	*0%*	*n/a*	*n/a*	*n/a*
	Membranes	423	0.0	*0%*	*n/a*	*n/a*	*n/a*
	Rock wool insulation	30,285	2.3	*0%*	*n/a*	*n/a*	*n/a*
	Plasterboard	52,525	4.0	*100%*	*n/a*	*n/a*	*n/a*
	Stainless steel	5,494	0.4	*100%*	*n/a*	*n/a*	*n/a*
	Steel profiles	7,325	0.6	*100%*	*n/a*	*n/a*	*n/a*
Superstructure: Windows and External Doors	*Steel doors*	8,079	0.6	*100%*	*n/a*	*n/a*	*n/a*
Superstructure: Internal Walls and Partitions	*Concrete blocks*	818,642	61.8	*100%*	*n/a*	*n/a*	*n/a*

	Glass wool insulation	2,859	0.2	*0%*	*n/a*	*n/a*	*n/a*
	Steel studs	6,036	0.5	*100%*	*n/a*	*n/a*	*n/a*
	Plasterboard	72,526	5.5	*100%*	*n/a*	*n/a*	*n/a*
	Glass	2,365	0.2	*100%*	*n/a*	*n/a*	*n/a*
Superstructure: Internal Doors	*Wooden internal doors*	41,792	3.2	*0%*	*n/a*	*n/a*	*n/a*
Finishes	*Screed*	426,258	32.2	*100%*	*n/a*	*n/a*	*n/a*
	Gypsum plasterboard	46,334	3.5	*100%*	*n/a*	*n/a*	*n/a*
	Paint	2,293	0.2	*0%*	*n/a*	*n/a*	*n/a*
	Carpet tiles	4,315	0.3	*100%*	*n/a*	*n/a*	*n/a*
	Ceramic tiles	12,179	0.9	*100%*	*n/a*	*n/a*	*n/a*
	MDF skirting	576	0.0	*0%*	*n/a*	*n/a*	*n/a*

	Epoxy floor	10,475	0.8	*0%*	*n/a*	*n/a*	*n/a*
	Polyurethane floor	35,458	2.7	*0%*	*n/a*	*n/a*	*n/a*
	Raised access floor panels	249,163	18.8	*100%*	*n/a*	*n/a*	*n/a*
	Raised access floor pedestals	17,424	1.3	*100%*	*n/a*	*n/a*	*n/a*
Services (MEP)	*MEP equipment*	183,774	13.9	*100%*	*n/a*	*n/a*	*n/a*
External works	*Aggregates*	2,024,059	152.8	*0%*	*n/a*	*n/a*	*n/a*
	Mortar	316,259	23.9	*100%*	*n/a*	*n/a*	*n/a*
	Membranes	493	0.0	*0%*	*n/a*	*n/a*	*n/a*
	Precast concrete pavers	125,551	9.5	*100%*	*n/a*	*n/a*	*n/a*
	Pipes (water, heating, sewage)	453	0.0	*100%*	*n/a*	*n/a*	*n/a*
	Safety glass panes	1,239	0.1	*100%*	*n/a*	*n/a*	*n/a*