February 2025

The Aylesham Centre, Peckham

Circular Economy Statement

Document reference: AC10B

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Circular Economy Statement AC10B

Berkeley Homes (Capital) Plc

Aylesham Centre

Final

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February 2025

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Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project. We are able to advise at all stages of projects from planning applications to handover. Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

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Executive Summary

This updated Circular Economy Statement and is prepared for Berkeley Homes (Capital) Plc and submitted in support of the planning application (ref. 24/AP/2074) which seeks permission for the comprehensive redevelopment of the Aylesham Centre and associated car park and petrol filling station at Hanover Park, London SE15 5EW ('the Site'). This updated Flood Risk Assessment supersedes the July 2024 Flood Risk Assessment (document ref. AC19).

The updated Circular Economy Statement reflects the design changes as set out within the updated Design and Access Statement (document ref AC02A) and respond to comments received from the GLA and London Borough of Southwark. The updates within this report and accompanying spreadsheet are minor and comprise the following:

> Further justification for the requirement for demolition.

> Additional commentary on designing for disassembly on services.

> Additional commentary on the brickwork being re-usable has been updated in the report.

> Clarity on approaches adopted in relation to building type and layers.

> Additional details on maintenance and end of life stage strategy specifically in the design for longevity, design for disassembly and End of Life section within the spreadsheet.

The conclusions as set out within this updated Circular Economy Statement are unchanged from those as set out within the July 2024 Circular Economy Statement (document ref. AC10).

This Circular Economy Statement has been prepared by Hodkinson Consultancy to accompany an application for full planning permission being submitted by the Applicant, Berkeley Homes (Capital) Plc, to the London Borough of Southwark (LBS).

The purpose of this Circular Economy Statement is to demonstrate that the Proposed Development in has considered the following six circular economy principles:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

The commitments below have been set to ensure that changes are made at a strategic level in order to ensure that the core principles of Circular Economy are adopted.

> 95% non-hazardous construction, demolition and excavation waste is to be diverted from landfill or recycled or reused.

> A pre-redevelopment audit and pre-demolition audit have been undertaken. These studies have confirmed that 100% of concrete and brick and 25% of bituminous materials will be recycled on-site. The Applicant is committed to a target of 20% of the total tonnage for reuse and recycling on site, within the Proposed Development.

> Municipal waste recycling target of 65% (residential) and 75% (commercial) by 2030. Details of how this will be implemented and monitored is set out in the Operational Waste Management Plan.

> The Applicant is committed to target a benchmark of 20% reused or recycled content by value., where feasible. The current recycled content of the proposed materials is 22%.

> Prefabrication off site will be undertaken where possible so reduce the material wastage in certain items such as bathroom pods, utility cupboards and bolt on balconies. There is also the intention to precast several structural elements of the buildings such as columns, twin walls and precast stairs.

> The partitions will be designed to be lightweight and can be removed in future if there is a requirement for a change in layout or function to this area. The building services design will also be designed to account for this potential change future use.

> 100% of timber used on site, including timber used in the construction phase, will be sourced from sustainable forestry sources (e.g., PEFC and FSC). All materials will be sourced in accordance with the Berkeley Group Procurement Policy.

> Standardisation is being applied across the Proposed Development. Examples include all brick details to be standardised to one or one and half bricks to prevent cutting and wastage and pre-cut plasterboard and standardised ceiling heights will be implemented to limit plasterboard cuts. Kitchens will also be built with standard layouts which will allow for repetitive designs and prefabrication of elements off site minimising waste.

> The landscaping strategy includes a varied material palette, importance has been given to the appropriateness of the materials for place-making and a much-needed robustness to support the anticipated uses and long-term performance.

Further different strategic approaches that can be adopted and how they could be incorporated have also been outlined in the report and will support a circular economy approach for the development.

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1. INTRODUCTION

1.1 This updated Circular Economy Statement has been prepared by Hodkinson Consultancy to accompany an application for full planning permission being submitted by the Applicant, Berkeley Homes (Capital) Plc, to the London Borough of Southwark (LBS).

1.2 The purpose of this Circular Economy Statement is to demonstrate that the Proposed Development has considered the following six circular economy principles:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

1.3 The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the full planning application that is being submitted to the London Borough of Southwark.

1.4 The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental change in the way that buildings are designed, built, operated, and deconstructed.

1.5 This report should be read in conjunction with the updated GLA Circular Economy Spreadsheet which has been updated following comments received which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

2.1 The Site is located within Peckham town centre within the administrative boundary of the London Borough of Southwark ('LBS') (the Local Planning Authority ('LPA')). Rye Lane bounds the Site to the west, Hanover Park to the south and Mckerrell Road to the east. Peckham Bus Station, fronting onto Peckham High Street, bounds the Site to the north.

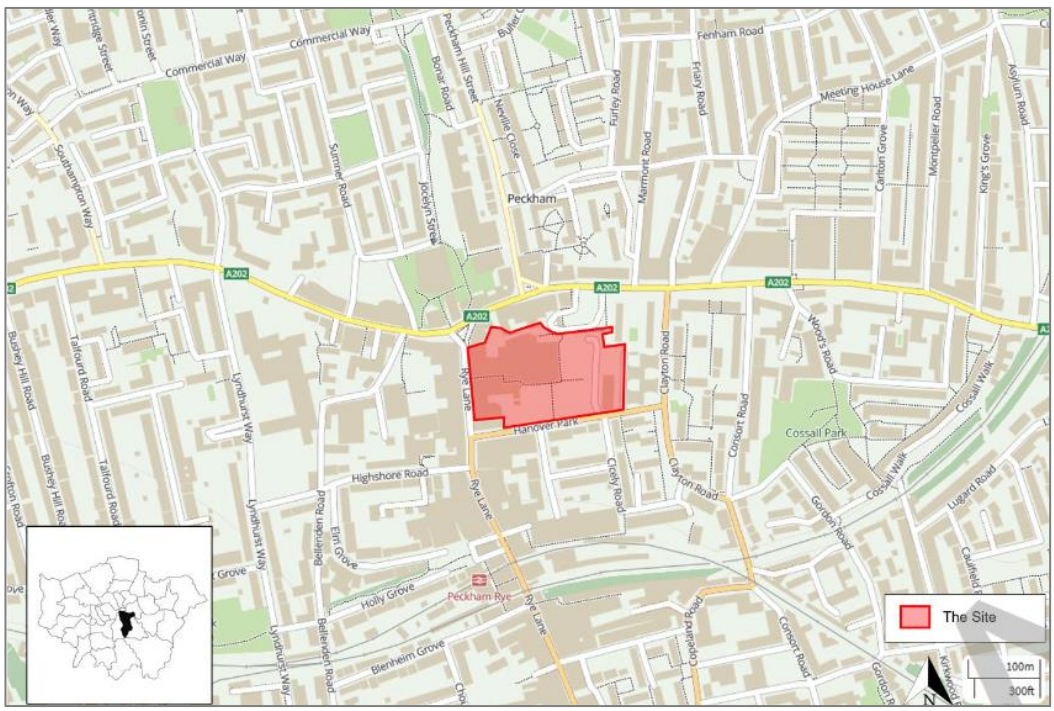

Figure 1: Site Location

Proposed Development

2.2 The Proposed Development is described as follows:

"Demolition of existing buildings and phased redevelopment to provide a replacement supermarket and associated service yard and car parking (Use Class E(a)); flexible retail, leisure (including drinking establishment), and commercial accommodation (Use Class E/Sui Generis); dwellings (Use Class C3); landscaping; and associated works."

2.3 Figure 2 below illustrates the proposed Site layout.

Figure 2: Proposed Site Layout – (DRMM Architects, November 2024)

Scheme Overview

2.4 This is a mixed-tenure proposal, providing a mix of one, two and three bedrooms across multiple blocks. Varied ground floor uses are proposed across the ground plane including a mixture of workspace commercial units, homes and residential ancillary uses. New public realm and new residential streets are linked by a comprehensive landscaping proposal and offer new links for pedestrians and cyclists through the site. An overview of buildings and building heights are noted below:

- Buildings A, B, C – 7 storeys
- Building D and F– 6 storeys
- Building E – 11 storeys
- Building G – 12 storeys
- Building H – 9 Storeys
- Building J1/J2 – 16/6 storeys
- Building K – 10 storeys
- Building L – 11 storeys
- Building M – 20 storeys
- Building N - 13 storeys
- Building P - 12 storeys
- Building Q - 6 storeys

2.5 An overview of heights and massing can be seen in Figure 3 below:

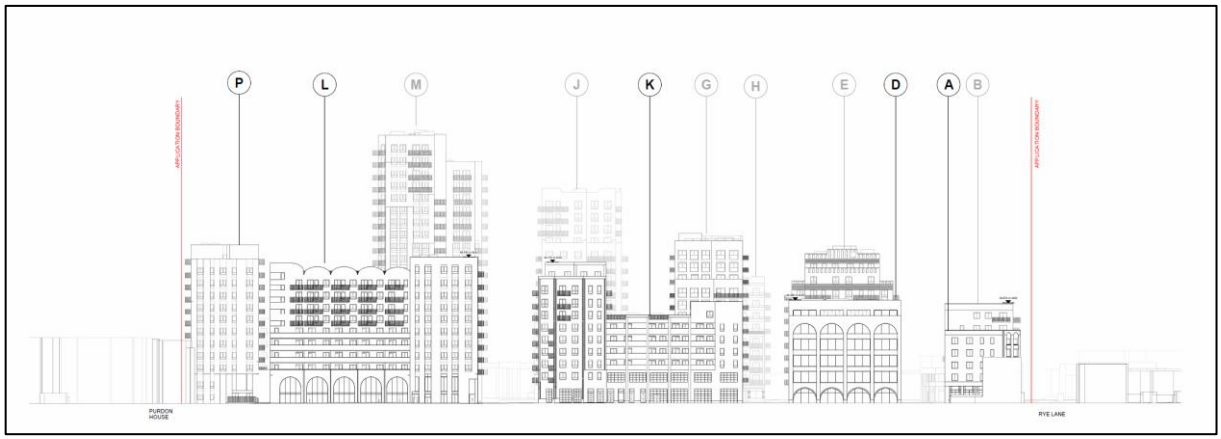

Figure 3: Building Elevations – North (DRMM, June 2024)

Floor Area

2.6 The total floor area for the Proposed Development is 106,060m^2, this is comprised of:

> Retail, Leisure and Commercial Floorspace (Use Class E/Sui Generis) – 17,250m^2.

> Residential (Use Class C3) – 88,810m^2.

2.7 The principles noted within this report apply to this GIA.

Existing Development

2.8 The Site accommodates the Aylesham Centre alongside an associated surface car park (353 spaces), service yard, and petrol filling station. The Aylesham Centre comprises retail units fronting on to Rye Lane with additional retail units within a covered mall, including a Morrison supermarket.

2.9 The existing buildings (on the Site) are not listed at either Statutory or Local level. The closest listed buildings are located at 58 Peckham High Street and Baptist Chapel, Rye Lane. Immediately north of the Site, is the former Jones and Higgins building and immediately to the south of the Site is 47-79 Rye Lane, both of which are locally listed. The western part of the Site (fronting onto Rye Lane) falls within the Rye Lane Peckham Conservation Area.

2.10 As there are existing buildings present on site, a Pre-Demolition Audit has been undertaken. This has been outlined later in the report.

3. POLICY AND REGULATIONS

3.1 This chapter highlights the policies and regulations which are relevant to the Proposed Development.

Regional Policy: London Plan (2021)

3.2 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the Proposed Development and this Statement:

Policy SI7 Reducing Waste and supporting the Circular Economy.

A. Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:

1. Promoting 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. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;

3. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass, and food).

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

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

2. How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life;

3. Opportunities for managing as much waste as possible on site;

4. Adequate and easily accessible storage space to support recycling and re-use;

5. How much waste the proposal is expected to generate, and how and where the waste will be handled;

6. How performance will be monitored and reported.

Local Policy: The Southwark plan 2022

3.3 The London Borough of Southwark Local Plan *'The Southwark Plan'* was adopted in February 2022. The following policies are considered pertinent to this report.

3.4 **Policy P62 Reducing Waste** states that development must:

> Demonstrate how the following waste management hierarchy will be applied during construction:

1. Avoid creating waste; then
2. Reduce the amount of waste produced; then
3. Prepare waste materials for re-use; then
4. Recycle and compost waste materials; then
5. Recover energy from waste materials; then
6. Dispose materials in landfill.

> Provide adequate recycling, composting and waste disposal, collection and storage facilities on site; or

> Provide a suitable off site project waste management strategy that does not adversely impact amenity, access or the environment where on site waste management provision is not possible.

> Major referable development should submit a Circular Economy Statement.

BREEAM

3.5 The Proposed Development will be assessed to target a minimum of BREEAM 'Excellent' rating under the New Construction V6.1 scheme, thus representing a high level of sustainable design and construction. A full BREEAM Pre-Assessment has been prepared by ME Engineers and accompanies the application.

3.6 Implementing a circular economy approach can support achieving the following credits:

> **Waste 01 Construction Waste Management –** Aims to reduce construction waste by encouraging reuse, recovery, and best practice waste management practices to minimise waste going to landfill. It ensures procedures are in place for sorting construction waste into waste groups. Encourages circular routes for construction waste.

> **Waste 03 Operational Waste –** Encourages the recycling of operational waste through the provision of dedicated storage facilities and space. Highlights the importance to provide sufficient storage areas within the building to reflect the recyclable waste streams that are generated and then collected by the local waste authority.

> **Waste 05 Adaptation to Climate Change –** Encourages to take measures to mitigate the impact of extreme weather conditions arising from climate change over the lifespan of the building. Requires an assessment of structural and fabric resilience to extreme weather conditions arising from projected climate change, with mitigation where feasible. Reduces likelihood of needing to replace products and materials due to damage or poor functionality resulting from changing climate conditions.

> **Waste 06 Design for Disassembly and Adaptability –** Aims to avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy.

> **Materials 01 Environmental Impacts from Construction Products –** Building and Life Cycle Assessment (LCA) – This encourages the use of reused / recycled / reclaimed and reusable / recyclable / durable / adaptable materials, products and systems in the building services and superstructure reduces life cycle impacts.

> **Materials 05 Designing for Durability and Resilience** – Aims to reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape. It requires protecting vulnerable and exposed parts of the building from damage and material degradation, thus increasing longevity and resilience of building components, resulting in fewer resources required for repairs and refurbishment; and,

> **Materials 06 Material Efficiency** – Aims to avoid unnecessary material use arising from over specification without compromising structural stability, durability, or the service life of the building. Targets and reporting on opportunities and methods to optimise the use of materials, at various stages of design and construction will be required. It will be necessary to develop and record the implementation of material efficiency at various stages of design construction. Targets and actual material efficiencies achieved will need to be reported. Less over-specification means that there is less wastage of materials and reduced overall demand.

3.7 Reports demonstrating compliance for the above credits will need to be provided to the BREEAM assessor post planning.

Guidance Documents

3.8 Guidance was released by the Greater London Authority (GLA) *"Circular Economy Statement Guidance",* issued in March 2022. It outlines guidance on Circular Economy statements that should accompany all referable planning applications in line with the London Plan Policy SI 7.

3.9 The guidance is accompanied by a Circular Economy template, which provides separate tabs outlining the information that should be submitted at each stage. This template has been provided as a standalone document which should be read in addition to this report.

3.10 The guidance notes that Circular Economy Statements should be submitted at three stages:

> **Outline/pre-application (RIBA Stage 1/2) -** Draft Circular Economy Statement with a focus on the strategic approach.

> **Full application (RIBA Stage 2/3) -** Detailed Circular Economy Statement outlining how the principles will be addressed through detailed design.

> **Post-completion stages (RIBA Stage 5/6)** - Post-Planning Updates should outline the progress in meeting the targets and commitment can be provided during the construction process.

3.11 As the Proposed Development is already at RIBA Stage 2 with a full application being submitted, a detailed Circular Economy Statement is required.

4. APPROACH TO CIRCULAR ECONOMY

Designing Out Waste Workshops

4.1 In February 2024, key members of the design team met for a Designing out Waste (DoW) Workshop, hosted by Berkeley Homes (Capital) Plc. From the earliest stage of the design process Berkeley Homes (capital) Plc aim to design out waste and work with their supply chain to develop material efficient processes.

4.2 Following the DoW workshop, the structural engineers (Walsh) explored the design idea to make use of the existing basement vault, which is located beneath existing units 2-5 of the Aylesham Shopping Centre, to form part of the storage required to attenuate the discharge rates to the public sewer in line with policy P68 of the Southwark local plan. The proposal seeks to minimise any additional excavations within the ground by repurposing approximately half of the plan area into a waterproof tank. The tank would be designed to provide back-up storage for surface water during extreme rainfall events which serves as a flood mitigation measure. This proposal will be further explored at the next stage of the design.

4.3 The meeting minutes for this workshop have been provided in **Appendix A** and are discussed throughout this Circular Economy Statement. Further workshops will be held with the Design Team as the design progresses.

Targets and Monitoring

4.4 Circular economy targets have been agreed with the design team and will be used to influence decisions and design as we progress through the project, they are all in line with Berkeley Group requirements. These are outlined in Table 1 below:

4.5 An overview on how the Applicant will meet these targets is outlined in this report and in the accompanying GLA spreadsheet.

Table 1: Circular Economy Targets

Circular Economy Targets	Target aiming for (%)	Policy Compliant?	Exceeds Policy?
Reuse/recycling/recovery of demolition waste	95%	✓	No
Reuse/recycling/recovery of construction waste	95%	✓	No
Beneficial reuse of excavation waste materials	95%	✓	No
Recycling of municipal waste – residential (by 2030)	65%	✓	No
Recycling of municipal waste – non-residential (by 2030)	75%	✓	No
Recycled content of new materials	20%	✓	No

4.6 To monitor the targets in accordance with the London Plan Guidance for Circular Economy Statements, the Applicant will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded via a Project Waste Management Plan. Operational waste will be measured post-construction to ensure that the targets set are achieved. Finally, the recycled content will be monitored through the development of the actual Bill of Materials.

Strategic Design Making

Decision Tree

4.7 The GLA Decision Tree as set out in the London Plan Guidance has been used to determine the most appropriate design approach for the site. Figure 4 below highlights how the design team have progressed through the decision gates regarding the Proposed Development.

4.8 This has determined to be a *'disassemble and reuse'* and *'demolish and recycle'* as confirmed in the Pre-Demolition audit produced by KaNect **(Appendix B)** and further explained in the GLA Circular Economy Spreadsheet.

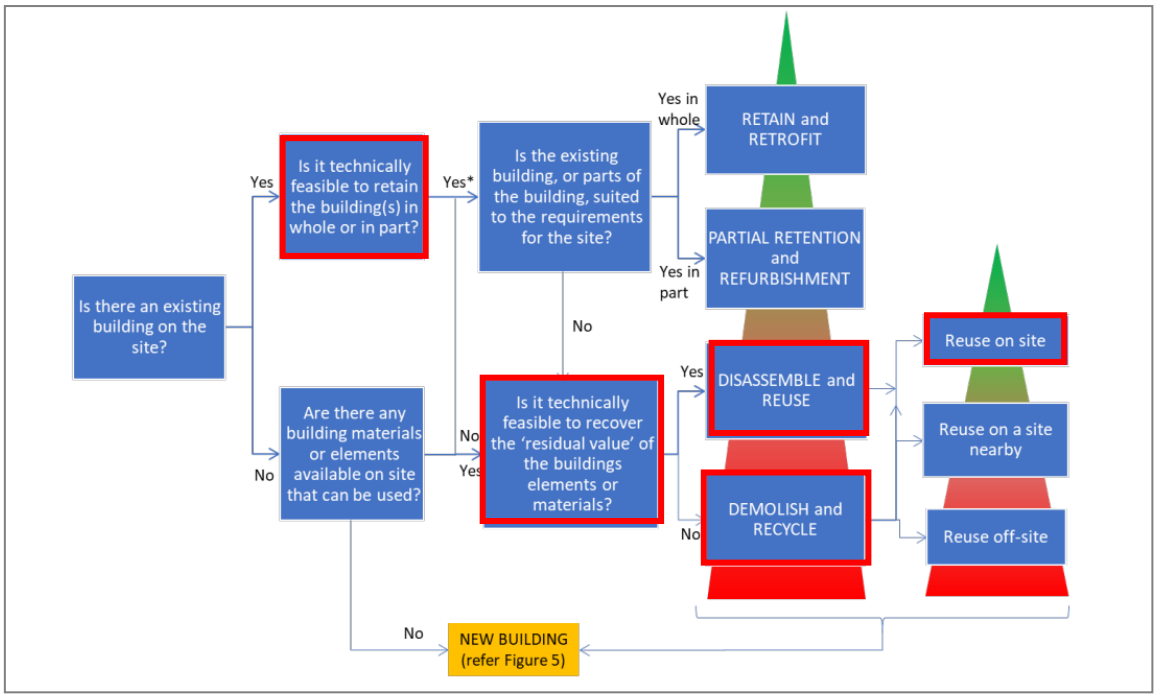

Figure 4: Decision tree for design approaches for existing structures/buildings (Circular Economy Statement guidance, GLA, March 2022)

4.9 The other 'decisions were not taken forward because:

> **Retain and retrofit**: The Proposed Development primarily involves converting existing structures into residential units, with commercial space at ground level. The Southwark Plan's site allocation suggests constructing 850 homes, necessitating building heights beyond what the current structures can support. The existing one/two-storey steel-framed Aylesham centre and Morrisons store would require significant structural upgrades to accommodate this change, including increased load capacity and enhanced fire protection. Additionally, adapting the retail spaces for residential use would require substantial modifications to ensure proper access and functionality which isn't viable. The pre-demolition audit **(Appendix B**) was conducted to identify materials and structural elements from the existing buildings that could be reused or retained. A "design out waste" workshop (**Appendix A)** was held with the design team prior to the site's demolition. The purpose of the workshop was to explore strategies to minimise waste, with a key focus on assessing opportunities to retain parts of the existing structure where feasible. The existing one/two-storey steel-framed Aylesham centre and Morrisons store would require significant structural upgrades to accommodate this change, including increased load capacity and enhanced fire protection. Additionally, adapting the retail spaces for residential use

would require substantial modifications to ensure proper access and functionality which isn't viable.

