



HODKINSON



**Circular Economy
Statement –
Condition 70**

Peabody Trust, Catalyst by Design
and Hill Residential Limited

St Ann's New Neighborhood

Final

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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

The purpose of this Circular Economy Statement is to demonstrate that the proposed development in St Ann's New Neighbourhood submitted by Peabody Trust, Catalyst by Design and Hill Residential Limited in the London Borough of Haringey has considered the following circular economy principles:

- > Conserve resources and source ethically.
- > Design to eliminate waste (and for ease of maintenance).
- > Manage waste sustainably and at the highest value.

This Circular Economy Statement will address the requirements set out in Condition 70 of the hybrid planning application (HGY/2022/1833) and follows the strategy set out in the hybrid application.

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.

- > 98% non-hazardous demolition waste and 95% of construction waste is to be recycled or reused.
- > Commitment to re-use materials identified in the pre-demolition audit.
- > The concrete frames have been designed to ensure that future layout changes are relatively simple.
- > Both cycle and vehicle parking have been designed to allow for future changes in provision.
- > Municipal waste recycling target of 65% (residential) and 75% (commercial) by 2030.
- > At least 20% of materials will include reused or recycled content by value, where feasible.
- > 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).
- > The development will be designed to meet long-term resident needs, be robust, durable, and resilient to climate change.
- > All residential units will be provided with access to a refuse store, supporting the separate collection of dry recyclables (mixed plastics, metals, glass, card and paper) and food waste.
- > All residential units will be provided with a user guide to promote the principles of circular economy.

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 detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Peabody Trust, Catalyst by Design and Hill Residential Limited.
- 1.2** This Statement sets out the circular economy measures including in the proposed development in the St Ann's New Neighbourhood in the London Borough of Haringey. The measures consider the following principles:
- > Conserve resources and source ethically.
 - > Design to eliminate waste (and for ease of maintenance).
 - > Manage waste sustainably and at the highest value.
- 1.3** The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the Reserved Matters Application that is being submitted to the London Borough of Haringey.
- 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 *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

- 2.1 The development site is located in the London Borough of Haringey, as shown in Figure 1 below.