> **Partial retention and refurbishment:** As above, also the existing basement is not currently habitable has limited headroom. It would be unable to be refurbished into a habitable basement as it stands without further excavation close to the highway and adjacent party walls.

4.10 The project team worked through the decision tree to evaluate which approach most suited this development overall, this was determined to be *adaptability, disassembly, and reuse*. The buildings are not designed to have short life span (i.e. 10 years) but instead have been assumed to have at least a life span of 60 years, as per GLA guidance for Whole Life Carbon.

Strategic Decisions

4.11 The following sections detail the circular economy opportunities identified for the Proposed Development, explored through the application of the following six circular economy principles:

> Building in layers.

> Designing out waste.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly; and

> Using systems, elements or materials that can be reused and recycled.

Designing out Waste

Existing Buildings – Pre-Redevelopment

4.12 As per the London Plan Guidance, one of the requirements of a Circular Economy Statement is to submit a pre-redevelopment audit. The pre-redevelopment audit is a tool for understanding whether existing buildings, structures and materials can be retained. The pre-redevelopment audit should outline an explanation of the existing buildings on the site and brief description of state of their repair. The details should include: the building's age, key materials, photos of typical internal spaces and facades, and site plans.

4.13 A copy of the pre-redevelopment Audit has been provided by KaNect in their pre-demolition audit report, within **Appendix B** and should be referred to for more information.

Existing buildings – Pre-Demolition

4.14 Once the Pre-Redevelopment audit was undertaken, the Applicant was required to undertake a pre-demolition audit. A pre-demolition audit is a detailed inventory of the materials in the building that will need to be managed upon demolition.

4.15 A pre-demolition audit has been produced by KaNect, this has enabled the design team to identify and quantify the materials that might be generated on-site and to provide the Applicant with this information to assist in maximising the recovery of material for subsequent high grade or value applications. A copy of this pre-demolition audit has been provided in **Appendix B.**

4.16 The Applicant is committed to a target of 20% of the total tonnage for reuse and recycling on site, within the Proposed Development. This includes, but is not limited to:

> It is envisioned that 100% of concrete and brick will be recycled on-site i.e., it will be crushed and used as infill material or material for creating pile mats.

> It is envisioned that 25% of bituminous mixtures (including asphalt) will be recycled on-Site i.e., it will be crushed and used as infill material or material for creating pile mats.

4.17 Table 17 in the pre-demolition audit (**Appendix B**) explores the above in much more detail, including a breakdown of all materials suitable for recycling offsite and the suitable brokers for this.

Sustainable Procurement

4.18 Berkeley Homes (Capital) Plc will operate within the wider Berkeley Group procurement plan. The responsible sourcing of materials will be a key consideration in the selection of suppliers and the sustainable procurement plan will support new building materials being selected to minimise environmental impact and have low embodied carbon – from manufacture, transportation, and operational stages, through to eventual demolition and disposal.

4.19 Materials will be sourced in accordance with the following guidance:

> 100% of concrete will be BES 6001 certified (Responsible Sourcing of Construction Products).

> Where possible steel will be sourced from suppliers rated under the CARES Sustainable Constructional Steel Scheme.

> Other major construction materials will be certified under an Environmental Management System (EMS) such as ISO 14001.

4.20 In addition, products with a recognised environmental product declaration (EPD) will be targeted where possible. This will allow for the BREEAM credit (Mat 02) to be achieved and will help formalise the Whole Life Carbon assessment process.

4.21 All timber specified will be legally harvested and traded timber and should be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) and PEFC accreditation– which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

4.22 The Material Exchange Board, exclusive to Berkeley Group, allows projects to request items which are needed for their site. Projects can also list items which they no longer intend to use, and other projects may collect them. This makes it easier for construction sites across the Group to share excess construction materials resulting in cost savings, from reduced waste disposal costs and reduced material procurement costs and reduced environmental impact.

Circular Construction Techniques

4.23 Berkeley Homes (Capital) Plc will adopt innovative construction and demolition techniques throughout the project, ensuring minimal environmental impact (through both demolition and construction), reduce embodied carbon impacts and reduce disruption to the local community. Key methods to be implemented and explored include:

> All waste generated on site to be segregated and recycled, with subcontractors required to adhere to this policy, in accordance with the sites SWMP.

> Ensure the Material Exchange Board is used for all demolition materials, to minimise the impact of these being taken off site to a waste facility.

> Contractors must comply with the site's Construction Environmental Management Plan (CEMP) as well as with the site-specific planning requirements.

> Co-operate during regular sustainability assessments on site and carry out any corrective actions in a timely manner, as agreed with the Berkeley Group project team.

> Preference should be given to biofuels over diesel. Should biofuels be used, evidence confirming the sustainability of the product should be provided by the supplier, such as the International Sustainability and Carbon Certification (ISCC) certificate for HVO. sustainability certificates should be shared with the Berkeley project team LPG (also called propane and butane) usage in kg.

> Opportunities to be early adopters of new low-carbon or zero-carbon plant and machinery (e.g. electric concrete pumps, electric telehandlers or hybrid excavators) should be sought.

> Senior leadership to conduct monthly reviews to assess site learnings, while quarterly technical and commercial forums should be held to share insights and ensure lessons learned are applied to future projects.

4.24 The above is captured in the Sustainability Standard for Contractors (April 2023), Berkeley Group document.

Building Efficiencies

4.25 The following building efficiencies have been developed through the public engagement process:

> Lower floors of Phase 1 buildings are shared with the Supermarket, therefore only half a residential floorplate contains NIA on lower levels.

> Building B has higher efficiency as this shares the cores of Building A and C.

> Different layout strategies were also reviewed to ensure the most efficient design (for M&E services and standardisation) was taken forward.

4.26 The change in column grid from retail to residential levels is structurally the biggest challenge for the Proposed Development. It has the potential to be very expensive and intensive for materials and embodied carbon. Supporting residential blocks on top of transfer structures needs careful consideration of overall and long-term structural movements. Walsh look to establish the simplest structural grid possible to enable repetition and the most economical solution. In the first instance they would look to minimise the amount of transfer structure required. Where this is unavoidable, achieving a simple uniform grid enables a more efficient transfer structure and they will then look to use transfer beams rather than transfer slabs where possible.

4.27 For the residential levels, alternative options of short span traditional reinforced concrete (RC) and longer span post tensioning (PT) will be investigated to look at the impact on the transfer structure, material quantities for slabs, and foundations. Shallow slabs and lightweight finishes will also be reviewed as these are also advantageous to reduce transfer depths, material quantities and embodied carbon.

4.28 A lean design approach will be taken through the use of bespoke slab reinforcement within the building. Having bespoke slab sizes and reducing column sizes as the building increases in height will enable a “build light “approach. This approach will use less material, as slabs and columns will reduce in material quantity as the height increases, but furthermore reduce the materials quantity required in the piles to support the structure.

Minimised Material Use

4.29 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (e.g., lean design), and / or less waste is produced in the construction process, without compromising the design concept.

4.30 The design team will regularly review material efficiency strategies to ensure a lean design that reduces material quantities without inhibiting future flexibility. Engagement with the design team has been undertaken to address the end-of-life strategy for the material.

4.31 The project Architects undertook an early-stage façade options study to determine which façade treatment would be most appropriate in terms of character, diversity and sustainability for the Proposed Development. Within this study, Hodkinson Consultancy assessed the building circularity for eight façade types, an outline of this is shown in Figure 5 below:

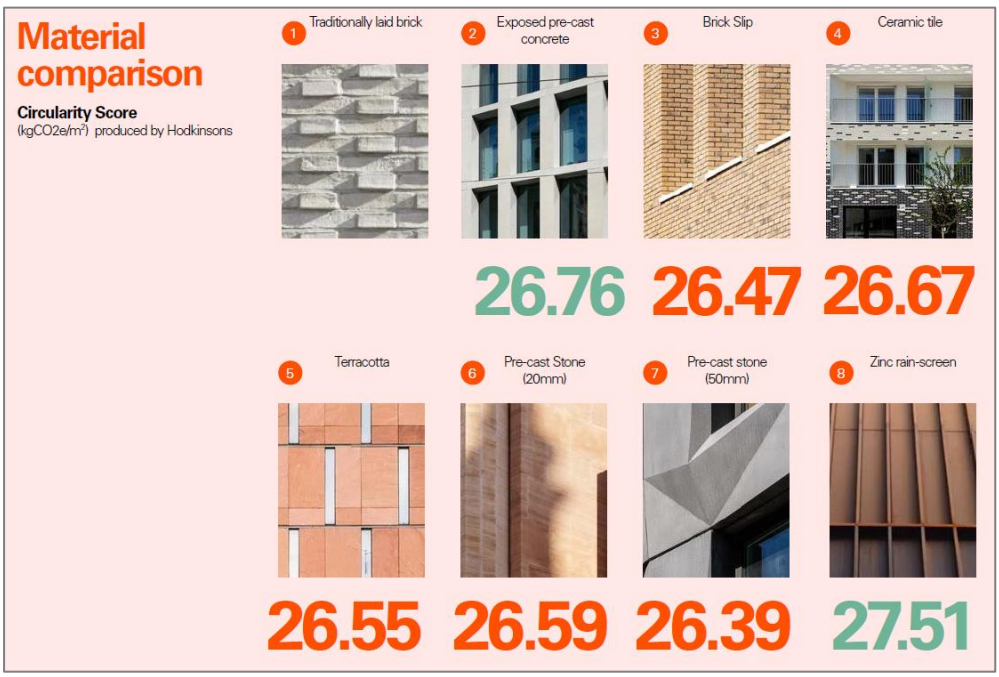

Figure 5: Façade options study

4.32 As structural, civil and geotechnical engineers for the project, Walsh have maximised the use of sustainable materials within the structural components of the Proposed Development:

> They have investigated the use of low carbon structures wherever possible. Timber structures and light gauge steel systems will be investigated alongside more traditional materials. They also use a ECAT tool to assess the embodied carbon in each system.

> They only use steel with high recycled content and specify steel members that are produced in electrical arc furnaces rather than blast furnaces. As active members of Steelzero (https://www.theclimategroup.org/steelzero), they proactively suggest and support the adoption of low carbon steel.

> They proposed the use of high cement replacement concrete mixes for structural elements and possibly zero cement mixes where appropriate. As a minimum, they aim to specify 50% cement replacements in the substructure and 50% in the superstructure, working closely with concrete

mix designers to ensure concrete mix specifications are low carbon with readily available and locally sourced constituents, whilst meeting performance requirements.

> As active members of Concretezero (https://www.theclimategroup.org/concretezero), they proactively suggest and support the adoption of net zero concrete.

> They use recycled aggregate within concrete mixes when available locally.

> They specify that road finishes will be designed using high recycled content macadam or asphalt.

4.33 Smaller, more informal elements of the proposed play spaces in the landscaping strategy includes stepping-stones, logs, balance beams and boulders. It is intended that all elements will be made of natural materials and opportunities to re-use site found materials will be encouraged.

4.34 The development has also taken steps to ensure other resource use will be kept to a minimum. Examples include:

> The development will achieve a total reduction in regulated CO_2 emissions of more than the required 35% over the Building Regulations baseline through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies.

> All new dwellings will target a maximum internal water efficiency standard of 105 litres/person/day in accordance with the recently adopted London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).

> Site set up will consist of longitudinal temporary modular welfare cabins sized adequately for the predicted number of operatives and management on site during the enabling works, remediation and piling phases. The welfare modules proposed for use on site are not new and have been re-used on construction sites before and will be re-used on different sites once construction is complete. This re-use is facilitated by the modular nature of the welfare compounds.

> A 'just-in-time' delivery system will be used onsite to minimise an excess amount of material on site at any one time, which reduces the chance of damage to materials. Protective coverings will be left on products for as long as possible to reduce the risk of any damage or degradation during the construction process.

Material Intensity

4.35 The Bill of Materials provided in the Circular Economy template were taken from the Whole Life Carbon Assessment (Hodkinson Consultancy). The template has taken this information and automatically calculated the material and waste quantities throughout the building’s life cycle, and

the intensity of these indices. Where these impacts are in the fourth quartile, and therefore considered 'high', justifications have been provided below:

> Upper floors – There are a total of sixteen buildings which range between six and twenty storeys high which explains the increase in mass of materials. Further, the change in column grid from retail to residential levels creates an increase in material content due to the structural loads required.

> Roofs - There are a total of sixteen buildings, each with their own roof which has caused the increase in mass of materials.

> External walls – As above, the total number of buildings results in an increase in external wall space. Further, whilst a majority of the buildings are simple in shape, a few have a more complex design (Buildings K and G) which slightly increased material use. This will be a key focus area post planning to determine how we can reduce the kg impact of the external walls.

Recycled Content of Materials

4.36 The Applicant is committed to target a benchmark of 20% reused or recycled content by value., where feasible. Please see **Appendix C** for the recycled content calculations from One Click (Hodkinson Consultancy), this confirms the current recycled content is 22% which exceeds the requirements set by the GLA.

4.37 A brief bill of materials summary table has been provided in the GLA Circular Economy Template, submitted alongside this application. This bill of materials has been created using the inputs provided in the Whole Life Carbon Assessment (Hodkinson Consultancy) which was created from the BIM model and will need to be updated as the project progresses.

4.38 The monitoring of the recycled content in materials will be done throughout design by all members of the design team via a 'live' bill of materials. The final bill of materials (to be provided post construction) will verify the implementation of this target.

Standardisation

4.39 The Proposed Development will consider designing and construction methods by applying, where feasible, standardised elements for materials and products that enable a reduction in construction waste and easier reuse in next life. The design team will be encouraged to use standardised design formats to enable future reuse, e.g., no bespoke cutting of materials as this can make replacements difficult to obtain. Details of how this has been incorporated so far is as follows:

> Standardised letterbox detail for firestopping.

> The structural engineers (Walsh) have proposed the standardisation of lift/stair shaft geometry where possible to allow for repetition of formwork across site (circa 34no. lifts total).

> All brick details to be standardised to one or one and half bricks to prevent cutting and wastage. It is proposed that all window positions and openings are to be designed around standard brick dimensions.

> Pre-cut plasterboard and standardised ceiling heights will be implemented to limit plasterboard cuts. If boards are required to be cut to fit, this will be specified and done in the factory. Bespoke plasterboard sizing will be avoided where possible.

> Kitchens will be built with standard layouts which will allow for repetitive designs and prefabrication of elements off site minimising waste.

Cut and Fill

4.40 No cut and fill exercise has been undertaken yet because, other than the excavation for the Phase 1 basement and infilling of the existing Rye Lane basement, the ground floor levels of buildings generally follow the existing site levels so there should not be any major re-levelling of the site.

4.41 It is estimated that there will be approximately 43,250m^3 of material excavated associated with the bulk dig for the substructure construction. This material will be generated from pile arisings, excavation for substructures and removal of material to form the new basement. Materials will be removed progressively throughout the construction period and reused on site where possible.

4.42 More details of the above will be provided pre-commencement of works on site to ensure that any cut and fill undertaken, is done so with minimal environmental impact.

Designing for Longevity

4.43 The Proposed Development will seek to design with longevity in mind. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.

4.44 In terms of maintenance requirements, a detailed 'Access, Cleaning and Maintenance Strategy' will be provided as the design progresses to ensure that elements such as façade and window cleaning are appropriately considered. A detailed Landscape Management Plan will also be developed to ensure the extensive landscaping is well maintained following completion of the Proposed Development.

4.45 The landscaping strategy devised by Gillespies includes a varied yet complementary material palette. Importance has been given to the appropriateness of the materials for place-making and a much-needed robustness to support the anticipated uses and long-term performance.

> All material components of the Proposed Development must also contribute to the overall sustainability of the scheme and as such consideration has been given to embodied carbon in paving material selection.

> All external furniture will be robust, require low maintenance and be able to tolerate the demands of the public environment. Timber will be used to create a tactile and comfortable surface.

> A combination of native and adapted plants are proposed, with high durability and low water demand to soften the surrounding built form, this will reduce the need for ongoing maintenance and replacement.

4.46 Appropriate durability measures will be incorporated in vulnerable parts of the internal building (both residential and non-residential) so as to minimise the frequency of replacing materials and therefore optimising material use. Examples of such measures include hard-wearing floor finishes and bollards and kerbs in servicing/vehicle areas.

4.47 The frame of the buildings will consist of reinforced concrete – a durable material that can be separated and recycled in its constituent parts at the end of its life. In addition, the external façade will comprise of brickwork which is suitable for the buildings location. These materials provide a highly durable superstructure.

4.48 All glazing, including doors and windows has been designed to be composite – both timber and aluminium. Composite windows and doors benefit from the thermal performance and warm feel of timber windows, whilst also receiving the durability and maintenance benefits of aluminium windows. All windows are top hung and fully reversible outward opening, the glass can be replaced internally, including full height glazing to balconies via the lifts specified.

4.49 The consideration for repair and replacement of finishes, fittings (including sanitaryware) and MEPH will be mitigated through the specification of appropriate access panels to allow for the necessary maintenance/replacement. No concealed elements will be permitted (cisterns, baths without panels etc).

4.50 All floor finishes within dwellings are proposed to be slip resistant, hard wearing, firm, level and easily maintained. Whilst all external communal entrances will be weather protected.

4.51 Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.

Designing for Disassembly

4.52 A materials inventory will be created for the entire building that includes a detailed breakdown of all building elements that sets out the constituents of each product and material, the structural loadings, and the ability for each material to be reused and/or recycled.

4.53 Where possible, materials will have the option to be taken apart through mechanical and reversable fixings to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be minimised where feasible, to enable end of life deconstruction and salvage of building elements. Fixings will be easily accessible, where possible, for disassembly.

4.54 The design of the building's superstructure and substructure does not inherently facilitate design for disassembly. However, for components with shorter lifespans, like services and internal finishes, the focus will be on utilising mechanical connections, ensuring accessibility of connections, and enabling easy replacement without affecting other structural layers.

4.55 The Applicant will commit to selecting materials and systems that are designed ensuring safe disassembly and removal at the end of their service life, thus increasing the amount of material which might be recycled or reuse and reducing the overall environmental impact of the façade system.

4.56 All glazing will be able to be replaced from inside the building, aiding the replacement and maintenance cycles. Glazed units will be manoeuvred into the window frame using a lightweight hoist if required. This also means that the need for scaffolding is removed as the windows will fit inside the internal lifts.

4.57 The play spaces proposed in the landscaping realm have been designed to be disassembled, if and when required. This includes climbing elements (frames, ropes), swings, slides and bouncing elements (trampolines, springers). Equipment made of natural materials that offer high play value will be selected.

4.58 Mechanical and electrical unit sizes and components reviewed to allow for replacement strategy avoiding the use of cranes where possible. Larger equipment located on buildings provided with accessible road frontage.

4.59 Consideration will be given to the disassembly of the brickwork, depending on its condition and how it is bound. This will depend on the condition of the bricks, the type of mortar used, and the adhesion of the bricks to steel or concrete that may already be present.

4.60 Easily accessible conduits and service cores for electrical wiring, water pipes, and HVAC ductwork will be specified. These are likely to be designed with snap-fit or easy-disconnect joints, allowing individual sections to be removed and replaced without demolition.

4.61 The following disassembly measures will also be reviewed and considered:

> Bolted connections for any steel elements.

> Independent structure to allow other elements to be replaced where necessary.

> Any steelwork will be bolted together without the use of welding, this will facilitate the dismantling of this steelwork at the end of its design life.

> Simplification of the façade design to allow for quick disassembly.

> For overhead services in corridors (electrical wiring, lighting), suspended ceilings with removable tiles or panels allow for easy access. The design could include a modular grid system that allows services to be quickly rerouted or upgraded without requiring the dismantling of large sections.

Designing for Adaptability or Flexibility

4.62 To avoid unnecessary material use, cost and disruption arising from the need for future adaptation works the designs will look to incorporate functional adaptability. These changes could be required as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a Circular Economy.

4.63 The landscaping masterplan devised by Gillespie's has focused on adaptability and flexibility in its design. Peckham Yards, a social space for members of the community and residents of the scheme, has incorporated moveable furniture whilst Aylesham Gardens has created a flexible lawn area for outdoor activities, yoga classes and picnics.

4.64 Phase One of the Proposed Development comprises the large replacement supermarket. Supermarkets need to keep their options open, and their building needs to support this over the longer term. As the needs of their customers change so too will the areas and usage of the floorplan. As structural, civil and geotechnical engineers for the project, Walsh leverages its experience in the evolving demands of retail space and large supermarkets to ask questions at an early stage about the future, from this they will design in flexibility and adaptability into the store space.

4.65 A majority of the commercial units across the site are being delivered as shell and core, allowing the future tenant complete flexibility on the fit out works.

4.66 The partitions across the Proposed Development have been designed as lightweight and can be removed in future if there is a requirement for a change in layout or function to this area. The building services design has also been designed to account for this potential change future use.

4.67 Residential units have been designed to meet long-term resident needs, be robust, durable, and resilient to climate change. This includes being designed for accessibility, with a variety of apartment size, catering for individuals and family living with adequate storage for buggies and wheelchairs (Part M). Wheelchair homes are distributed across various buildings in the development

and at different floor levels to enable the greatest choice, size and positioning for individuals who use wheelchairs.

4.68 The Proposed Development has incorporated the following adaptability measures for the 'non-structural' elements:

> Reconfigurable furniture in private dwellings that can be repurposed to allow for easy reconfiguration of rooms for other purposes.