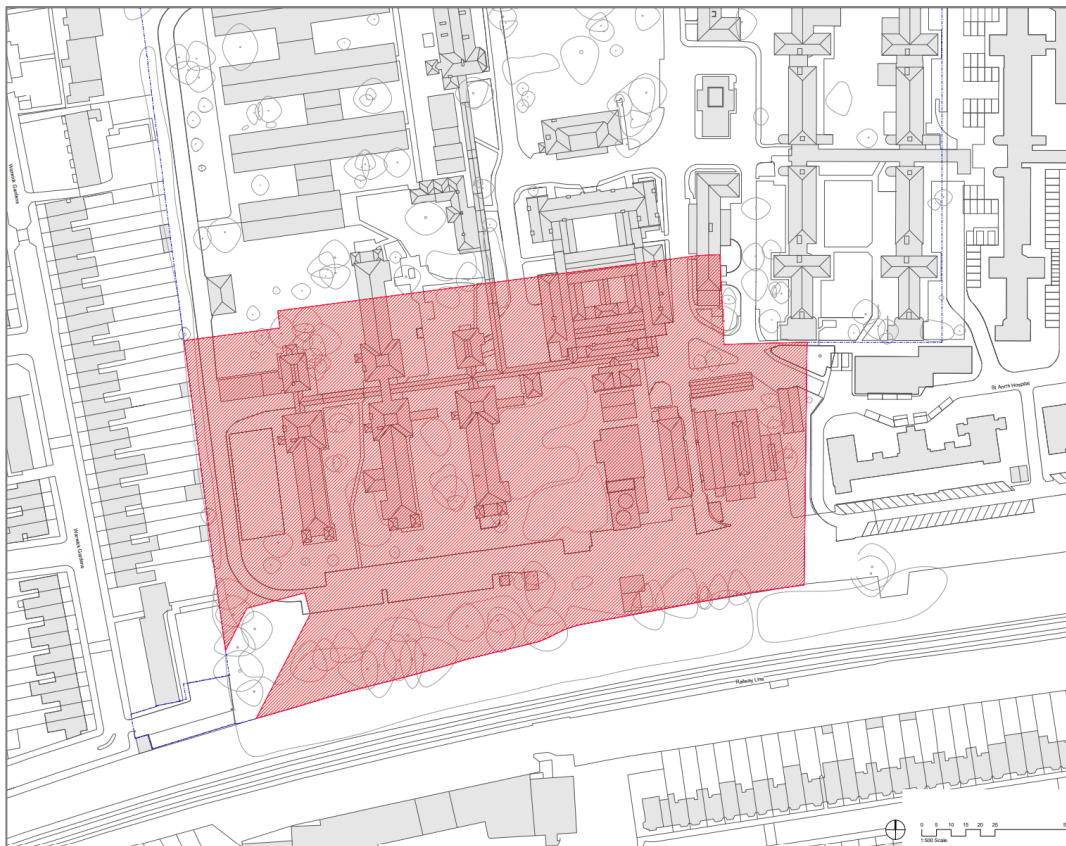


Figure 1: Site Location – Karakusevic Carson Architects (July 2023)

Development Description

- 2.2 RMA 1 seeks detailed approval of the appearance, landscaping, layout and scale of Phases 1b and 2 of the outline components of the hybrid application at St Ann's Hospital, which covers Plots E-J on the illustrative masterplan.
- 2.3 The proposed development is described as follows:

Application for the approval of reserved matters respect of appearance, landscaping, layout and scale relating to Phases 1b and 2 associated with the outline component of planning permission HGY/2022/1833 for "Outline planning permission (with all matters reserved except for access) for

Phases 1B, 2 and 3, for: (a) the erection of new buildings for residential development (Use Class C3) and a flexible range of non-residential uses within Use Class E, F1/F2; (b) provision of associated pedestrian and cycle accesses; (c) landscaping including enhancements to the St Ann's Hospital Wood and Tottenham Railsides Site of Importance for Nature Conservation (SINC); and, (d) car and cycle parking spaces and servicing spaces.”

2.4 Figure 2 below indicates the proposed site plan.



Figure 2: Proposed Site Layout – Lambert Smith Hampton (June 2023)

2.5 The total Gross Internal Floor Area (GIA) for the proposed development is as follows:

- > Residential: 44,109.57m²
- > Non-Residential: 99.28m²

Existing Development

- 2.6** The Site currently comprises over 40 buildings, formerly part of St Ann's hospital. They vary in height from two to three storeys.
- 2.7** The Site has a relatively flat topography with a gentle fall west to east and north to south. It comprises a mix of natural landscaped elements including a Site of Importance for Nature Conservation (SINC) to the south. The SINC comprises standalone mature trees covered by individual tree protection orders (TPOs) and a lawn in the centre known as the Peace Garden.

3. PLANNING CONDITION

- 3.1** The following planning condition, as stated within the Decision Notice (HGY/2022/1833, July 2023), has informed the Circular Economy strategy of Phases 1b and 2.

Condition 70: Circular Economy Statement (Outline)

Each reserved matter (s) application for scale, layout and appearance shall be accompanied by a Circular Economy Statement with an appropriate level of detail and Operational Waste Management Strategy in line with the GLA's Circular Economy Statement Draft Guidance dated September 2020, which shall be submitted to and approved in writing by the Local Planning Authority. The statement shall adhere to the principles set out in the draft Circular Economy Statement. The development shall be carried out in accordance with the details so approved.

4. POLICY AND REGULATIONS

- 4.1** This chapter highlights the policies and regulations which are relevant to the proposed development at St Ann's New Neighbourhood.

Regional Policy: London Plan (2021)

- 4.2** 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: London Borough of Haringey Development Management
DPD**

- 4.3** The London Borough of Haringey Development Management DPD was adopted in July 2017 and sets the vision of how Haringey, and the places within it, should develop by 2026 and sets out the Council's strategy for achieving that vision.
- 4.4** **Policy DM4: Provision and Design of Waste Management Facilities** states all proposals should consider how to sustainably manage waste arising from the development during the design, construction, and occupation phases of new developments. Furthermore, all proposals are required

to make on-site provision for general waste, the separation of recyclable materials and organic material for composting.

- 4.5 Policy DM21: Sustainable Design, Layout and Construction** states all building, and landscape works are to be expected to consider and implement sustainable design, layout and construction techniques. This includes sustainably retrofitting existing homes and non-residential buildings.
- 4.6 Policy DM30: New Waste Facilities** requires development proposals to demonstrate that any impacts caused by the operation of the facility can be controlled such that the facility will not have a significant adverse effect on human health and the environment in line with regulatory requirements – supporting Policy SP6 in Haringey's Strategic Policies Local Plan thus promoting the principles of sustainable development and ensure new waste facilities do not give rise to unacceptable impacts on the local and wider environment, including the amenity of residents.

Local Policy: London Borough of Haringey Strategic Policies

- 4.7** The London Borough of Haringey Strategic Policies, formerly known as the Core Strategies, outlines the vision and key policies for the future development of the borough up to 2026. It takes forward the priorities of Haringey's Sustainable Community Strategy and other plans and strategies, to identify a vision for Haringey as a place to live, work and visit.
- 4.8 Policy SP6: Waste and Recycling** outlines the commitment to the sustainable management of waste through prioritising waste reduction, reuse, and recycling.

BREEAM

- 4.9** The new commercial unit in Phases 1b and 2 will be assessed to achieve a minimum of BREEAM 'Excellent' rating under the New Construction 2018 scheme, thus representing a high level of sustainable design and construction. A full BREEAM Pre-Assessment has been prepared and accompanies the application.
- 4.10** 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.

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

Guidance Documents

4.12 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.

4.13 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.

- 4.14** 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.
- 4.15** As the proposed development is already at RIBA Stage 2, a detailed Circular Economy Statement is required.
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5. CIRCULAR ECONOMY PRINCIPLES

- 5.1** A circular economy is defined in the London Plan Policy *SI7 'Reducing Waste and Supporting the Circular Economy'* as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.
- 5.2** In contrast to a linear economy (take, make, dispose), a circular economy keeps products and materials circulating through the system at their highest value for as long as possible, through re-use, recycling, refurbishment, and remanufacturing.
- 5.3** The end goal 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.
- 5.4** Applying circular economy thinking to the built environment is complex, with many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole systems approach that should be applied on every project. These are as follows:

1. Conserve resources and source ethically

- > Minimise the quantities of materials used.
- > Minimise the quantities of other resources used.
- > Specify and source materials and other resources responsibly and sustainably.

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

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

3. Manage waste sustainably and at the highest value

- > Manage demolition waste.
- > Manage excavation waste.
- > Manage construction waste.
- > Manage municipal waste.

- 5.5** Adoption of these three core principles on developments typically reduce the amount of raw and new materials required. Alongside this, a reduction in vehicle movements, air pollution, noise and greenhouse gas emissions would also be beneficial. There are also benefits from cost savings through the reduction in materials required.

6. APPROACH TO CIRCULAR ECONOMY

Circular Economy Workshop

- 6.1** In July 2023, the design team met for a Circular Economy Workshop. The minutes of this workshop are available within **Appendix A**. Early collaboration between the key stakeholders ensured that Circular Economy Principles can be achieved and embedded in the design.