> The use of monolithic casting will be prioritised which promotes flexibility for connections.

> It will be possible to remove and replace all major items of plant within the building without the need to demolish sections of wall or floor. Lifting beams and hoists will be incorporated into the design where necessary.

Design for offsite construction/modular

4.69 Offsite manufacturing is being considered for the development. The benefits of offsite factory production in the construction industry are well documented and include the potential to considerably reduce waste especially when factory-manufactured elements and components are used extensively.

4.70 Prefabrication off site will be undertaken where possible so reduce the material wastage in certain items such as Bathroom pods, utility cupboards and bolt on balconies. There is also the intention to precast several structural elements of the buildings such as columns, twin walls and pre cast stairs.

4.71 The following elements are being considered for offsite manufacturing at the Proposed Development:

> Bolt on balconies.

> Pre fabricated plasterboard walls

> Precast stairs.

> Prefabricated utility cupboards.

> Bathroom pods.

> Precast columns.

> Pre insulated ductwork.

4.72 More detail to be provided at the next stage of the design.

Using Systems, Materials that can be Reused and Recycled

Material Reclamation

4.73 It is not possible that all materials within the Proposed Development are directly reused at end-of-life, but most materials within the buildings could recycled. The RC frame could be crushed to use as hardcore or aggregate, and the steel rebar could also be recycled. The bricks could be reclaimed for reuse, however given that they are bonded through strong cementitious bonds it may be very difficult and time consuming to reclaim these without significant breakage. The likeliest outcome is that most materials are broken down to become aggregate materials at the end of their life.

4.74 Some service components will be designed for disassembly, allowing for material reclamation at end-of-life. These include water tanks, water pumps, heating plant ancillaries, plastic and metal pipe work, ductwork, ventilation fans, air handling units and MVHRs, heating & cooling VRF equipment, air source heat pumps, electricity and telecoms containment and wiring, emergency generator, substation, electrical distribution boards, ventilation grilles, photovoltaic panels, lighting fittings, electrical accessories, lifts' cars, motors, counterweights and railing, access control systems, CCTV and security systems.

Managing Waste

Project Waste Management

4.75 A Project Waste Management Plan (PWMP) has been developed by the Applicant. This will be kept updated during both the design and construction stages to outline procedures and commitments will work towards for all demolition, construction and excavation waste. A draft early-stage version of this has been provided in **Appendix D.**

4.76 It includes details on waste minimisation strategies incorporated in design and procurement stages. It also includes information on how waste will be managed during the construction phase, along with predictions for various waste streams.

4.77 The location of the waste handling site that materials will be taken to, will vary dependent upon their specific make up, of which is yet to be confirmed (on appointment of Principal Contractor). Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination waste facility has/have the capacity to receive waste.

4.78 Waste facility sites in the London Borough of Southwark may be used amongst others as appropriate. Wherever possible, materials will be recycled and re-used either onsite, or provided for

use elsewhere. Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

4.79 A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. Where possible materials will be stored in dry, covered areas to reduce material wastage. This will increase efficiency and minimise wastage due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of 'just in time' deliveries will be encouraged.

4.80 Further to the Material Exchange Board, which is Berkeley Group exclusive, the Applicant will explore using Enviromate to find nearby projects which may want any surplus site materials. This will continue to reduce the amount of site waste and promote circular economy principles.

Construction Waste Monitoring

4.81 The Applicant is committed to reducing construction waste from landfill and they will be required to regularly monitor and record the project's waste reduction performance. A monthly progress report will be produced once construction works begin and will contain data for waste movements. This will be assembled by senior contract managers who shall review the previous month's activity during report compilation.

4.82 As part of their commitment to divert construction waste from landfill, the Applicant will be required to regularly monitor and record the project's waste reduction performance. This will be compared against a target benchmark where at least 95% (by volume) of non-hazardous construction waste is diverted from landfill. This will be checked monthly, as noted in the PWMP in **Appendix D.**

Operational Waste

4.83 Waste reduction during the operational phase is also being considered for opportunities in implementing waste mitigation measures for the potential impacts arising during the operation of the development to ensure that such measures are consistent with both national and local waste policies and targets.

4.84 The Waste Hierarchy strategy in accordance with the London Plan will be used to ensure that waste is reduced or reused prior to being put out for recycling or refuse collection. The waste hierarchy, as shown in Figure 6 below, establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing if for re-use, then recycling, recovery and lastly disposal (e.g., landfill).

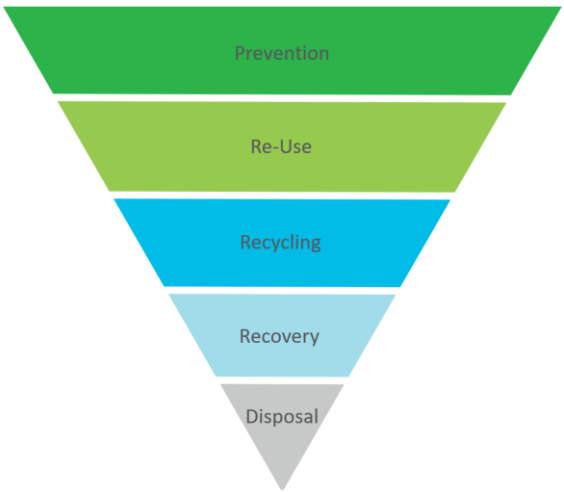

Figure 6: Waste Hierarchy

Refuse Store Locations - Residential

4.85 To manage the waste and recycling material arisings from the residential units of Buildings A, B and C; two bin stores have been provided on the Ground Floor level of Buildings B. To manage the waste and recycling arising from the residential units of Buildings E, F, G, H, J1, J2, K, L, M, N, P and Q, separate bin stores have been provided on the Ground Floor of each building. It is to be noted that for Building K, two separate bin stores have been provided on the Ground Floor of Building K.

4.86 The majority of bin stores are located in such a manner that residential units are within 30 m distance of these bin stores.

Refuse Store Locations – Non-Residential

4.87 For the flexible retail, leisure and commercial spaces that are located in Buildings A, B, C and F, a combined bin store has been provided on the Ground Floor level of Building B. On daily basis the commercial tenants cleaning team will transfer the waste and recycling material from the commercial spaces in Buildings A, B, C and E to the combined bin store in Building B.

4.88 For the flexible retail, leisure and commercial spaces that are located in Buildings D, E, G and K, a combined bin store has been provided on the Ground Floor level of Building D. On daily basis the commercial tenants cleaning team will transfer the waste and recycling material from the commercial spaces in Buildings D, E, G and K to the combine bin store in Building D.

4.89 For the flexible retail, leisure and commercial space in Buildings G, H, J, K, L and N, a combined bin store is provided on the Ground Floor Level of Building K. On daily basis the commercial tenants cleaning team will transfer the waste and recycling material from the commercial spaces in Buildings G, H, J, K, L and N to the combined bin store in Building K.

4.90 For the flexible retail, leisure and commercial that is located in Building K, will have space provided within the curtilage of the individual unit to hold bins for the waste and recycling material arising from this unit.

4.91 For the flexible retail, leisure and commercial spaces that are located in Buildings E, F, G and H, separate bin stores have been provided, that are based on a daily collection frequency. These bin stores have been provided with an external entry, that will allow the collection operatives on the day of collection to directly access these bin stores.

4.92 There is a supermarket located within the service yard area accessed off Hanover Park. This is managed by the supermarket operator.

Waste Arising and Collection

4.93 All refuse stores are designed to hold three separate bin types for mixed dry recyclables (MDR), food and residual waste considering a weekly collection frequency. On the day of collection, the building management team will move the different bins outside the bin store so that these bins will be positioned within 10 m distance of the Refuse Collection Vehicle (RCV) stopping point, which will allow the LBS collection operatives to wheel the bins scheduled to be collected to the RCV for emptying. Once the bins are emptied, the LBS collection operatives will return the empty bins back to the designated location, from where this will be returned to the bin store by the building management team.

Operational Waste Monitoring

4.94 The development is committed to meet the Mayor's 65% target for municipal waste (residential) recycling by 2030 and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the Proposed Development, is operational. The development will also meet the Mayor’s 75% target for municipal waste (commercial) recycling by 2030.

4.95 In accordance with the London Plan Guidance for Circular Economy Statements, a project-specific Operational Waste Management Strategy has been prepared by KaNect in accordance with relevant requirements, in order to embed and enable sustainable waste management in operation. This has been submitted alongside the planning application as a separate document and should be referred too for more information.

4.96 Waste monitoring will consist of the collection of waste reporting data by Facilities Management, such as the volumes of various waste streams and tracking of the percentage of waste recycled. This information will be used to monitor progress towards achieving waste avoidance targets.

4.97 New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates. The information will also include details on waste prevention schemes within the London Borough of Southwark such as:

> **Love Food Hate Waste –** aims to raise awareness of the need to reduce food waste and ways to take action;

> **Community RePaint –** UK wide paint reuse network that collects leftover paint and redistribute it to benefit individuals, families, charities and communities in need at an affordable cost;

> **Southwark Council Reuse and Recycling Centres** – A reuse and recycling centre located on Devon Street allows residents to dispose of a wide range of reusable and recyclable items for free; and,

> **Freecycle Network; and Freegle** – are networks that aims to increase reuse and reduce landfill by offering a free online based service where people can give away and ask for things that would otherwise be thrown away.

Recycling Waste Reporting Form

4.98 The recycling and waste metrics reporting will be provided by the main contractor, once appointed. This will be agreed with the project manager and a project waste management plan, which will contain improved estimates for figures shown in Table 2 below.

Table 2: Recycling and Waste Reporting – Construction and Municipal Waste

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m^2 GIA)	0.145	0.078	0.053	0.011 (resi) 0.021 (non-resi)
Reuse Onsite (%)	95%	Max 1%	Max 1%	N/A
Reuse Offsite (%)	0%	Max 1%	Max 1%	N/A
Recycle Onsite (%)	0%	Max 1%	Max 1%	N/A
Recycle Offsite (%)	<5%	>95%	>95%	65%/75%
Landfill (%)	0%	Max 2%	Max 2%	Max 25%
Other management (%)	0%	Max 2%	Max 1%	0%

4.99 The above figures were taken from the following documents:

> **Excavation waste:** 0.145 based on 43,250m^3 or 15,274 tonnes of excavation waste, as noted in the Demolition and Construction EIA chapter.

> **Demolition waste:** 0.008 based on 8,289 tonnes of waste, as noted in the Demolition and Construction EIA chapter.

> **Construction waste:** 0.053 based on 15,740m^3 or 5,558 tonnes of excavation waste, as noted in the Demolition and Construction EIA chapter.

> **Municipal waste:** 0.001 based on 1,144 tonnes of waste/annum (residential) and 0.021 (non-residential) based on 364 tonnes of waste/annum. Provided in the Operational Waste Management Plan.

Plans for Implementation

4.100 Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):

> Principal Contractor and Sub-contractors (when appointed).

> Project Architect.

> Structural Engineers.

> Waste Consultants.

> Transport Consultants; and

> Client.

Plans to Prove and Quantify

4.101 The measures noted below will be confirmed in the 'as built' Circular Economy Statement. The following actions are being put in place to ensure they are implemented:

> Detailed cost plan being produced and kept up to date during construction, this will verify the use of recycled content.

> SWMP to be updated throughout demolition and construction.

> Waste transfer notes to be kept and monitored to ensure the end destination of all waste (both construction and demolition) is monitored and in line with the targets set.

> Monthly catch ups will take place between the Circular Economy/Whole Life Carbon consultant and Berkeley to ensure the actions committed too are being implemented.

> Energy, water and the transport of all waste/materials will be done via the use of Q Flow.

Short to Medium Term

4.102 A brief plan of implementation and action list has been compiled. Key actions of which included:

> Ensure the operational waste strategy is sufficient with both local authority and end user requirements.

> Ensure the PWMP is actioned and updated with site specific details ahead of start on site.

> Ensure the results of the Pre-Demolition audit (**Appendix B**) are incorporated into the design, especially the figures for re-use and recycling.

> Review and confirm the actual elements to be produced off site.

> Continue to develop the BREEAM strategy with Circular Economy principles in mind.

> Further consider how flexibility and adaptability can be considered in the design process.

> Continue to compile an access and maintenance strategy to ensure that all building elements are designed with maintenance and longevity in mind.

4.103 Such requirements, along with the projects strategic approach to implementing circular economy principles, will be included in tendering specifications to contractors, ensuring responsibilities in line with these aspirations are embedded from the earliest opportunity.

4.104 Waste is a key performance indicator for Berkeley Homes (Capital) Plc and therefore included in project performance dashboards, allowing for the ongoing monitoring of construction waste by site managers. This will help to ensure that construction waste targets are met.

4.105 Establish the final destination landfills in the Borough and ensure that they have sufficient capacity for the estimated generation.

4.106 Maintenance of all plant items will need to be implemented utilising the appropriate equipment and platforms, by appropriately trained engineers in accordance with relevant regulations. Prior to any of these tasks being implemented, method statements and risk assessments will need to be produced and issued to the building management team.

Longer Term

4.107 The Principal Contractor (once appointed) will be required to continue the work done by the design team to identify and provide solutions on key challenges with material use with the aim to reduce this even further.

4.108 Evidence will need to be provided to confirm that all commitments made, are addressed in the as built development. They will also need to confirm:

> The Demolition Contractor and Berkeley Homes (Capital) Plc to report against all waste management targets.

> Provide further evidence during the design that a minimum of 20% of the total value of the selected products and materials does include recycled and/or reused content.

> Berkeley Homes (Capital) Plc, as Main Contractor will need to provide evidence that materials have been procured in line with requirements set out in the tender document.

> Ensure that the operators are aware of the overall waste management strategy and the targets for at least 65% (residential) and 75% (commercial) diversion of municipal waste from landfill for reuse, recycling, or recovery by 2030.

> Provide a Post-Construction report to the GLA which includes lessons learned that can be fed into future projects.

Next Steps

4.109 It is expected that the submission of a post-construction report will be secured through a planning condition. To ensure the commitments made in this report will be met, the following actions will be undertaken:

> Workshops to be held with the design team in Stages 3, 4 and 5 to ensure the Circular Economy principles continue to evolve and are incorporated into the design.

> Regular reviews of all waste data (demolition, construction, excavation) buy Site Managers to ensure that the targets set within this statement are met.

> To ensure the 20% re-use of demolition materials and 20% recycled content targets are met, regular reviews of the Whole Life Carbon assessment will also be undertaken to ensure the site is on track to achieve this. Recommendations will be made where the site is falling short of either target.

End of Life Strategy

4.110 Although the Proposed Development is still at an early design phase, engagement with the design team has been undertaken to address the end-of-life strategy for the building materials and components.

4.111 The One Click Building Circularity tool has been used to estimate opportunities for the materials at the end of their life. The results are based on inputs used for the Whole Life Cycle Carbon Emissions Assessment (Hodkinson Consultancy).

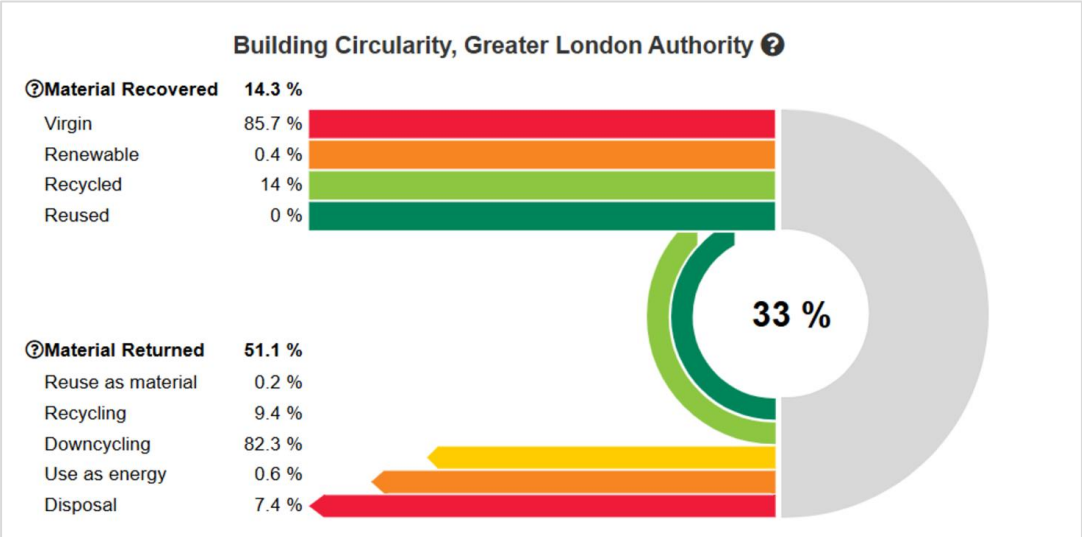

Figure 7: Building Circularity Tool

4.112 This building's circularity is evaluated in terms of the mass of the recovered building material as compared to virgin material likely to be used in the building construction and the percentage of the material that can be returned to building construction at the end of life of the building.

4.113 'Materials Recovered' (14.3%) represents the use of circular materials in the project. It is the mass-based share of recycled, reused or renewable materials of the total materials used.

4.114 'Materials Returned' (51.1%) represents the end-of-life handling of materials that were used in the project. It is the mass-based share of materials that are either recycled or reused as material, added with 50% of the materials that are either downcycled (with value loss, such as reuse of concrete aggregates) or used as energy (such as wood or plastic product incineration).

4.115 Once the principal contractor is appointed, and the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifetime of the building through careful design and specification through the measures listed herein.

4.116 Where individual elements have shorter design life periods, the development seeks to design for the repurpose and independent replacement of these individual elements.

4.117 Exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.

4.118 Building Information will be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material specification and manufacturers data sheets will be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, waste reduction

4.119 Once appointed, the contractor will also be required to produce a disassembly manual that provides guidance on which materials, elements or components can be reused, recycled, or composted. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building which will also enable BREEAM credits to be obtained for the buildings.

4.120 The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.

4.121 Assumptions made with respect to maintenance, repair and replacement cycles and the material ''end of life'' scenarios have been included within the GLA Spreadsheet that accompanies the Whole Life Cycle Carbon assessment (Hodkinson Consultancy).

5. CONCLUSION

5.1 This updated Circular Economy Statement has been prepared by Hodkinson Consultancy in support of a planning application submitted to LBS (ref. 24/AP/2074) being submitted by the Applicant, Berkeley Homes (Capital) Plc, to the London Borough of Southwark (LBS).

5.2 This Circular Economy Statement demonstrates that the Proposed Development has considered the following six circular economy principles:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

5.3 The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the full planning application that is being submitted to the London Borough of Southwark.

5.4 This report should be read in conjunction with the updated GLA Circular Economy Spreadsheet that is submitted alongside this report following comments received by the GLA.

5.5 A series of targets have been proposed in this Circular Economy Statement, identifying and applying these approaches during concept design will enable them to be incorporated as part of the development brief and will help facilitate a circular economy approach.

5.6 A Post Construction Completion Report is to be provided at project completion. This will seek to set out the predicted and actual performance against all numerical targets and provide updated versions of the items noted in this report.

APPENDICES

Appendix A
Designing Out Waste Workshop

Appendix B
Pre-Redevelopment and Pre-Demolition Audit

Appendix C
Recycled Content Calculations

Appendix D
Project Waste Management Plan

Designing-out Waste Workshop

Project: Aylesham Centre

Date: 08/02/2024

Next review: April 2024

Scoring: Sliding scale, 5 being meets 20% on-site re-use, Berkeley & BREEAM targets, 1 being does not contribute to the 20% on-site re-use, Berkeley or BREEAM targets

Action	Status as of 08/02/2024	Action by	Score towards meeting 20% material re-use on-site, Berkeley & BREEAM target	Status update
Design for reuse and recovery				
Engagement with the demolition contractor for re-use, reclaim or recycling of existing materials.	To be considered	BHNEL / DRMM / Hodkinson / Walsh		
Re-use of steel from Aylesham in piles	To be considered	BHNEL / DRMM / Hodkinson / Walsh		
Building D to be designed with the reclaimed steel. Steel audit to determine lengths & quantities.	To be considered	BHNEL / DRMM / Hodkinson / Walsh		
Reuse of Aylesham Centre bricks for crushing	To be considered	BHNEL / DRMM / Walsh		
Re-use of any insulation or soils from the Aylesham Centre in the void (Aylesham Centre basement)	To be considered	BHNEL / DRMM / Walsh		
Reuse of demolition crush to form piling matt.	To be considered	Walsh/ DRMM /BHNEL		
Re-use of any soils under a CL: AIRE	To be considered	Walsh		
Welfare set up to be considered with regard to phasing.	To be considered	BHNEL		
Use of permanent foundations for welfare	To be considered	BHNEL		
Re-usable elements of the project e.g. temporary pathways to be movable and not concrete which requires breaking out	To be considered	BHNEL		
Temporary work having uses further down the line	To be considered	BHNEL		
Design to retain trees	To be considered	BHNEL / DRMM / Gillespies		
Re-use of petrol station elements e.g. tank; Morrisons not to backfill.	To be considered	BHNEL / DRMM / Walsh / Morrisons		

This is subject to Morrisons agreement.				
Sequence of works to be considered & joined up approach across disciplines. Design coordination to avoid re-work & design changes. Early involvement of build team & lessons learnt to be shared.	To be considered	BHNEL		
1 marketing suite for scheme	To be considered	BHNEL		
Use of the Materials Exchange Board	To be considered	BHNEL		
Enviro-hoarding	To be considered	BHNEL		
Design for off-site construction				
Pre-cast staircases / Stairmaster,	To be considered	BHNEL / Walsh		
Pre-cast columns & standardised sizes	To be considered	BHNEL / Walsh		
Pre-fabricated Utility Cupboards	To be considered	BHNEL / ME Engineers		
Pre-cut plasterboard, standardised ceiling heights to limit plasterboard cuts. If boards are required to be cut, can these be pre-cut in the factory.	To be considered	DRMM / BHNEL / Contractor		
Prefab bolt on balconies. Types to be limited.	To be considered	BHNEL / Walsh		
Bathroom pods	To be considered			
Pre-insulated duct work	To be considered	ME Engineers		
Design for materials optimisation				
Standardised design (MEP, Drainage, Windows, etc.)	To be considered	BHNEL		
Standardised layouts	To be considered	BHNEL / DRMM		
Standardised formwork	To be considered	Walsh / BHNEL		
Bespoke slab reinforcement design in rebar	To be considered	Walsh / BHNEL		
Post Tension (PT) slab	To be considered	Walsh / BHNEL		
56 day strength concrete vs 28 day strength concrete for smaller features	To be considered	Walsh / BHNEL		
MEP to be standardised sizes	To be considered	ME Engineers / BHNEL		
SFS Studs to be reused in partition or designed out	To be considered	DRMM / BHNEL		

Re-use of bathroom pod doors for construction	To be considered	BHNEL		
Fixing builders work rather than moving	To be considered	BHNEL		
Standardised letterbox detail for fire stopping. This should be in line with BH standardisation.	To be considered	ME Engineers		
Standardised brick depth. This should be in line with BH Standardisation	To be considered	DRMM / BHNEL		
Propped basement vs cantilever basement	To be considered	Walsh / BHNEL		
Concrete replacement	To be considered	Walsh / BHNEL		
Design for waste efficient procurement				
N/A – for Stage 4				
Design for deconstruction and flexibility				
Copper pipes instead of composite pipes (recyclable)	To be considered	Me Engineers / BHNEL		
Deconstruction for buildings end of life	To be considered	Walsh / BHNEL		
Windows in façade to fit in lift in case of changes	To be considered	DRMM / BHNEL		
Designing for future loads in M&E	To be considered	ME Engineers / BHNEL		
Adaptable living spaces	To be considered	BHNEL / DRMM		

Appendix B

Pre-Redevelopment and Pre-Demolition Audit

Pre-Redevelopment and Pre-Demolition Audit Report

Aylesham Centre

Berkeley Homes (Capital) Plc

20/06/2024

Document Control

Version	Date	Comments	Author	Checked By	Verified By
V1	28/03/2024	First Draft Report	Nafey Bin Afan Resource and Waste Consultant	Nafey Bin Afan Resource and Waste Consultant	Kat Lees Resource and Waste Consultant
V2	02/04/2024	Second Draft with updated reuse quantities	Nafey Bin Afan Resource and Waste Consultant	Nafey Bin Afan Resource and Waste Consultant	Kat Lees Resource and Waste Consultant
V3	30/04/2024	Third draft incorporating text for Carbon	Nafey Bin Afan Resource and Waste Consultant	Nafey Bin Afan Resource and Waste Consultant	Kat Lees Resource and Waste Consultant
V4	20/06/2024	Final Issue	Nafey Bin Afan Resource and Waste Consultant	Nafey Bin Afan Resource and Waste Consultant	Kat Lees Resource and Waste Consultant

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This document has been prepared by KaNect Limited ('KaNect') for sole use of Berkeley Homes (Capital) Plc (the 'Applicant') in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between KaNect and the Applicant. Any information provided by third parties and referred to herein has not been checked or verified by KaNect, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of KaNect.

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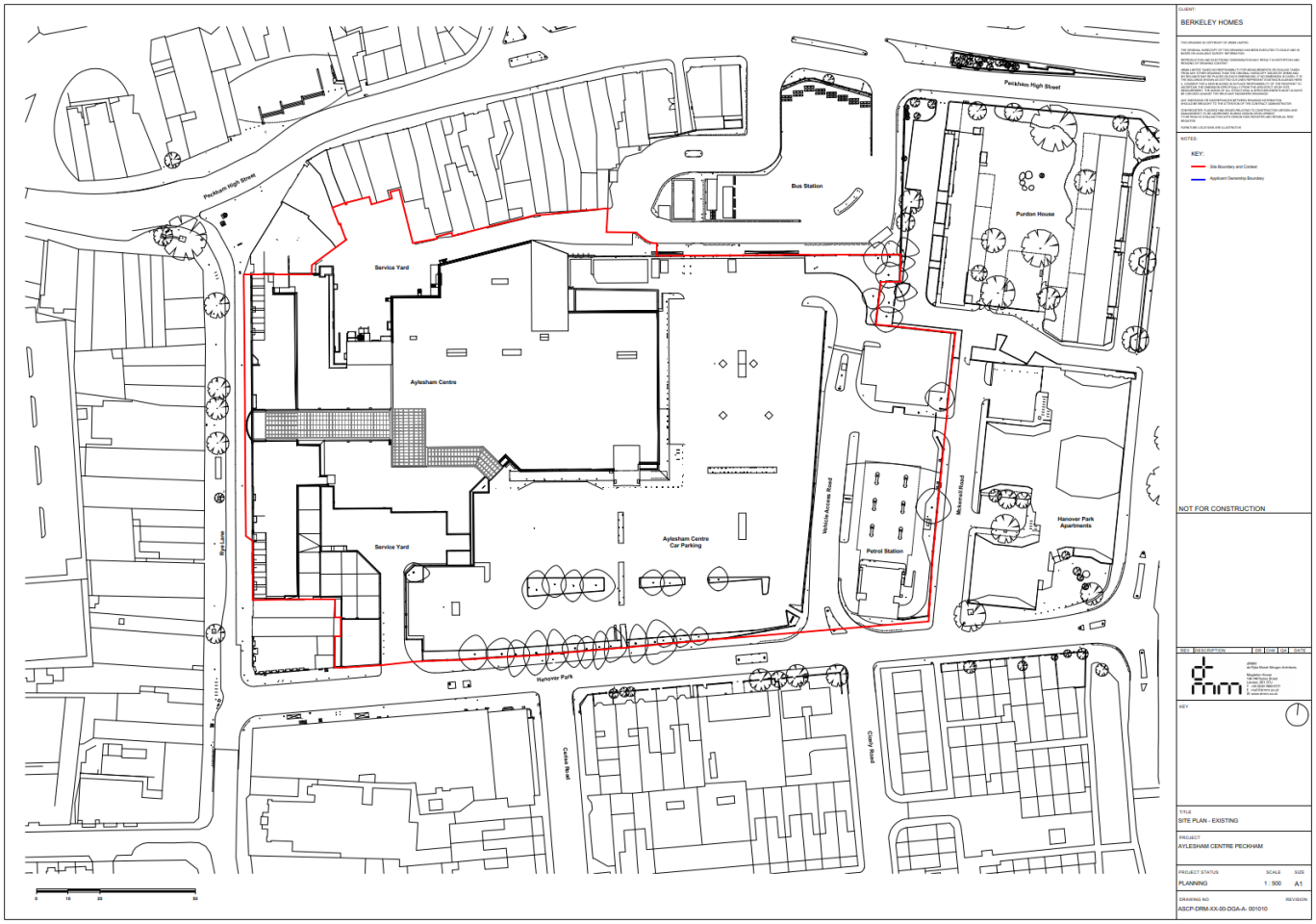
1. Introduction

1.1 KaNect Limited (hereafter referred to as 'KaNect') has been appointed by Berkeley Homes (Capital) Plc (hereafter referred to as the 'Applicant') to prepare a Pre-Redevelopment and Pre-Demolition Audit Report (hereafter referred to as the 'Report') in support of the proposed Aylesham Centre development (hereafter referred to as the 'Proposed Development'), located within London Borough of Southwark (LBS).

1.2 The Site accommodates the Aylesham Centre alongside an associated surface car park (353 spaces), service yard, and petrol filling station. The Aylesham Centre comprises retail units fronting on to Rye Lane with additional retail units within a covered mall, including a Morrison supermarket.

1.3 Figure 1 shows the site location plan.

Figure 1 Location Plan



Please note that this Figure is not drawn to scale.

1.4 As per the BREEAM New Construction 2018 (UK), a total of 5 credits can be obtained for the Wst 01 Construction Waste Management criteria. These credits are split into three parts (for Fully fitted) including:

- One Credit – Pre-Demolition Audit:
  - Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This audit will:
    - Be carried out at Concept Design stage by a competent person prior to strip-out or demolition works.
    - Guide the design, consider materials for reuse and set targets for waste management.
    - Engage all contractors in the process of maximising high-grade reuse and recycling opportunities.
    - Refer to the audit in the resource management plan (RMP)
    - Compare actual waste arisings and waste management routes used with those forecasts and investigate significant deviations from planned targets.
- Up to Three Credits – Construction resource efficiency: preparing a compliant Resource Management Plan (RMP) with the aim of minimising and monitoring waste.
- One Credit – Diversion resources from landfill

1.5 As per the London Plan Guidance: Circular Economy Statement to meet Policy SI7 (B) of the London Plan (2021) one of the requirements is to submit a Pre-Redevelopment audit. The Pre-Redevelopment audit is a tool for understanding whether existing buildings, structures and materials can be retained. The Pre-Redevelopment audit should outline an explanation of the existing buildings on the site and brief description of state of their repair. The details should include: the building's age, key materials, photos of typical internal spaces and facades, and site plans.

1.6 The extent or details required to complete the Pre-Redevelopment audit is not mentioned by the Greater London Authority (GLA), therefore, based on KaNect's previous experience, information included in Section 2, is considered to be useful in understanding the approach adopted for the redevelopment of the Proposed Development.

2. Existing Site

2.1 The existing Site is only partially built. It comprises of the Aylesham Centre, a commercial building, an open-air car park, and a petrol station. The commercial building contains a shopping gallery with numerous shops, ancillary spaces in the form of offices and back of house, as well as the Morrisons supermarket

2.2 Image 1 - Image 4 provides some images of the buildings on-Site.

Image 1 Aylesham Centre – External from Roof

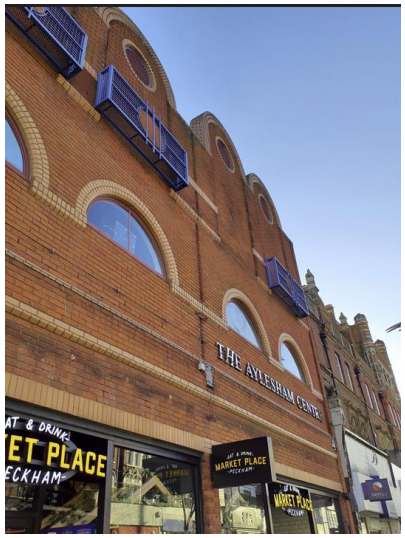


Image 2 Aylesham Centre - External

Image 3 Morrisons - Aylesham Centre

Image 4 Morrisons Petrol Station

3. Proposed Works and the Justification to the adopted approach

3.1 To establish whether retrofitting of part or all of the buildings would be a suitable option, in comparison to the demolition of the existing buildings, several parameters were looked at. These parameters have been outlined in the section below, however, for more details please refer to the Design and Access Statement (DAS) to be issued alongside the planning application.

Heritage and Cultural Value

3.2 The heritage value and the visual quality of the buildings forming the shopping centre is generally low/poor. The great majority of the Site does not lie within a conservation area or contain any statutorily listed buildings, locally listed buildings, or buildings which were considered as part of LB Southwark's Townscape Heritage Initiative (2016 onwards). There are, however, several designated and non-designated Heritage Assets (HAs) in the area around the Site, including close to its red line boundary on its east and north sides, while the Rye Lane frontage of the shopping centre is located within the Ryle Lane Peckham Conservation Area.

3.3 The Rye Lane frontage is relatively long and unrelieved in its form and expression, contrary to the prevailing character and appearance of the conservation area. Its treatment of windows, false balconies and barrel roof elements provides only superficial articulation. The entrance arch and glazed arcade are heavy and somewhat crude in their form and execution. The supermarket and ancillary buildings behind the frontage are drab in appearance, with large areas of blank frontage.

3.4 The dominance of parking areas on much of the Site is such that it provides little or no definition or animation to surrounding streets, most notably a long stretch of Hanover Park. The Rye Lane Peckham Conservation Area Character Appraisal notes that it creates a poor setting for the conservation area and the buildings within it. As experienced from Hanover Park, the Site has a somewhat out-of-town character which feels incongruous given the Site's central location in urban Peckham.

3.5 Overall, in its existing state, the Site does not positively animate the street, or contribute positively to the character and appearance of surrounding heritage assets. It does not take advantage of its location on a busy junction in central London. It is considered that redevelopment with a thoughtful and well executed design has the potential to be beneficial to the setting and significance of heritage assets, including the Rye Lane Peckham Conservation Area within which the shopping centre is partly located. In addition, redevelopment holds the prospect of improvements in local townscape views and will create an uplift in quality over the existing condition in urban design and architectural terms.

Spatial Capacity – Existing Building Uses

3.6 The current car park is an open-air area of tarmac with some services and landscaping features. Its capacity matches the needs of the future project; however, it uses up a vast amount of land which is rendered impermeable and does not contribute to the public realm.

3.7 The Petrol Station is a very standard building that is bespoke to its current use. The petrol station will not be re-provided in the proposal and is deemed surplus to requirements by Morrisons. The infrastructure elements such as tanks, pumps, and shelters are very specific and not suitable to be adapted to other uses.

3.8 The commercial building comprises of a tall ground floor with a vast footprint, relying on roof opening for natural light. The depth of the building does not allow residential uses, and its height of two/three storeys would not be suitable for housing.

Spatial Capacity – Proposed Building Uses

3.9 The Proposed Development use is mostly residential, with large areas of commercial use at ground floor. The Site allocation by the council suggests 850 homes to be built on the Site, which requires building heights not compatible with the existing structures.

3.10 The commercial areas at ground floor are proposed as individual shops accessed from the public realm. This would not be possible with the current layout of buildings which relies on an internal shopping gallery.

Existing Structure

3.11 The existing structure of the Aylesham centre and Morrisons store is a one / two storey steel framed building with lightweight steel and concrete floors. The northern half of the existing Rye Lane retail units have an inhabitable basement space within which shallow foundations and drainage are exposed. The other half of the site consists of an open-air car park and petrol filling site, with associated buried tanks.

3.12 Often it is possible to justify small upward extensions to existing structures, however the proposed change in building heights here is expected to result in exceeding the load capacity of the existing steel framed structure and foundations. Not only the load capacity, but the at two-storeys the existing structural fire protection is likely to require significant upgrading to achieve residential usage at the proposed building heights. The structural spans of the retail spaces are also not aligned to residential units without significant adaptation to provide stair and lift access etc.

3.13 The existing basement is not habitable currently and has limited headroom. It would be unable to be refurbished into a habitable basement as it stands without further excavation close to the highway and adjacent party walls.

Floor to Ceiling Heights

3.14 A typical new build floor-to-floor requires 3,150mm to allow for a service zone whilst achieving a floor to ceiling height of 2,500mm. Heights slightly more than this value can be used for housing, and small areas slightly under this value can be managed as well.

3.15 The current floor-to-floor height of the Aylesham centre is widely over this standard value (around 4 to 5m) but does not allow for two typical residential floors to be fitted withing one of the existing. As such reusing the current floors for residential would not be possible.

3.16 It should also be noted that to provide housing at a scale close to the current site allocation would require a lot of additional floorspace, and adding this floorspace within the existing floor to ceiling height or by adding additional floors on top of the existing structure would not be feasible.

Regulatory Requirements

3.17 In addition to the existing Site constraints, there are several regulatory requirements that need to be met to consider any retrofit proposal. A few examples are provided in this section.

Building regulations – AD Part A

3.18 Reusing the existing building would require a significant upwards extension, which would be difficult to justify from a structural point of view. Likewise assessing the capacity of the foundations to take any additional load would be very challenging (see Structure Sections of this statement)

Building regulations – AD Part B

3.19 The existing building fabric contains combustible materials as well as materials not assessed or certified and as such would not comply with the current building regulations. Other aspects of fire regulations may be at risk as well and would need to be further assessed, such as makeup of party walls or potential for fire escape with appropriate distances. These are expected to be difficult to achieve with the current layout and construction.

Building regulations – AD Part L

3.20 The existing building fabric does not provide sufficient insulation to be even close to current building standard, and as such even in a retention scenario would need to be partially rebuilt to meet modern standards.

Whole Life Carbon

3.21 The current design is projected to yield (CAN’T BE DETERMINED UNTIL MODEL IS FINALISED) kgCO2/m^2 over a span of 60 years.

3.22 An alternative design option was evaluated in accordance with GLA requirements during the design phase: extensive refurbishment of the existing Morrisons store and its surroundings.

3.23 Using One Click LCA for assessment, it was determined that implementing this scenario would result in 463 $CO2/m^2$ over 60 years (excluding operational energy). However, this alternative is deemed impractical for the Applicant to pursue. The rationale behind this decision is elaborated below:

3.24 The Morrisons store occupies a significant portion of the site, leaving minimal space for residential development. Consequently, the alternative design, though emitting fewer emissions, is solely commercially driven. Moreover, the structural constraints of the existing store prohibit the construction of residential units above it. Thus, despite its lower emissions, this alternative remains unfeasible for the Applicant due to its lack of residential dwellings.

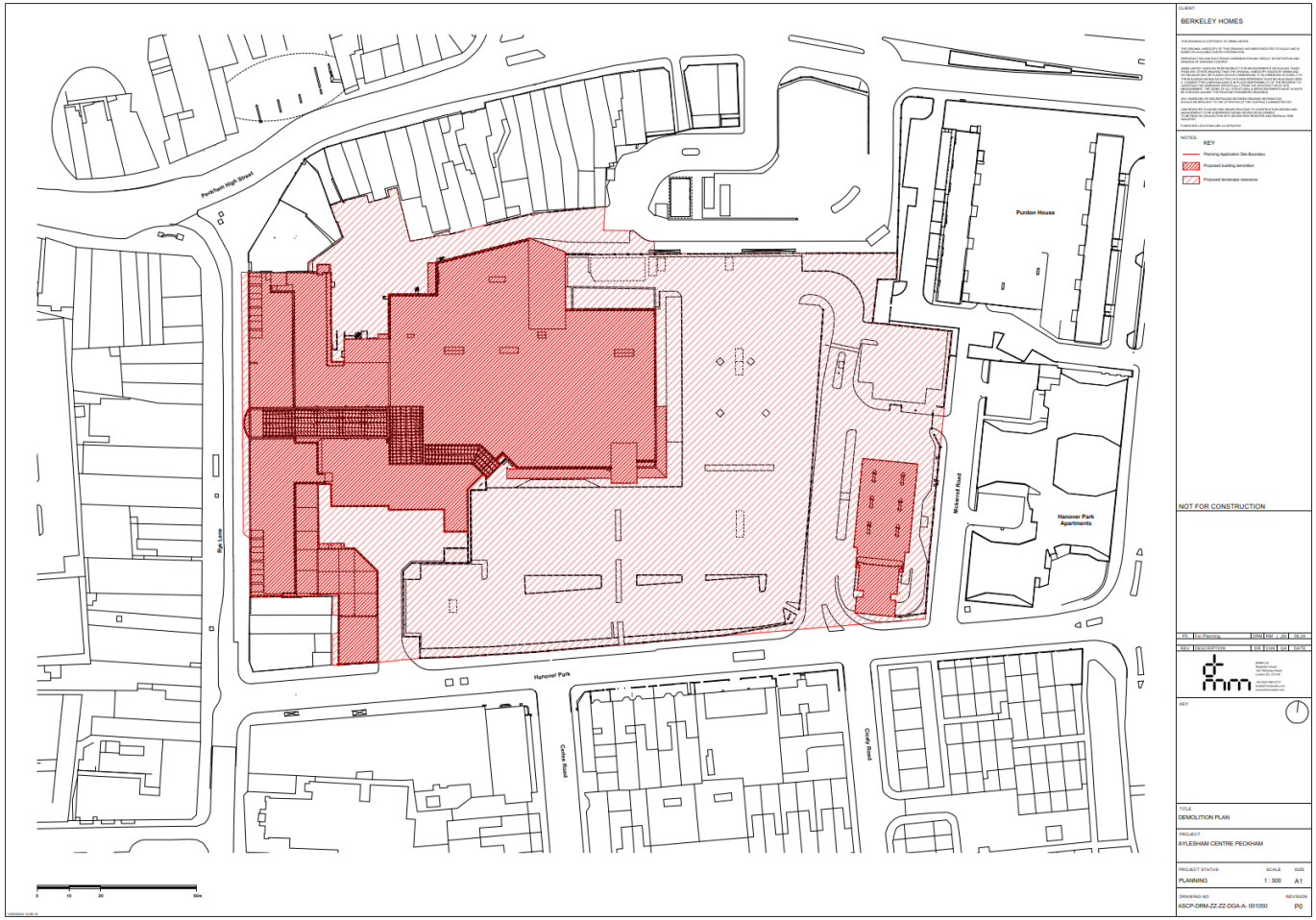
3.25 Additionally, integrating residential units above the store (if feasible structurally) would compromise key views, notably that of the clock tower. Preserving these views is pivotal, influencing the massing of the Proposed Development.

3.26 The most practical and efficient solution for the site entails demolition, with a target of reusing a minimum of 20% of materials to minimize emissions wherever feasible.

3.27 Considering the above, the full demolition of the existing buildings is proposed.

3.28 Figure 2 provides the site wide demolition plans.

Figure 2 Site Wide - Demolition Plan



Please note that this Figure is not drawn to scale.

4. Aims and Objectives

4.1 The main aim of the Report is to understand whether the existing building, structure and materials can be retained, refurbished, or incorporated into the Proposed Development. This Report will also help to identify and quantify the materials that might be generated on-Site (if the buildings undergo demolition) and to provide the Applicant with this information to assist the Applicant in maximising the recovery of material for subsequent high grade or value applications.