Strategic Design Making

- 6.2** The GLA Decision Tree has been used to determine the most appropriate design approach for the site. Figure 3 below highlights how the design team have progressed through the decision gates regarding the proposed development.



Targets and Monitoring

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

Circular Economy Targets	Target aiming for (%)
Demolition waste materials (non-hazardous)	98%
Excavation waste materials	95%
Construction waste materials	95%
Municipal waste – residential (by 2030)	65%

Circular Economy Targets	Target aiming for (%)
Municipal waste – business (by 2030)	75%
Recycled content	20%

- 6.6** To monitor the targets, the Client will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded via a Site 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.
- 6.7** More detailed information on the monitoring process is outlined below.

Conserve Resources

Existing Buildings

- 6.8** Prior to the redevelopment, the site was occupied by St Ann’s Hospital. There are 36 buildings to be demolished with 7 further being retained and refurbished (within Phase 1A only).
- 6.9** A pre-demolition audit has been conducted by Reusefully Ltd (April 2022), it was completed to support the Hybrid Planning Application and provides an understanding of the types and amounts of products and materials arising during the demolition.
- 6.10** The audit confirms that there is an estimated 22,471 tonnes of materials arising, equivalent to 13,199m³ from the buildings that are to be demolished. A further 312 tonnes, equivalent to 208m³ from the buildings to be retained.
- 6.11** The audit confirms that it should be possible to achieve a high diversion from landfill on this project, approximately 98%. In addition to the waste diverted from landfill, an estimated 1,155 tonnes of materials are potentially suitable for reuse (at around 5%) and has been considered as such in the Whole Life Carbon Assessment (Hodkinson Consultancy, December 2023). Actual amounts to be re-used on and offsite will be explored post planning.
- 6.12** Several existing buildings of heritage merit are to be retained and sensitively repurposed for reuse for community use, these are all located in Phase 1A and have not been considered in this Circular Economy Statement.

6.13 As the main building will have to be piled, there will be a piling mat installed to allow for the piling installation, this will be reused elsewhere on the site as the sub-grade for the ground bearing slab, as recommended in the Pre-Demolition Report (April 2022).

6.14 The pre-demolition audit has been included in **Appendix B** and should be referred to for more specific information.

Sustainable Procurement

6.15 As the main contractor for the project, the contractor will look to implement their sustainable procurement plan for the proposed development. 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 energy – from manufacture, transportation, and operational stages, through to eventual demolition and disposal.

6.16 The sustainable procurement strategy will aim to do the following:

- > Work closely with supply chain partners to minimise any negative impacts on people and the environment, while also seeking to maximize the socio-economic benefits resulting from procurement decisions.
- > Ensuring all timber and products are sustainably sourced with FSC/PEFC Chain of Custody Certification.
- > Procuring materials compliant with the BES6001 Responsible Sourcing Standard, where possible.
- > Other major construction materials will be certified under an Environmental Management System (EMS) such as ISO 14001.
- > Sourcing environmental product declarations (EPDs) for as many products as possible.

6.17 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) accreditation – which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

Recycled Content of Materials

6.18 The Applicant is committed to target a benchmark of 20% reused or recycled content by value., where feasible. 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, December 2023) and will need to be updated as the project progresses.

6.19 With regards to contributing towards circularity the recycled content within the construction elements will be maximised as much as possible, 20% is the current target. The list below indicates a way this target could be met:

- > Reinforced steel: 97% share of recycled material in the product by mass
- > Gypsum: minimum 30% share of recycled material in the product by mass
- > Aluminium: 35% share of recycled material in the product by mass
- > Insulation: 20% share of recycled material in the product by mass
- > Ready mix concrete: Up to 5% of recycled material in the product by mass
- > Concrete, gravel and aggregates in hard landscaping: 50% share of recycled materials in the product by mass

6.20 The monitoring of the recycled content in materials will be done throughout design by all members of the design team.

Minimised Material Use

6.21 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.