4.2 The objectives of this Report are to:

- Identify the types and quantities of key materials present in the existing buildings, structures, and hard services,
- Identify potential applications and any related issues for the reuse and recycling of the key waste/materials in accordance with the waste hierarchy,
- Identify opportunities for reuse and recycling on-Site and off-Site,
- Identify local re-processors or recyclers for recycling of materials,
- Identify overall recycling targets where appropriate,
- Identify reuse targets where appropriate, and
- Identity overall landfill diversion rate for all key materials.

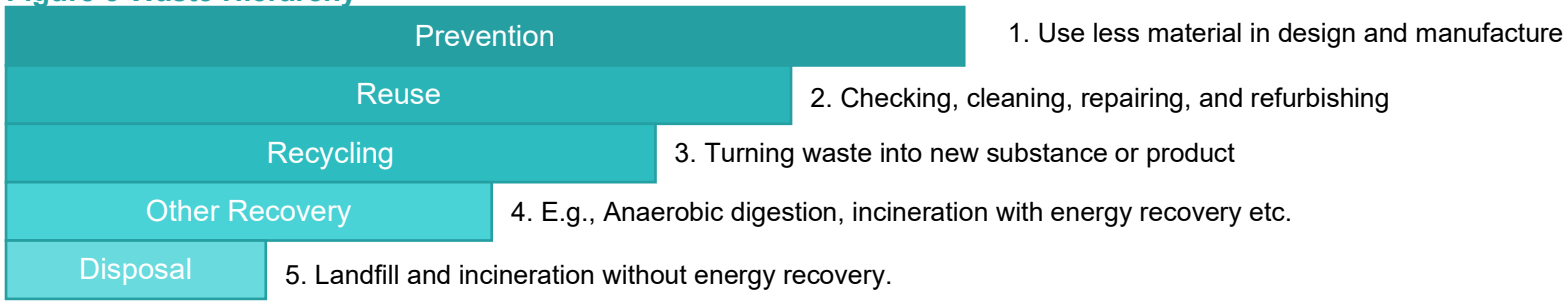
5. Key Principles

The Waste Hierarchy

5.1 Clause 12 of The Waste (England and Wales) Regulations 2011 requires that anyone involved in the import, generation, collection, transferring, recovery, or disposal of waste must take all such measures available to apply the waste hierarchy.

5.2 This Report considers the waste hierarchy and encourages materials identified on-Site to be reused before they are sent for recycling, recovery, or disposal. The main principles of the waste hierarchy are summarised in Figure 3.

Figure 3 Waste Hierarchy[1]



[1] Department of Environment, Food & Rural Affairs (Defra), Waste Hierarchy Guidance (updated by KaNect Limited)

The Circular Economy

5.3 A Circular Economy (CE) is a systematic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take make waste' linear model, a Circular Economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources. The Circular Economy activity focuses on design that is regenerative and restorative. This is based on three principles:

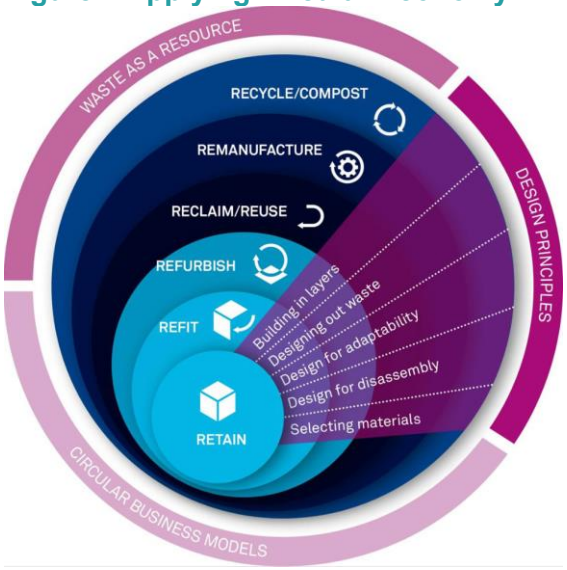
- Design out waste and pollution,
- Keep products and materials in use, and
- Regenerate natural systems.

5.4 This Report can help encourage a Circular Economy by:

- Influencing the wider design team to consider reclamation and reuse of waste/materials found on-Site to be incorporated in the proposed development, avoiding disposal of valuable materials, and
- Identifying reuse and re-processors companies for materials found on-Site, extending the products useful life before being remanufactured.

5.5 Figure 4 demonstrates the key stages and principles used when applying the Circular Economy to the built environment.

Figure 4 Applying Circular Economy Principles to Building Design[2]



6. Method

6.1 As stipulated by BREEAM, site visit is to be carried out by competent persons: '… who has appropriate knowledge of buildings, waste and options for reuse and recycling of different waste streams'.

6.2 Site visit was undertaken by Charted Building Surveyor Tom Lawrence and Chartered Waste Manager Kat Lees on 10 January 2024.

6.3 This Site visit consisted of non-intrusive visual audits of building fabric to the external and internal parts of the building to be demolished and replaced.

6.4 The existing Site has been divided into three sections:

- Aylesham Centre – this includes the mall, the shops on Rye Road and Morrisons;
- Petrol Station ; and
- External Areas – this includes the parking areas.

Exclusion and Assumptions

6.5 The following assumptions, exclusions and caveats apply to this Report:

- A 350mm concrete slab has been assumed to be under the building.
- A 150mm concrete slab has been assumed to be under the carpark.
- The roof is assumed to be made up of metal sheet.
- This Report is based purely on the findings of a non-intrusive visual survey.
- Where clear line of sight/access was not available to attain measurements e.g., thicknesses, best judgement and assumptions have been made.
- Where areas of build frame were not visible, the size and lengths of the columns were assumed.
- Catering equipment that is free standing and not fixed to the structure, small power, data, and large specialist plants or any other mechanical, electrical, and plumbing (MEP) equipment are not considered within this Report.
- It is assumed that all furniture, equipment, and miscellaneous non-fixed items installed by the tenants will be removed by the tenants, therefore, these are not considered within this Report.

6.6 The information provided within this Report is based on visual inspection (non-intrusive) of the existing Site. Where elements of the Site were inaccessible, assumptions are made based on professional judgement. It is understood that the quantities provided within this Report might vary, therefore, the principal contractor will be responsible for monitoring and reporting these changes (if any).

[2] Building Revolutions, David Cheshire, RIBA Publications 2016

7. Materials Identified

7.1 The following section describes the key waste/materials identified, their location, and images taken during the Site visit. Based on the condition of the waste/materials and their market demand, a circularity rating (i.e., how likely is the material reused or recycled on/off-Site) for the waste/materials has been provided (based on professional judgement) to determine whether they can be reused, recycled, or sent for recovery or disposed to landfill as a last resort.

7.2 The circularity rating is based on the following key shown in Table 1. The ratings and related descriptions are recommendations for the waste management route of the materials identified; the exact routes for the materials will be determined by the appointed demolition contractor (when appointed).

Table 1 Circularity Rating

Key	Description
	Good condition and reuse of this material is possible.
	Wear and tear – this material is likely to be recycled. Alternatively, this indicator may be used if the material is in a good condition but there is no market for reuse and therefore must be recycled.
	Poor condition/not reusable or non-recyclable material, this may be due to several reasons such as there being no end market for the material to be recycled (e.g., composite materials) or due to the small quantity of the material present, which therefore makes it unviable to recycle separately. This material is likely to be sent to landfill or energy recovery.

Concrete

7.3 Please see Table 2 for the types and quantities of the concrete found on-Site. Image 5 - Image 7 shows some of the concrete found on-Site.

Table 2 Quantities of Concrete

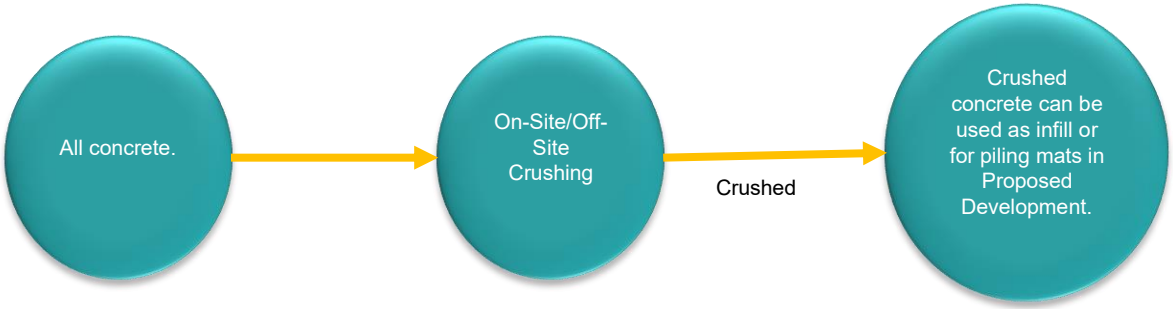
Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Concrete Slab 300mm	8,112.70	2,433.81	5,841.14
Concrete Facia	100	50	120
Concrete from Staircase	89.20	22.30	53.52
Concrete Slab Tiles 450mm	32.20	1.45	3.48
Concrete Slab 150mm	3,988.20	598.23	1,435.75
Concrete Hardstanding	1,500	450	1,080
Medium Density Blockwork 150mm	1,865	279.75	419.63
Total	**15,687.30**	**3,835.54**	**8,953.52**

General Observation

7.4 Concrete i.e., the slabs were not visible; therefore, the condition of these materials cannot be determined. However, the blockwork and the hardstanding, tiles were noted to be in good condition with no physical damage noted.

General Recommendation and Limitations

All concrete can be either crushed on-Site or off-Site and then used as infill material and pile matts.



Images

Image 5 Concrete Blockwork

Image 6 Concrete Hardstanding

Image 7 Concrete Tiles

Bricks

7.5 Please see Table 3 for the type and quantities of the bricks found on-Site. Image 8 - Image 10 shows some of the bricks found on-Site.

Table 3 Quantities of Bricks

Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Brickwork	3,129.2	477.5	859.5

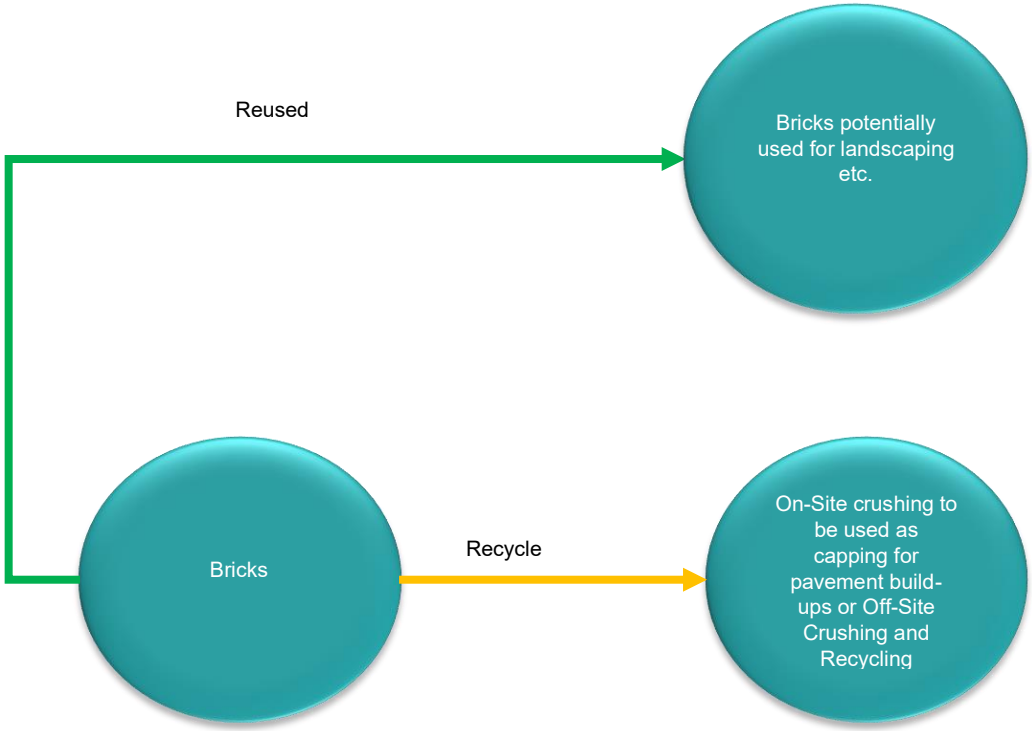
General Observation

7.6 The bricks noted on-Site were in fair condition.

General Recommendation and Limitations

The bricks found on-site can be carefully removed and then reused for different purposes such as landscaping etc. However, there are few barriers related to this process including bricks not matching the design of the development due to its colour and bricks bound with cement mortar requiring cleaning and is labour intensive.

Alternatively, if these are not reused then all bricks can be crushed on-Site or sent to crushing facilities and recycling centre off-Site to be used as infill material.


Reused
Bricks potentially used for landscaping etc.
Bricks
Recycle
On-Site crushing to be used as capping for pavement build-ups or Off-Site Crushing and Recycling

Images

Image 8 External Brickwork - Aylesham Centre	Image 9 External Brickwork - Car Wash	Image 10 External Brickwork - Morrisons

Mixed Metals

7.7 Please see Table 4 for the type and quantities of the mixed metals found on-Site. Image 11 - Image 34 shows some of the mixed metals found on-Site.

Table 4 Quantities of Mixed Metals

Material	Area (m^2)	Quantity (No.)	Volume (m^3)	Tonnage (t)
Steel Tubular Light Columns (3mm)	2.48		0.01	0.06
Stainless Steel Sinks		6	0.29	2.19
Roof Corrugated Steel (including assumed) (6mm)	8,112.30		48.73	370.38
Structural Steel Beams (200mm)	1,662.54		332.51	2,527.06
Metal Window Frames (30mm)	1,023.65		30.71	233.39
Lift Doors (75mm)	17.22		1.29	9.82
Roller Shutters (75mm)	148		11.10	84.36
Urinal Trough		3	0.14	1.09
Radiators – Electric (50mm)	1.32		0.07	0.50
Radiators – Steel Pressed (65mm)	1.82		0.12	0.90
Metal from Stairs (40mm)	29.88		1.20	9.08
Steel Gate (45mm)	1.90		0.09	0.65
Louvre Panel (30mm)	1		0.03	0.22
Steel Grid (30mm)	197.75		5.93	16.02
Circle Louvre (40mm)	6.75		0.27	0.73
Metal handrails (40mm)	16		0.64	4.86
Steel kick plates roof (2mm)	33.30		0.07	0.51
Steel kick plates doors (2mm)	3.44		0.01	0.05
Steel from Cat Ladders (100mm)	3.30		0.33	2.51
Steel from Trolley Park (40mm)	12.20		0.49	3.71
Steel from Stairs (75mm)	5.40		0.41	3.08
Steel from Canopy (250mm)	102		25.50	193.8

Trapezoidal Metal Sheet (10mm)	320		3.2	24.32
Steel Barriers (35mm)	3.12		0.11	0.83
Steel Fall Safe Handrail (roof) (35mm)	200.25		7.02	53.27
Cast Metal Fence Boundary (20mm)	91.90		1.84	12.50
Structural Steel Column (250mm)	6		1.50	11.40
Structural Steel Beams (120mm)	125		15	114
Sheet Material (4mm)	525		2.10	15.96
Roller Shutter (50mm)	12.48		0.62	4.74
Steel Bollards – Petrol Station	0.75		0.002	0.05
Total	**12,648.75**	**9**	**491.33**	**3,702.04**

Numbers may not add up due to rounding

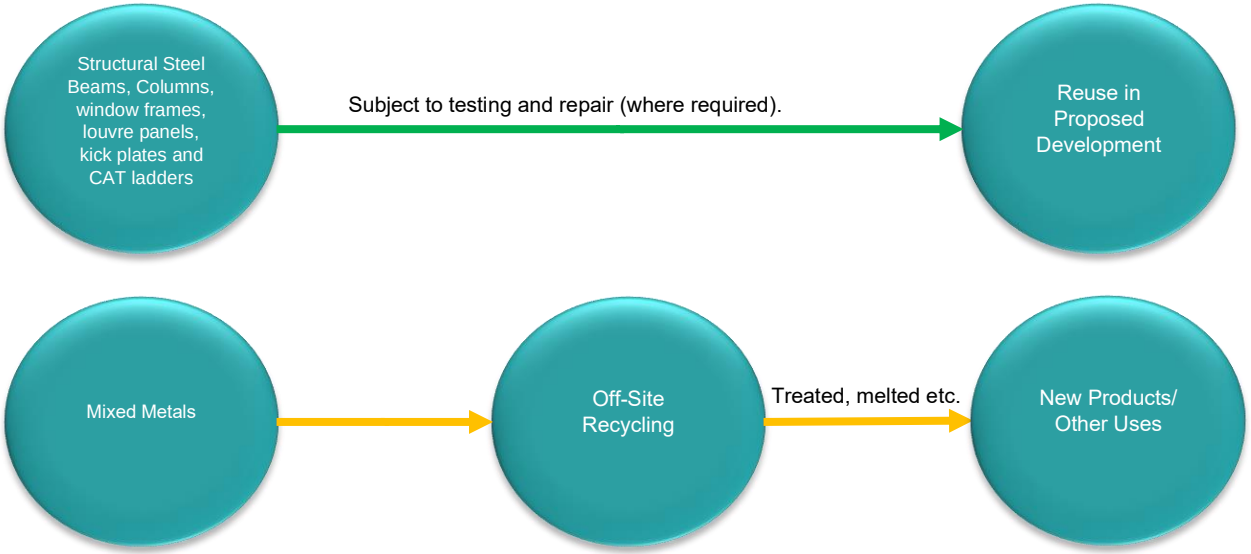
General Observation

7.8 The mixed metals found on-Site were noted to be in between good to poor condition i.e., most of the metal was noted to have no physical damage or sign of corrosion, except the trolley park and the metal stairs.

General Recommendation and Limitations

Subject to testing the following items might be reused on-Site including structural steel beams, columns, metal window frames (for daylight requirement in bin and bike stores), louvres (for ventilation in bin and bike stores), kick-plates and cat ladders can be reused in the Proposed Development.

If not reused, then all mixed metals can be sent off-site for recycling.



Images

Image 11 Structural Steel

Image 12 Metal Handrails

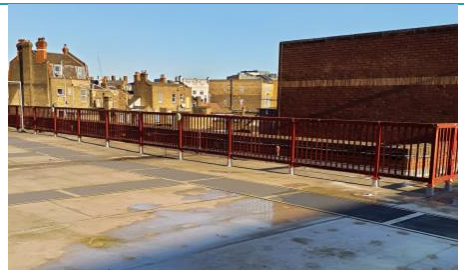


Image 13 Metal Handrails

Image 14 Cat Ladder

Image 15 Metal Window Frame

Image 16 Metal Window Frame

Image 17 Metal Window Frame

Image 18 Metal Window Frame and Roller Shutter

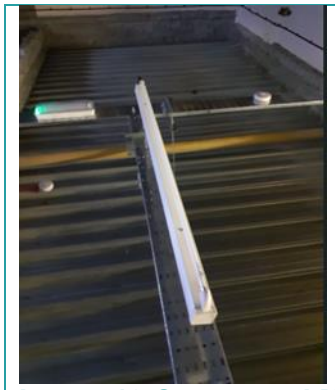
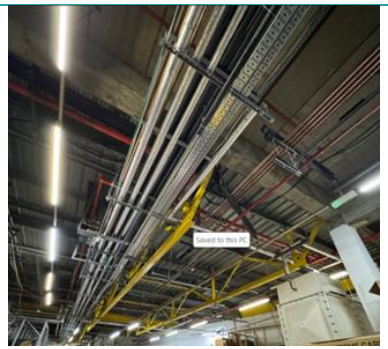
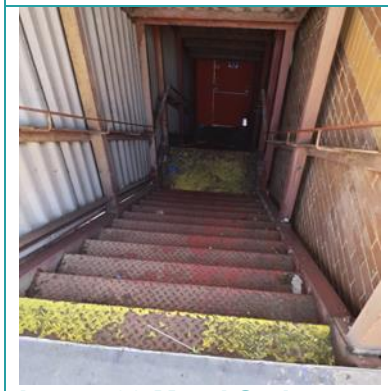
 Image 19 Corrugated Metal Roof	Image 20 Corrugated Metal Roof	 Image 21 Steel Beams	Image 22 Steel Columns
 Image 23 Metal Stairs	Image 24 Metal Stairs	Image 25 Radiator	Image 26 Radiator

Image 27 Radiator

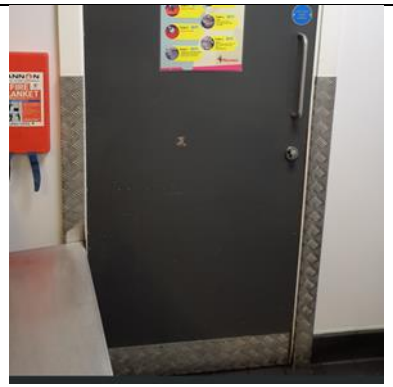


Image 28 Metal Kickplate

Image 29 Metal Trolley Park

Image 30 Steel from Canopy

Image 31 Louvre Grills

Image 32 Cast Metal Fence

Image 33 Roller Shutters

Image 34 Roller Shutters

Timber and Timber Products

7.9 Please see Table 5 for the types, and quantities of the timber and timber products found on-Site. Image 35 - Image 49 shows some of the timber and timber products found on-Site.

Table 5 Quantities of Timber and Timber Products

Material	Area (m^2)	Quantity (No.)	Volume (m^3)	Tonnage (t)
Laminate Flooring (4mm)	435		1.74	1.39
Internal Hollow Door (35mm)		106	6.68	1.38
Internal Fire Doors (44mm)		41	3.25	1.85
Door Frames	23.62		0.24	0.17
Skirting (90mm)	7.62		0.09	0.06
Kitchen Units	43.20		0.52	0.36
Structural Timber (50mm)	12		0.60	0.42
Timber Handrails (60mm)	4		0.24	0.17
Timber Staircase (75mm)	12		0.90	0.63
Chipboard (14mm)	43		0.60	0.42
Timber Fence (20mm)	44.10		0.88	0.62
Timber Bollards	4.90		0.61	0.43
Raised Timber Floors (15mm)	15		0.23	0.16
Timber Panels (Nandos) (14mm)	27		0.38	0.26
Total	**671.44**	**147**	**16.96**	**8.32**

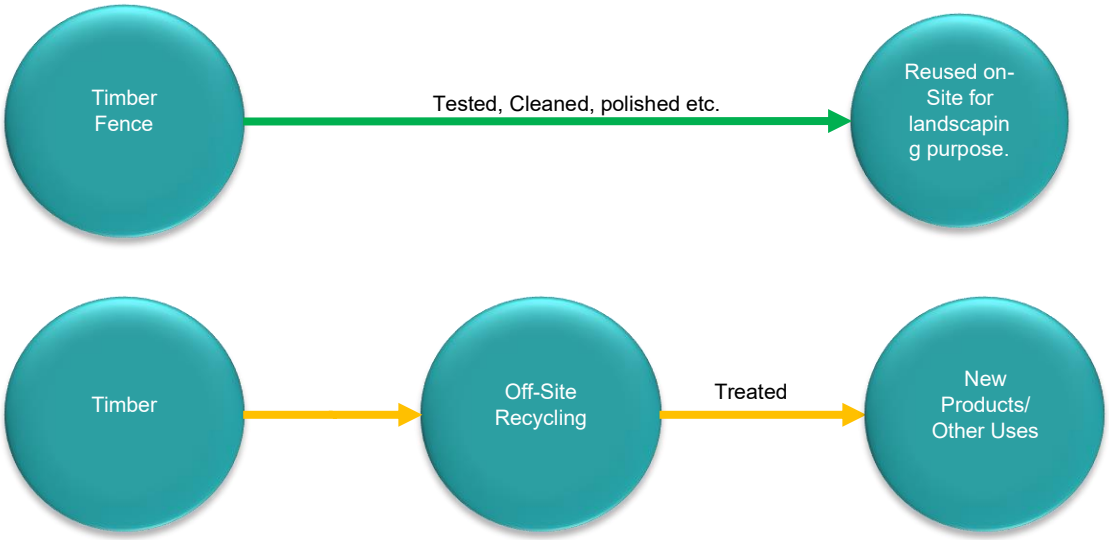
General Observation

7.10 The timber and timber products found on-Site were noted to vary in condition. For example, the laminate flooring was noted in good condition, whereas, the doors, the kitchen units varied between good and fair condition.

General Recommendation and Limitations

Depending on the design of the Proposed Development and subject to testing, the timber fence can be used as a replacement for the metal edging in the landscape at the back of planting beds to contain gravel strips to build facades.

Alternatively, if this material is not reused then all timber items can also be sent for off-Site recycling.



Images

Image 35 Laminate Flooring

Image 36 Laminate Flooring

Image 37 Laminate Flooring

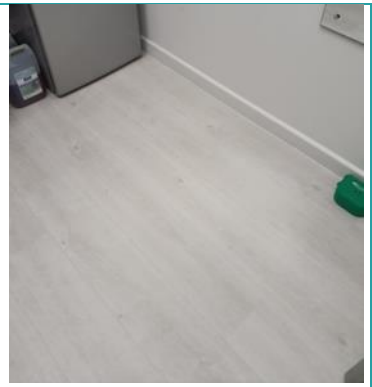


Image 38 Laminate Flooring

Image 39 Laminate Flooring

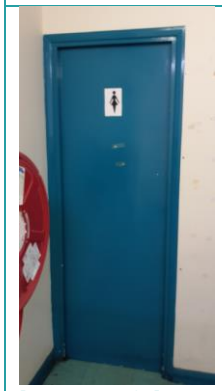


Image 40 Internal Timber Doors

Image 41 Internal Timber Doors

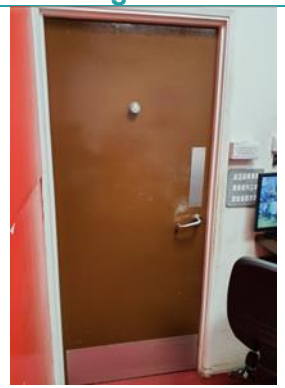


Image 42 Internal Timber Doors

Image 43 Internal Timber Doors

Image 44 Internal Timber Doors

Image 45 Timber Fence

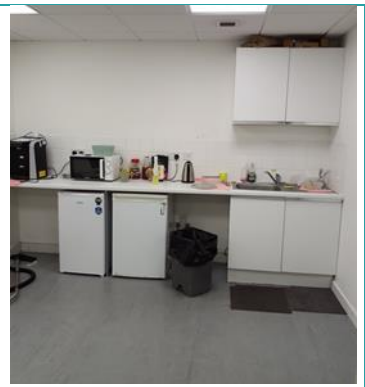


Image 46 Kitchen Units

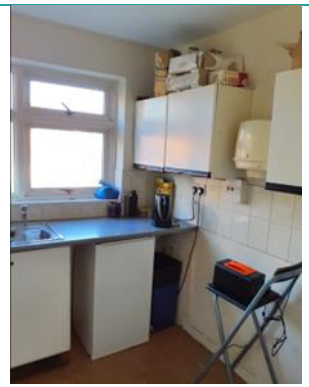


Image 47 Kitchen Units

Image 48 Kitchen Units

Image 49 Chipboard

Tiles and Ceramics

7.11 Please see Table 6 for the types, and quantities of the tiles and ceramics found on-Site. Image 50 - Image 74 shows some of the tiles and ceramics found on-Site.

Table 6 Quantities of Tiles and Ceramics

Material	Area (m^2)	Quantity (No.)	Volume (m^3)	Tonnage (t)
Standard Wall/Floor Tiles (5mm)	3,245		16.23	11.36
Suspended Grid Mineral Tiles	5,144.12		123.46	18.52
Vitreous Tiles (5mm)	2,184		8.74	6.12
China Water Closet (WC)		53	12.99	1.86
Shower Basin		3	0.08	0.05
China Washbasin		43	1.18	0.65
China Urinals		4	0.98	0.14
Total	**10,573**	**103**	**164**	**39**

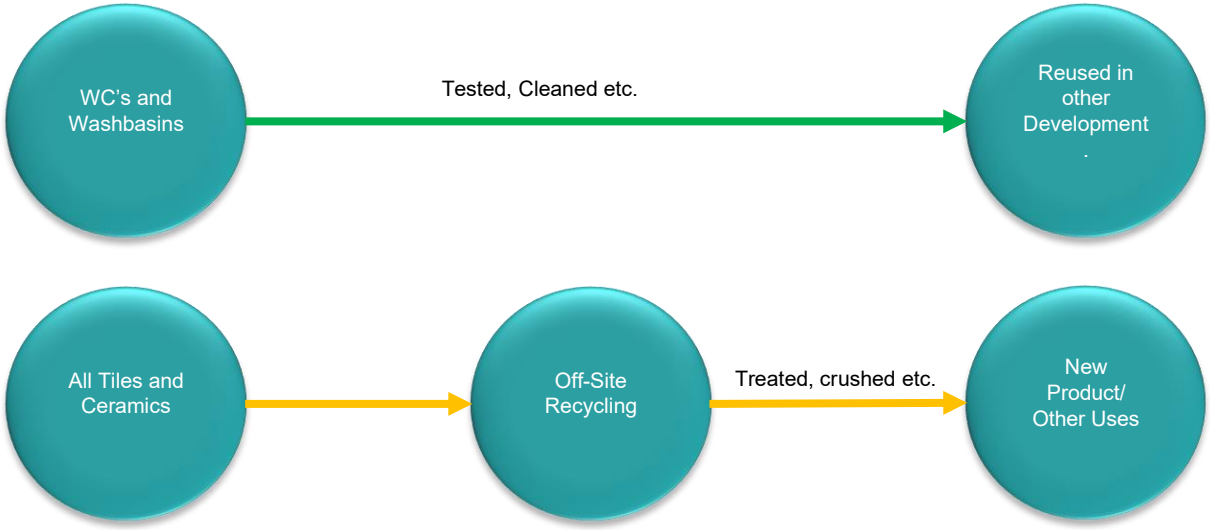
General Observation

7.12 The ceramics found on-Site were noted vary in condition. For example, the floor tiles in some areas were noted to be in good condition, whereas in some areas (such as Morrisons bakery) these were noted to be in poor condition. Similarly, the suspended grid mineral in most places were noted to be in good condition, whereas in some places (such as the Chinese shop) these were noted to be in poor condition. The water closet, shower basins, hand basins and urinals were noted to be in fair condition.

General Recommendation and Limitations

Depending on the design of the Proposed Development and subject to testing (for functionality), the China WC's and Washbasins can be reused in another development.

Alternatively, if the China WC's and Washbasins are not reused, then these can be sent off-Site for recycling. In addition, due to the adhesive nature, the tiles will break when removing from the substrate, therefore, these can be sent off-Site for recycling.



Images

Image 50 Ceramic Floor Tiles

Image 51 Ceramic Wall Tiles

Image 52 Ceramic Floor Tiles

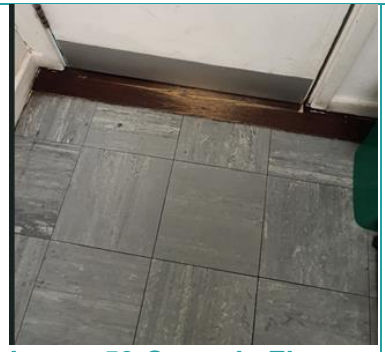


Image 53 Ceramic Floor Tiles

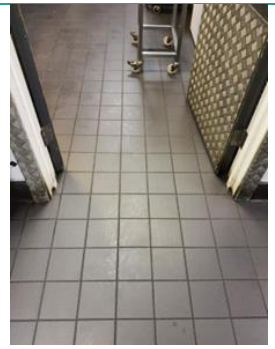


Image 54 Ceramic Floor Tiles

Image 55 Ceramic Floor Tiles

Image 56 Ceramic Floor Tiles

Image 57 Ceramic Floor Tiles

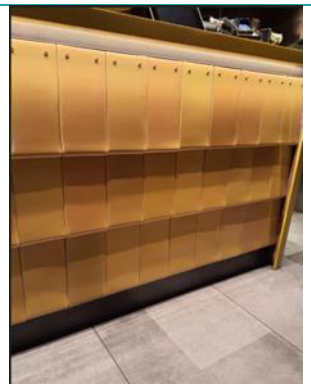


Image 58 Ceramic Wall Tiles

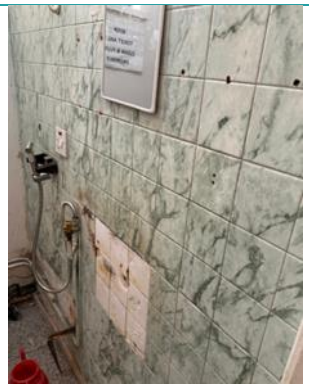


Image 59 Ceramic Wall Tiles

Image 60 Ceramic Floor Tiles

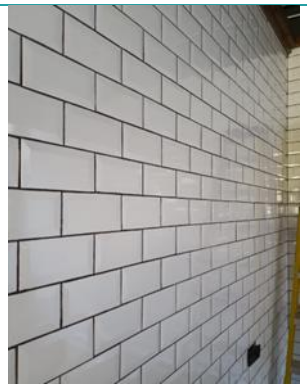


Image 61 Ceramic Wall Tiles

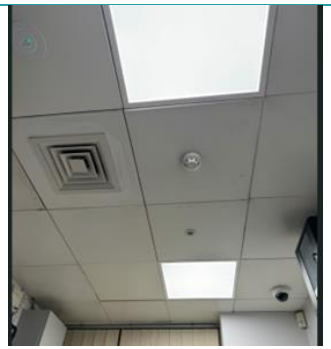


Image 62 Suspended Grid Mineral Tiles

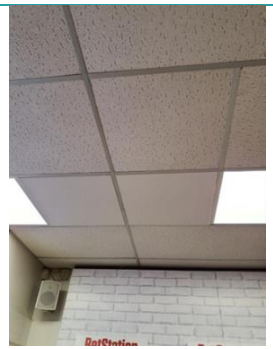
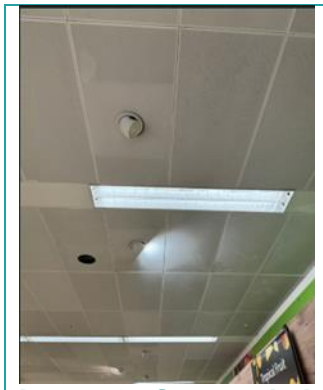
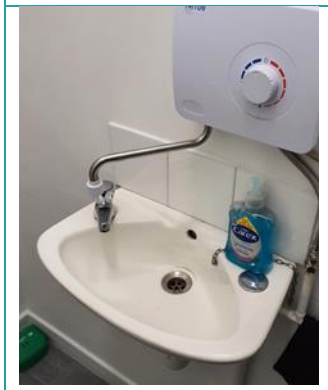
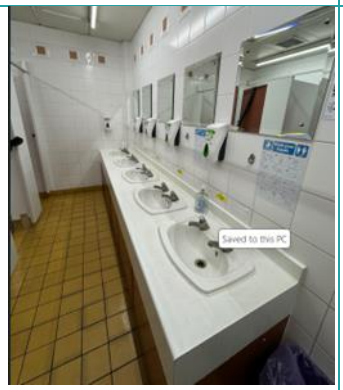


Image 63 Suspended Grid Mineral Tiles

Image 64 Suspended Grid Mineral Tiles

 Image 65 Suspended Grid Mineral Tiles	Image 66 Suspended Grid Mineral Tiles	Image 67 Suspended Grid Mineral Tiles	Image 68 China Handbasin	Image 69 China Handbasin
 Image 70 China Handbasin	 Image 71 Handbasin	Image 72 China WC	Image 73 China WC	Image 74 China Urinals

Gypsum based construction material (including plasterboard)

7.13 Please see Table 7 for the types, and quantities of the gypsum based construction material (including plasterboard) found on-Site. Image 75 - Image 78 shows some of the gypsum based construction material (including plasterboard) found on-Site.

Table 7 Quantities of Gypsum based construction material (including plasterboard)

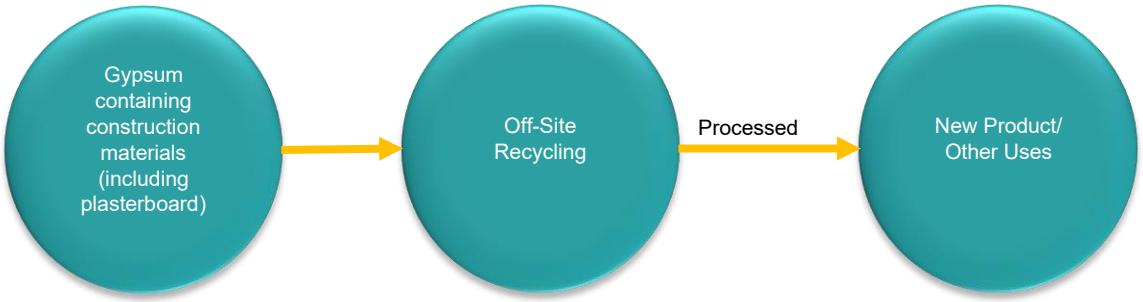
Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Plasterboard Walls (12mm)	598.35	7.18	6.46
White Rock Cladding (12mm)	15	0.18	0.16
Total	**613.35**	**7.36**	**6.62**

General Observation

7.14 The gypsum-based construction material (including plasterboard) found on-Site was noted to be in poor condition with physical damage noted in most of the areas.

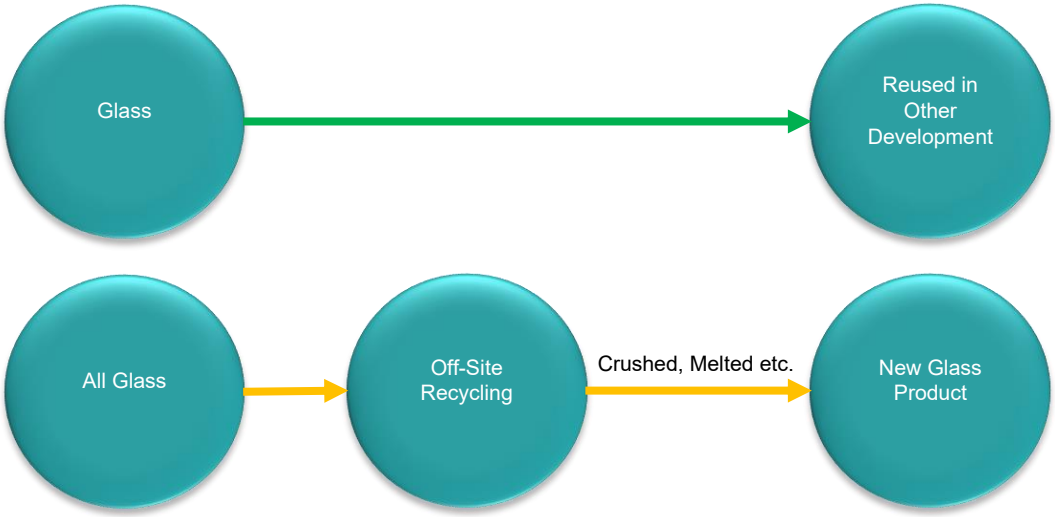
General Recommendation and Limitations

Plasterboard is delicate and will not detach from the studs without breaking, therefore, all plasterboard can be sent off-Site for recycling.



Images

Image 75 Plasterboard Wall	Image 76 Plasterboard Wall	Image 77 Plasterboard Wall	Image 78 Plasterboard Wall



Images

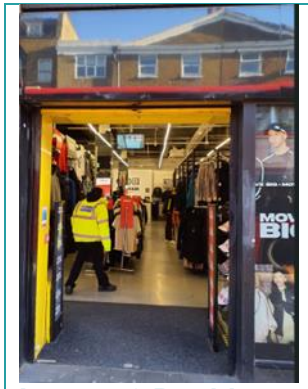
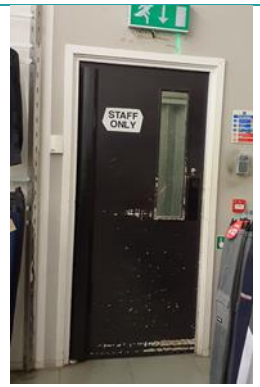
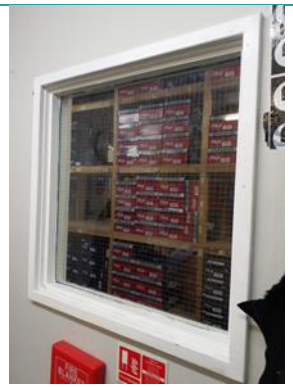


Image 79 Double Glazed Window

Image 80 Double Glazed Window

Image 81 Single Glazed Glass Window

Image 82 Internal Glass from Doors

Image 83 Internal Glass from Doors	Image 84 Internal Glass from Doors	 Image 85 Internal Glass from Doors	 Image 86 Internal Glass from Doors

Textiles

7.17 Please see Table 9 for the types, and quantities of the textiles found on-Site. Image 87 - Image 91 shows some of the textiles found on-Site.

Table 9 Quantities of Textiles

Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Carpet (7mm)	238.86	1.67	1.43

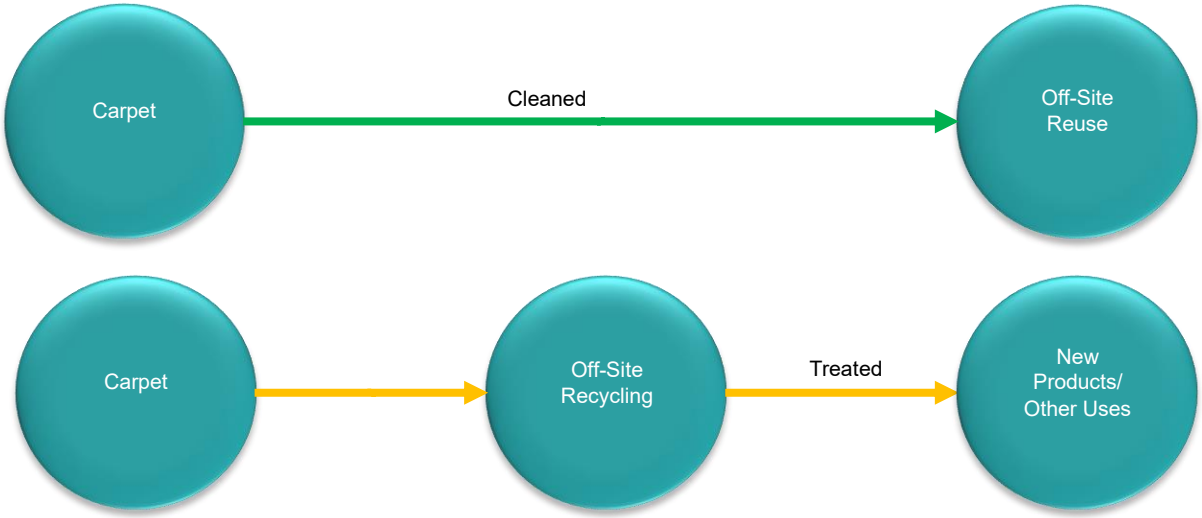
General Observation

7.18 Most of the carpet was found in office areas, and this was noted to be in good condition. However, there were areas which showed signs of wear and tear.

General Recommendation and Limitations

Carpets can be cleaned and reused in other development. However, as these carpets are cut based on specific room sizes, it might reduce its potential to be reused.

Alternatively, if not this material is not reused then these can be sent off-Site for recycling.



Images

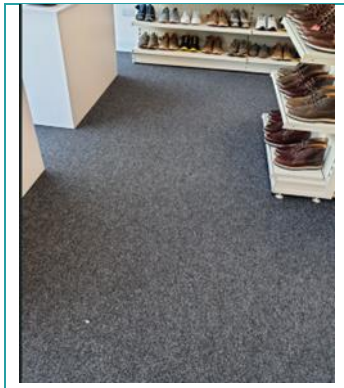


Image 87 Carpet Flooring

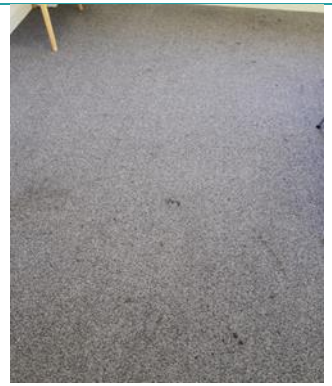


Image 88 Carpet Flooring

Image 89 Carpet Flooring

Image 90 Carpet Flooring

Image 91 Carpet Flooring

Plastics

7.19 Please see Table 10 for the types, and quantities of the plastics found on-Site. Image 92 - Image 100 shows some of the plastics found on-Site.

Table 10 Quantities of Plastics

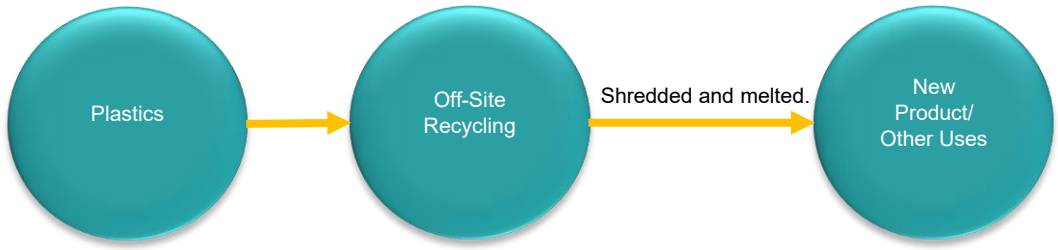
Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Vinyl Flooring (2mm)	4,387.72	8.78	17.55
Polyvinyl Chloride (PVC) sheet from Trolley Park (5mm)	30.75	0.15	0.22
PVC Counter/Till Screen (5mm)	3.30	0.02	0.02
Thermoplastic Olefin (TPO) Roof Membrane (2mm)	8,112.70	16.23	17.85
Total	**12,534.47**	**25.18**	**35.64**

General Observation

7.20 Plastics found on-Site were noted to be in poor condition, with the vinyl flooring worn and soiled, the PVC sheets and TPO showing signs of wear and tear.

General Recommendation and Limitations

All plastics can be sent off-Site for recycling.



Images

Image 92 Vinyl Flooring

Image 93 Vinyl Flooring

Image 94 Vinyl Flooring

Image 95 Vinyl Flooring

Image 96 Vinyl Flooring

Image 97 Vinyl Flooring

Image 98 Vinyl Flooring	Image 99 PVC sheet from Trolley Park	Image 100 TPO Roofing

Bituminous Mixtures (including Asphalt and Tarmacadam)

7.21 Please see Table 11 for the types and quantities of the bituminous mixtures (including asphalt and tarmacadam) found on-Site. Image 101 - Image 104 shows some of the bituminous mixtures (including asphalt and tarmacadam) found on-Site.

Table 11 Quantities of Bituminous Mixtures (including Asphalt and Tarmacadam)

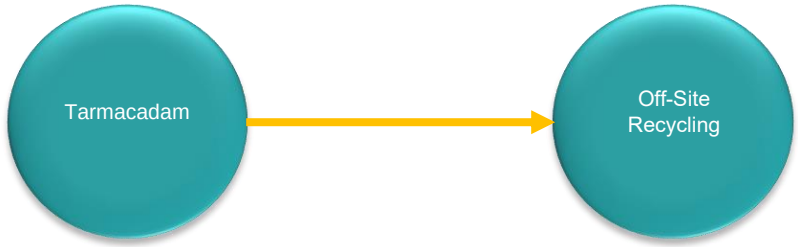
Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Tarmacadam to Roads and Footpath (50mm)	3,988.20	199.41	418.76

General Observation

7.22 The bituminous mixtures (including asphalt and tarmacadam) were noted to in fair condition, with some areas showing sign of wear.

General Recommendation and Limitations

The bituminous mixtures (including asphalt and tarmacadam), can be sent off-Site for recycling.



Images

Image 101 External surface/road	Image 102 External surface/road	Image 103 External Parking surface/road	Image 104 External Footpath

Insulation

7.23 Please see Table 12 for the types and quantities of the insulation found on-Site.

Table 12 Quantities of Insulation

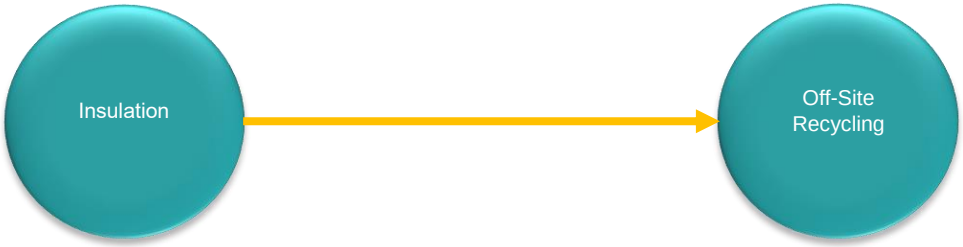
Material	Area (m^2)	Volume (m^3)	Tonnage (t)
Rigid Thermal Insulation (100mm)	8,122.70	812.27	16.25

General Observation

7.24 The insulation was not visible; therefore, it is difficult to provide the quality of this material.

General Recommendation and Limitations

The insulation could be sent off-site for recycling.



Luminaries

7.25 Please see Table 13 for the types and quantities of the luminaries found on-Site. Image 105 - Image 124 shows some of the luminaries found on-Site.

Table 13 Quantities of Luminaries

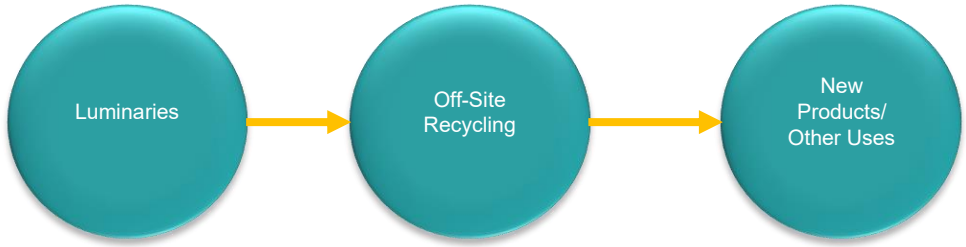
Type	Quantity
Fluorescent	12
Light Emitting Diode	124
Incandescent	114

General Observation

7.26 Some of the luminaries found on-Site were typically old.

General Recommendation and Limitations

Due to their age, luminaries can be sent off-Site for recycling.



Images

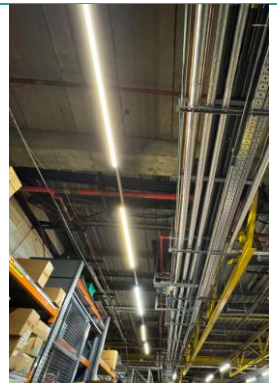
Image 105 Morrison's Lighting	Image 106 Morrison's Lighting	Image 107 Morrison's Lighting	Image 108 Morrison's Lighting
Image 109 Morrison's Lighting	 Image 110 Morrison's Lighting	Image 111 Shopping Centre - Lighting	Image 112 Shopping Centre - Lighting

Image 113 Shopping Centre - Lighting

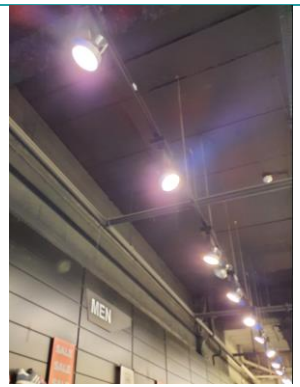


Image 114 Shopping Centre - Lighting

Image 115 Shopping Centre - Lighting

Image 116 Shopping Centre - Lighting

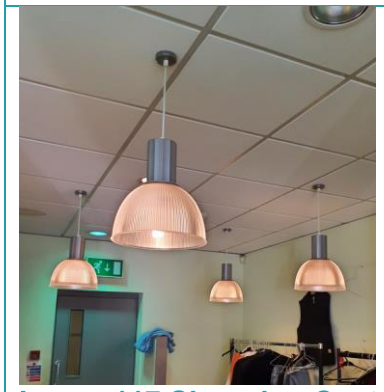
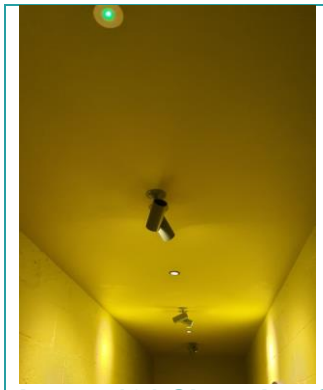


Image 117 Shopping Centre - Lighting

Image 118 Shopping Centre - Lighting

Image 119 Shopping Centre - Lighting

Image 120 Shopping Centre - Lighting

 Image 121 Shopping Centre - Lighting	Image 122 Shopping Centre - Lighting	Image 123 Shopping Centre - Lighting	Image 124 Shopping Centre - Lighting

8. Estimated Quantities of Materials Identified

8.1 Estimated quantities of the materials anticipated to be generated during the demolition process are provided in Table 14. The estimated volumes are based on the Site visit and do not consider the actual skip volumes that may result from the Site (i.e., does not account for bulking and the inevitable voids within the skip during disposal). Figure 5 and Figure 6 shows the percentage breakdown of waste identified during the Site visit.

8.2 It should be noted that the recovery potential provided within Table 14 is based on the best practices as suggested by Waste and Resource Action Programme (WRAP). Therefore, this should be used as a reference only.

Table 14 Estimated Quantities of Materials

Material	European Waste Catalogue Code (EWC)	Volume (m^3)	% of Total Volume (m^3)	Tonnes (t)	% of Total Tonnage (t)	WRAP Recovery Potential (%) (Best Practice) i.e. % diverted from landfill	Potential Recovery (i.e., m^3 diverted from landfill)	Disposal to Landfill/ Energy from Waste (m^3)	Potential Recovery (i.e., Tonnes diverted from landfill)	Disposal to Landfill/ Energy from Waste (Tonnes)
Concrete	17.01.01	3,835.54	64%	8,953.52	64%	100%	3,835.54	-	8,953.52	-
Bricks	17.01.02	477.5	8%	859.5	6%	100%	477.5	-	859.5	-
Mixed Metals	17.04.07	491.33	8%	3,702.04	26%	100%	491.33	-	3,702.04	-
Timber and Timber Products	17.02.01	16.96	0.3%	8.32	0.1%	95%	16.11	0.85	7.90	0.42
Tiles and Ceramics	17.01.03	164	3%	39	0.3%	100%	164	-	39	-
Gypsum based construction material (including Plasterboard)	17.08.02	7.36	0.1%	6.62	0.05%	95%	6.99	0.37	6.29	0.33
Glass	17.02.02	4.22	0.1%	10.63	0.1%	100%	4.22	-	10.63	-
Textiles	20.01.11	1.67	0.03%	1.43	0.01%	100%	1.67	-	1.43	-
Plastics	17.02.03	25.18	0.4%	35.64	0.3%	100%	25.18	-	35.64	-
Bituminous Mixtures (including asphalt, tarmacadam etc.)	17.03.02	199.41	3%	418.76	3%	95%	189.44	9.97	397.82	20.94
Insulation	17.06.04	812.27	13%	16.25	0.1%	75%	609.20	203.07	12.19	4.06
Total		**6,035.44**	**100%**	**14,051.71**	**100%**		**5,821.19**	**214.25**	**14,025.96**	**25.75**

The % might not add up to 100% due to rounding.
The numbers may not add up due to rounding.

Figure 5 Approximate Quantities of Materials (%) by Volume

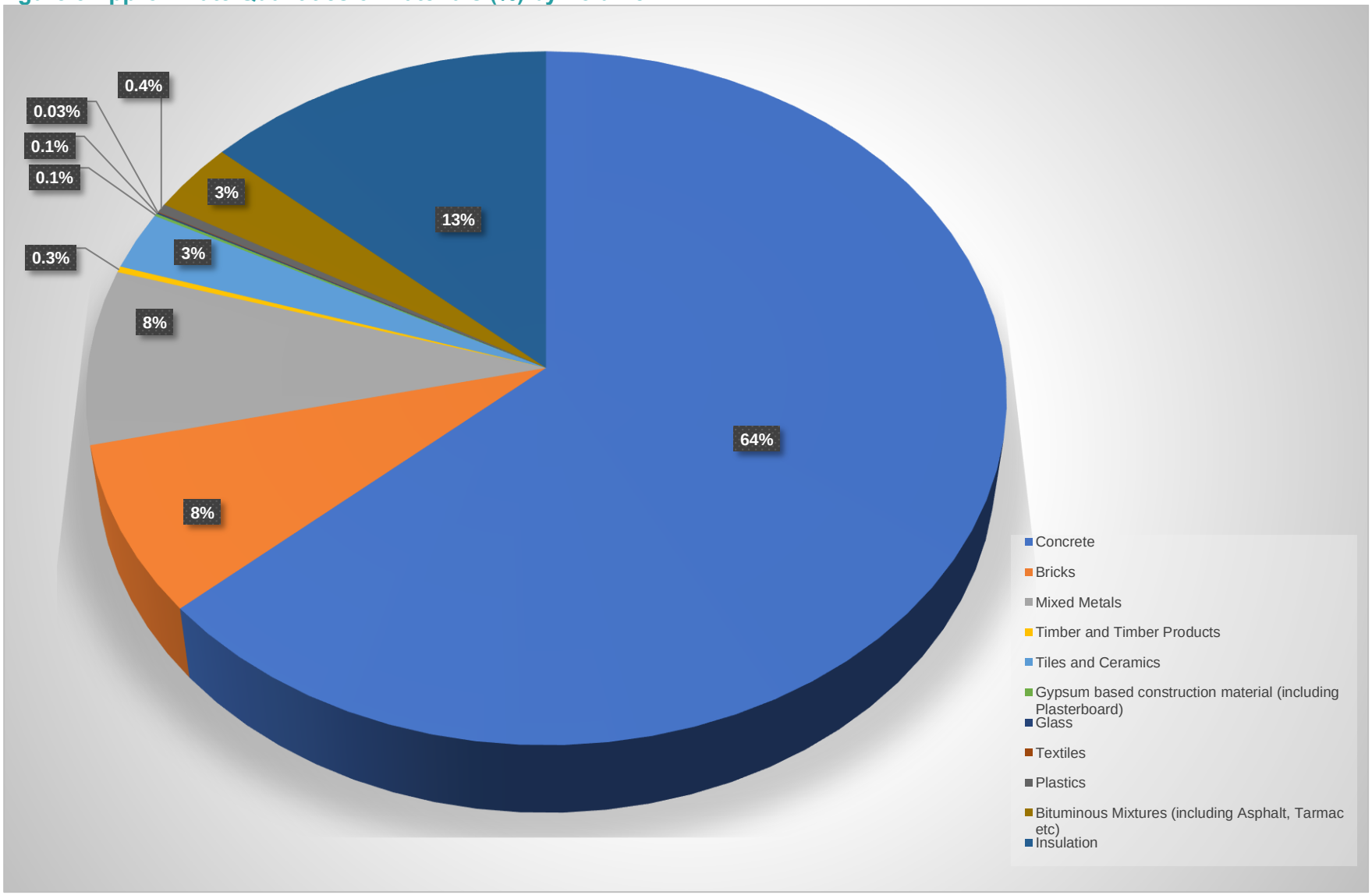
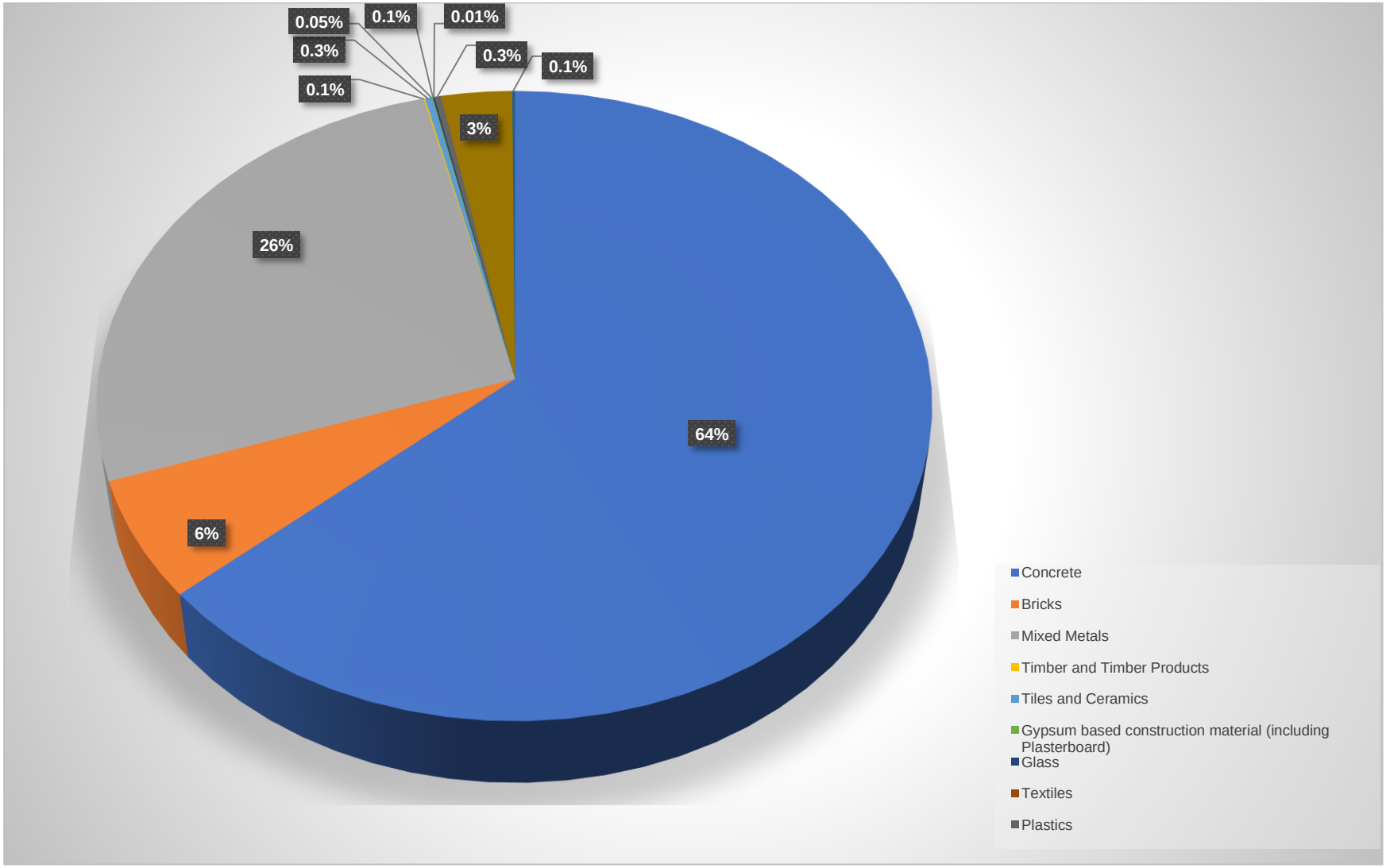


Figure 6 Approximate Quantities of Materials (%) by Tonnage



9. Embodied Carbon

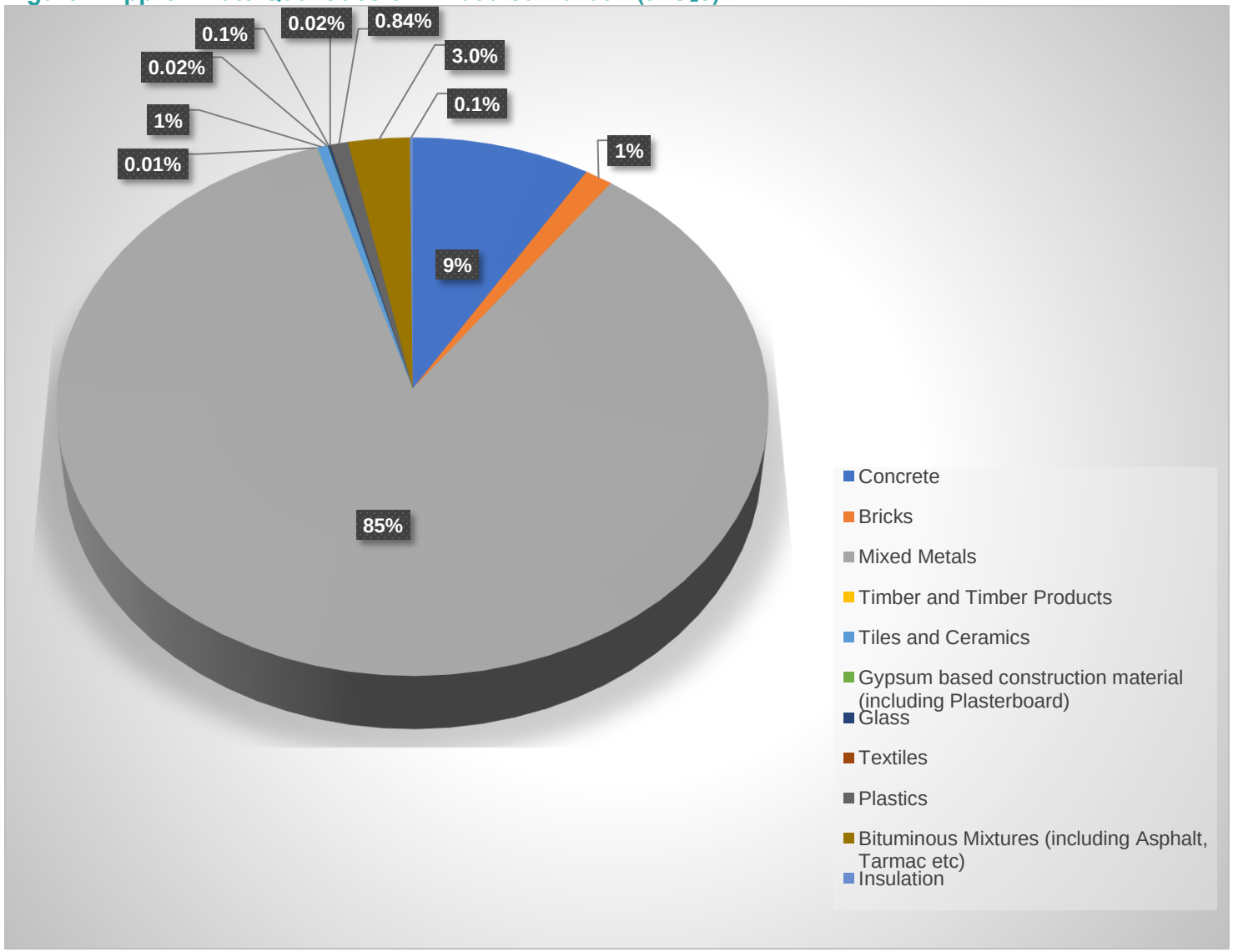
9.1 The approximate quantities of embodied carbon from the demolition materials have been estimated using Inventory of Carbon and Energy (ICE) database version 3. It should be noted that as the survey undertaken was non-intrusive, therefore, classification and identification of materials have been based on professional judgement, thus this should be used as a reference only.

9.2 Table 15 provides the potential quantities of embodied carbon (tCO_2e), which are further represented in Figure 7.

Table 15 Approximate Quantities of Embodied Carbon (tCO_2e)

Material	Approximate Quantity (t)	tCO_2e
Concrete	8,953.52	1,149.7
Bricks	859.5	180.5
Mixed Metals	3,702.04	11,328.01
Timber and Timber Products	8.32	1.48
Tiles and Ceramics	39	68.27
Gypsum based construction materials (including plasterboard)	6.62	2.58
Glass	10.63	17.63
Textiles	1.43	2.34
Plastics	35.64	112.08
Bituminous Mixtures (including asphalt, tarmac etc)	418.76	394.83
Insulation	16.25	18.19

Figure 7 Approximate Quantities of Embodied Carbon (tCO_2e)



10. Waste Reduction Opportunities

Targets

10.1 The Proposed Development will aim to achieve the following targets:

- Reuse and Recycling on-Site - approximately 20% of the total tonnage.
- Diversion from Landfill – at least 95% of the total volume.

10.2 The key provided in Table 16 has been adopted to show the opportunity of each material identified.

Table 16 Opportunity Key

Key	Description
	Reduction in landfill costs
	Reduced environmental impact
	Less carbon/energy intensive
	Preserve natural resources
	Corporate social responsibility

10.3 The potential opportunities for reusing and recycling the waste/material generated on-Site as well as the benefits of such initiatives have been identified in Table 17.

10.4 There are several opportunities to apply the waste hierarchy and Circular Economy to the buildings being demolished and examples of local reprocessing and recycling facilities have been identified, where appropriate, in this Report. However, these facilities suggested in Table 17 are not an exhaustive list. The final choices of the recommendations made within this Report will need to be determined by the demolition contractor, based on the costs and benefits of the options presented. There are clear benefits to implementing waste reduction initiatives, these include:

- Reducing costs associated with disposal,
- Realising financial benefits by diverting waste from landfill, and
- Environmental and social benefits of implementing the waste hierarchy and Circular Economy.

Table 17 Waste Reduction Opportunities

Material	Circularity Rating	Suggestion					Opportunity	Constraints	Local Reprocessors
		on-Site Reuse	on-Site Recycle	off-Site Reuse	off-Site Recycle	Disposal			
Concrete		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is envisioned that 100% of this material will be recycled on-Site i.e., it will be crushed and used as infill material or material for creating pile mats.	It is understood that 0% of this material will be re-used off-Site	It is understood that the 0% of this material will be recycled off-Site.	This material will not be sent for disposal.		This will require additional storage space and potentially a license from Environmental Agency (EA) for storing this waste.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company
Bricks		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is envisioned that 100% of this material will be recycled on-Site i.e., it will be crushed and used as infill material or material for creating pile mats.	It is understood that 0% of this material will be re-used off-Site	It is understood that the 0% of this material will be recycled off-Site.	This material will not be sent for disposal.		This will require additional storage space and potentially a license from Environmental Agency (EA) for storing this waste.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company
Mixed Metals		Considering the design of the Proposed Development, subject to testing, it is envisioned that the steel beams, columns, metal window frames, louvres, kick-plates and cat ladders might be reused on-Site. This account to approximately 30% of the total mixed metals (by tonnage i.e., 1,106 tonnes).	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that the remaining material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company EMR Get In Touch With EMR | EMR Metal Recycling Reimagined (emrgroup.com)

Timber and Timber Products		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that approximately 95% of this material (will be recycled off-Site.	Approximately 5% of this material will be sent for energy recovery or disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company Globe Chain Globechain | Reuse Marketplace for Business Reuse Network Home - Reuse Network (reuse-network.org.uk)
Tiles and Ceramics		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 100% of this material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company Globe Chain Globechain | Reuse Marketplace for Business Reuse Network Home - Reuse Network (reuse-network.org.uk)
Gypsum based constructio		Considering the design of the Proposed	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of	It is understood that 95% of	Approximately 5% of this material will		Temporary storage required	Yes Waste Construction Waste Tower Hamlets |

n materials (including plasterboard)		Development, it is understood that 0% of this material will be re-used on-Site.		this material will be re-used off-Site	this material will be recycled off-Site.	be sent for energy recovery or disposal.		prior to sending this off-Site.	Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company
Glass		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 100% of this material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company Globe Chain Globechain | Reuse Marketplace for Business Reuse Network Home - Reuse Network (reuse-network.org.uk)
Textiles		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 100% of this material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal

									Company UK - The Waste Company Globe Chain Globechain | Reuse Marketplace for Business Reuse Network Home - Reuse Network (reuse-network.org.uk)
Plastics		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 100% of this material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company Globe Chain Globechain | Reuse Marketplace for Business Reuse Network Home - Reuse Network (reuse-network.org.uk)
Bituminous Mixtures (including asphalt)		Considering the design of the Proposed Development, it is	It is envisioned that 25% of this material will be recycled on-Site (by tonnage – approx. 105	It is understood that 0% of this material	It is understood that 75% of this material	This material will not be sent for disposal.		This will require additional storage space and potentially a	Yes Waste Construction Waste Tower Hamlets |

		understood that 0% of this material will be re-used on-Site.	tonnes) i.e., it will be crushed and used as infill material or material for creating pile mats.	will be re-used off-Site	will be recycled off-Site.			license from Environmental Agency (EA) for storing this waste	Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company
Insulation		Considering the design of the Proposed Development, it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 75% of this material will be recycled off-Site.	Approximately 25% of this material will be sent for energy recovery or disposal.		This will require additional storage space and potentially a license from Environmental Agency (EA) for storing this waste	Yes Waste Construction Waste Tower Hamlets | Licensed & Efficient | Yes Waste The Waste Co Best Construction Waste Removal Company UK - The Waste Company
Luminaries		Considering the design of the Proposed Development it is understood that 0% of this material will be re-used on-Site.	It is understood that 0% of this material will be recycled on-Site.	It is understood that 0% of this material will be re-used off-Site	It is understood that 100% of this material will be recycled off-Site.	This material will not be sent for disposal.		Temporary storage required prior to sending this off-Site.	Reco Light Recycling Map | Recolight FREE lamp recycling Enviromate Enviromate | Surplus Material | Community Projects Globe Chain Globechain | Reuse Marketplace for Business

10.5 Waste contractors in the area that collect multiple construction streams (segregated) are shown in Table 18. This list is not intended to be comprehensive, and waste generators will need to meet their legal duty of care by making sure that any waste produced is managed responsibly and only given to businesses authorised to take it. The presence of a company on the list below does not remove the requirement for waste generators to carry out their own duty of care checks.

Table 18 Waste Management Companies in London which collect multiple Construction, Demolition and Excavation (CD&E) Waste Streams

Waste Management Company
Capital Waste www.Capwaste.co.uk
GBN Services https://www.gbnservices.co.uk/construction-waste/
London Waste Removal Service www.Londonwasteremovalservice.co.uk/demolition
O'Donovan Waste Disposal https://www.odonovan.co.uk/
Junk Bunk Limited https://junkbunk.co.uk/
Swift Waste Management https://swiftwaste.co.uk/
Powerday https://powerday.co.uk/
Bywaters https://www.bywaters.co.uk/

11. General Guidelines for Management of Demolition Materials and Waste

11.1 This pre-demolition and redevelopment audit has been conducted to allow material and waste management to be considered in the early stage of the project. The Applicant, Architect and Demolition Contractor should be involved in the material and waste management process from the offset. This will allow for effective planning to realise the value of materials on-Site and their subsequent management (i.e., consideration of the waste hierarchy).

11.2 The reuse of material on-Site or on a nearby similar project is the ideal option from an environmental and economic perspective. The Applicant and Architect are best positioned to consider these options and enable these initiatives. Doing so also often results in reduced transportation, reducing embodied CO_2 emissions and costs associated with material management on the project. To maximise this opportunity, it is advised that the following are considered:

- Opportunities for reuse on-Site,
- Safe storage of these items on-Site, in a separate storage area if feasible,
- Opportunities for reuse by the Applicant on other projects,
- Opportunities for reuse on local/similar projects,
- Advertisement of specific items on websites (e.g., www.salvo.co.uk),
- Contacting local architectural salvage merchants about specific items, and
- Selling or gifting items locally.

11.3 Waste arisings during demolition works should be continually monitored to provide a thorough understanding of the types and amounts of waste coming from the Site. This data collection will help with the continual improvement of material and waste management on-Site. Data collection can also be used to help set more demanding waste segregation targets for future demolition and refurbishment projects.

12. Recommendations and Next Steps

12.1 The type and quantities of material present on-Site have been identified, and opportunities to apply the principles of waste hierarchy and Circular Economy applied to different material types, with local reprocessing and recycling facilities identified. Ahead of construction works taking place, the following recommendations and next steps are suggested:

- Lifecycle analysis of new construction materials for the Proposed Development, in conjunction with the reuse/recycling of materials as identified in this Report.
- Embed the recommendations within this Report in the design process at pre-tender stage so the measures in relation to reuse and recycling targets are included in the awarded construction contract.
- Engagement with construction material suppliers to explore opportunities for takeback schemes.
- Where takeback schemes with suppliers are not possible, it is recommended that early engagement with reprocessing and recycling companies take place, to best capture recyclable materials and avoid downcycling.
- It is recommended that the materials identified within this Report are incorporated into a Site Waste Management Plan (SWMP)/Construction Resource Management Plan (CRMP) for effective management of waste. This is considered good practice on all construction projects and is a key step in facilitating diversion from landfill.
- Identify storage areas on-Site as appropriate for the types and quantities of waste anticipated to be produced during construction works. These areas should allow for the successful segregation of waste, as appropriate to avoid contamination of the different waste and material streams.
- All staff should have appropriate levels of training to enable the segregation of waste is achieved. Waste management information should be included within the Site induction for all personnel. It is recommended that a Reporting procedure SWMP/CRMP is put in place to catalogue the materials/waste produced, which is regularly updated. This will allow for the appropriate organisation of the transport for materials/waste on-Site and prevent stock piling.
- Further to this, it is recommended that a Waste Champion is nominated by the principal contractor to facilitate management of the SWMP/CRMP. This role would also aim to allow that the waste hierarchy is always considered, with the emphasis being on reducing, reusing, and recycling before landfill disposal is considered.

12.2 Once the principal contractor is commissioned to undertake the construction works, the following should be considered:

- The principal contractor should engage all contractors in the process of maximising high-grade reuse and recycling opportunities, and

- The principal contactor should refer to the Pre-Demolition and Pre-Refurbishment Audit Report in the SWMP/CRMP.

13. Further Information

13.1 In addition to the resources detailed in Table 18, further information pertaining to the sustainable waste management for construction projects can be found through the following sources:

- Bioregional, Reclaimed Buildings Product Guide: https://www.bioregional.com/resources/reclaimed-building-products-guide

Appendix C

Recycled Content Calculations

REUSED AND RECYCLED CONTENT CALCULATIONS

	Material quantity (kg)	Material intensity (kg/m²)	Recycled content by value
Substructure	79,357,608.74	742.69	5.66%
Superstructure: Frame	12,467,016.25	116.68	2.17%
Superstructure: Upper Floors	72,922,894.84	682.47	7.22%
Superstructure: Roof	6,910,495.34	64.67	2.84%
Superstructure: Stairs and Ramps	2,024,497.73	18.95	0.01%
Superstructure: External Walls	53,846,895.45	503.94	1.74%
Superstructure: Windows and External Doors	2,450,775.53	22.94	1.51%
Superstructure: Internal Walls and Partitions	8,573,496.4	80.24	0.72%
Superstructure: Internal Doors	109,460	1.02	0
Finishes	2,316,053.02	21.68	0
Fittings, furnishes, and equipment	692,265.84	6.49	0
Services (MEP)	1,240,721.72	11.61	0.24%
External works	11,975,161.11	112.07	0.01%
Total	**254,888,041.99**	**2,385.43**	**22.12%**

Appendix D

Project Waste Management Plan

Project Waste Management Plan

v5 - December 2015

Introduction
The Berkeley Group and its subsidiary companies are committed to using a Project Waste Management Plan (PWMP) on each development site, regardless of value or locality. This is deemed good practice following Government's decision to revoke the legislative requirement for Site Waste Management Plans in December 2013. This site-specific PWMP outlines our procedures and commitments to: - Minimise waste production through our technical, procurement and construction decision-making processes - Manage waste efficiently on site, including the segregation of waste streams where possible - Divert waste from landfill, through either re-use or recycling We will take all reasonable steps to ensure that all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1999. All waste leaving the development site will be recorded in a separate 'Waste Data Tool'. The Waste Data Tool records the identity of the waste carrier and their registration number, a written description of the waste, the name of the disposal site and a record of the permit/exemption for the disposal site. Updates to the Waste Data Tool will occur at least monthly to ensure the regular monitoring, measuring and reporting of non-hazardous and hazardous wastes leaving site. The Waste Data Tool forms part of this Project Waste Management Plan and should be reviewed in conjunction with this document.

Project Details	
Name of Project	The Aylesham
Project Address	Peckham, SE15
Project Description	Redevelopment of current Aylesham Centre and Morrisons Supermarket
Project Build Value (*£*)	
Project Start Date (*live on site*)	01/03/2026
Project Waste Management Plan Drafted By (*name*)	DRAFT
Project Waste Management Plan Drafted On (*date*)	09/03/2024

Project Breakdown		
BRE Project Type	Mixed Use	
Building Type	**Internal Floor Area (*square metres*)**	**Predominant Build Type**
Houses		
Apartments	84,851	
Commercial	11,419	
Student Accommodation		
Extra Care Accommodation		
Other	3,460	
Total Internal Floor Area of Structure(s) (*square metres*)	99,730	

Project Team	
Project Manager	
Technical Manager	
Commercial Manager	
Document Controller/Secretary (*if applicable*)	
Person Responsible for Implementing the Project Waste Management Plan (*name*)	

Waste Minimisation and Management	
If there are existing buildings and/or structures to be demolished on the site, has a pre-demolition audit been undertaken?	Existing buildings and/or structures are to be demolished and a pre-demolition audit has been undertaken
Please provide brief details of the outcomes of the pre-demolition audit	1,211 tonnes of material to be re-used on site (20%) (total 6,035). 95% recyled in total (diversion from landfill).
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of non-hazardous wastes on this project	Site wide cut and fill plan has been designed to optimise soil re-use within the site and minimise export of surplus material from site.
Specify three waste groups which will be / have been minimised at the design stage	**Outline waste minimisation actions taken at the design stage for the selected waste group**
Soils (Contaminated)	Extensive site investigation completed to accurately identify 'gross'contaminated areas which allows targeted approach rather than site wide excavation, thus reducing the volume of contaminated material that requires treatment/disposal
Concrete (blocks, rubble, paving slabs, pipes etc)	All buried concrete structures to be removed, curshed on site and eused for piling matt and other uses rather than disposing off-site
Timber	Timber re-use scheme to be in place
Please outline details of the measures taken during the planning, design, procurement and construction stages to minimise and manage the production of hazardous wastes on this project	

Waste Stream Predictions and Management								
Waste Stream	**BRE Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Berkeley Group Waste Stream Benchmarks (*m3*) (*indicative figures only*)**	**Predicted Amount of Waste Generated (*m3*)**	**Facilities Required**	**Projected End Destination**	**Cost of Waste Removal and Recovery / Disposal *(£/m3)***	**Predicted Waste Cost *(£)***	**Notes**
EXAMPLE: *Plasterboard*	*70*	*45*	*50*	*Skip: 7 cubic yard*	*Recycling Facility*	*£36*	*£1,800*	*All plasterboard to be segregated on-site for recycling*
Construction								
Asphalt and Tar	19.946	No Benchmark			Recycling facility			
Bricks	1675.464	No Benchmark			Reuse on-site			
Canteen / Welfare / Office Waste	498.65	No Benchmark			Recycling facility			
Cardboard and Paper Packaging	927.489	No Benchmark			Recycling facility			
Ceramics and Tiles	119.676	No Benchmark			Recycling facility			
Concrete (blocks, rubble, paving slabs, pipes etc)	1685.437	No Benchmark	653		Reuse on-site			
Electrical and Electronic Equipment	169.541	No Benchmark			MRF (Materials Recovery Facility)			
Floor Coverings (carpets, vinyl etc)	139.622	No Benchmark			Recycling facility			
Furniture	29.919	No Benchmark	0		Recycling facility			
Glass	No Benchmark	No Benchmark			Recycling facility			
Hazardous Materials (mastic tubes, spray cans, used spill kit materials etc)	No Benchmark	No Benchmark			Recycling facility			
Insulation	728.029	No Benchmark			Recycling facility			
Liquids (non hazardous only, e.g. canteen oils)	No Benchmark	No Benchmark			Recycling facility			
Metals	708.083	No Benchmark			Recycling facility			
Miscellaneous	No Benchmark	No Benchmark			Recycling facility			
Oils (fuels and oily waters only)	No Benchmark	No Benchmark			Hazardous waste treatment facility			
Other Plaster and Gypsum-Based Material	No Benchmark	No Benchmark			Recycling facility			
Other Plastics (corex etc)	No Benchmark	No Benchmark			Recycling facility			
Paint Tins / Containers	No Benchmark	No Benchmark			Return to supplier via a 'take-back' scheme			
Paper	No Benchmark	No Benchmark			Recycling facility			
Plasterboard	1087.057	No Benchmark			Recycling facility			
Plastic Packaging	927.489	No Benchmark			Recycling facility			
Soils (Contaminated)	No Benchmark	No Benchmark			Hazardous waste treatment facility			
Soils (Uncontaminated)	No Benchmark	No Benchmark			Reuse on-site			
Timber	2862.251	No Benchmark			Recycling facility			
Toilet Wastes (e.g. sewage effluent tank and chemical toilet wastes etc)	No Benchmark	No Benchmark	0		n/a - no waste of this type to be produced			
Demolition								

Excavation								

Predicted total waste volume	653	**Predicted overall reuse/recycling rate (%)**	100.00	**Predicted overall cost *(£)***	£0.00
Predicted waste volume (*excluding demolition and excavation waste*)	653	**Predicted reuse/recycling rate (%) (*excluding demolition and excavation waste*)**	100.00	**Predicted cost *(£) (excluding demolition and excavation waste)***	£0.00

Waste Targets		
Target Name	**Target**	**Explanation**
Berkeley Group Waste Target	**Reuse or recycle over 95% of waste**	The Berkeley Group target is to divert at least 95% of construction, demolition and excavation waste (by volume) from landfill through reuse or recycling.
BRE Waste Benchmark (m3/100m2) for the project type *Based on December 2015 data*	**No BRE Benchmark for Mixed Use Projects**	BRE Waste Benchmarks are derived from completed projects that use the BRE SMARTWaste Plan. The benchmarks are based on completed *new build* construction projects. The benchmarks are based on construction waste only and do not include demolition, excavation or groundworks waste. The BRE Waste Benchmarks are the average m3 of waste produced per 100m2 floor area under construction. The Target Total Project Waste Volume is calculated by multiplying the BRE Waste Benchmark by the Total Internal Floor Area of Structure(s).
	No BRE Benchmark for Mixed Use Projects	
BRE Waste Benchmark (m3/100m2) for the residential elements of the mixed use project *Based on December 2015 data*	**Average Volume of Waste (excluding demolition and excavation waste) per 100m2 of floor area: 18.55 m3**	
	Total Project Waste Volume (excluding demolition and excavation waste): 15739.8605 m3	
BREEAM Target Credits	**Three credits targeted - Amount of Waste Generated per 100m2 of Internal Floor Area: 3.4 m3**	To achieve BREEAM credits under section 'Wst 01', non-hazardous construction waste (excluding demolition and excavation waste) generated by the construction of the building covered by BREEAM should not be greater than the value outlined.