6.22 The design team will regularly review material efficiency strategies to ensure a lean design that reduces material quantities without inhibiting future flexibility.

6.23 Measures to reduce the overall volume of concrete as much as possible across Phases 1B and 2 is an effective way of reducing carbon. The Structural Engineers for the project (Price and Myers) have limited the use of concrete to areas in which its properties are most advantageous and have taken care to ensure that cover levels and member thicknesses are minimised.

6.24 The contractor will make reasonable endeavours to store off cuts from plasterboard on pallets for use in more detailed work near completion. Smaller off cuts will be used for filling in ceiling voids and any plasterboard in temporary partitions will be re-used as inner skin of permanent walls, whenever practicable.

6.25 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 site welfare will then be supplemented with additional temporary modular welfare cabins to ensure that welfare requirements for the predicted number of operatives is met. These welfare modules 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.

- 6.26** 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 CO₂ emissions of 79% 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 minimum 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).
 - > Built on land that is already developed which prevents the development of virgin land.
- 6.27** For waste reduction, minimisation of excavation, simplification and standardisation of materials and components of choice, and dimensional coordination have been considered.

Cut and Fill

- 6.28** Material balance calculations have been undertaken by Soilfix. The calculations include material to be generated from demolition (and processed into recycled aggregates) and soils to be cut and filled across the Site.
- 6.29** Soilfix estimate approximately 60,000m³ of material could be generated during demolition and excavation works – namely soil and topsoil, capping hardcore, sub-base, tarmac, and drainage aggregate. 77% of this material (approximately 46,000m³) could be reused on-site.
- 6.30** The cut and fill sequence will be reviewed in detail to maximise the re-use of material on site via treatment and distribution.

Eliminating Waste

Designing for Longevity

- 6.31** 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.
- 6.32** Appropriate durability measures will be incorporated in vulnerable parts of the internal building to minimise the frequency of replacing materials and therefore optimising material use. Examples of such measures include:

- > Reinforced concrete frame.
 - > Hard wearing floor finishes.
 - > Kick plates on communal doors.
 - > Bollards and kerbs in servicing/vehicle areas.
- 6.33** Roofs and facades have been designed to prevent water damage, ingress and detrimental ponding. Convenient access has also been considered and integrated within design to make cleaning, replacement and repair possible.
- 6.34** Energy saving sustainable initiatives are recommended to be included in the design such as highly insulated external fabric and walls and low energy lighting throughout. This extends the lifespan of the materials and reduces requirements to replacement materials at later stages of the design life.
- 6.35** Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.
- 6.36** 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 can also be reused and recycled at the end of its life. These materials provide a highly durable superstructure.
- 6.37** 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.

Designing for Assembly, Disassembly and Recoverability

- 6.38** 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.
- 6.39** Where possible, materials will have the option to be taken apart through mechanical and reversible 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.
- 6.40** Whilst the reinforced concrete frame is not readily disassembled, the masonry façade can be dismantled and renewed without requiring structural modifications.

- 6.41** The terraces contain loadbearing masonry and although difficult, they could be dismantled with care. The floors and roofs in these terraces are standard softwood joists which can also be dismantled and re-used with ease at the end of their life.
- 6.42** An indicative Stage 2 design strategy for maintenance and replacement, reflecting very early design information, has been outlined below:
- > **Rooftop plant:** Smaller modules of rooftop plant will be replaced using the lifts and craned to roof level using the fixed building maintenance hoist. Units to be lifted into place in parts and assembled on site. Rooftop plant parts that are too large for this method will be replaced using a crane from the street.
 - > **Roof access:** Stairs will directly access roof level and any associated plant space. Option of internal access hatch and drop down ladder but would require resident permission / notification.
 - > **Glass replacement:** Replacement is expected from inside the building. Window system to have internal glazing bead and be transported via residential lifts on a trolley. Glazed units can be manoeuvred into the window frame using a lightweight hoist if required.
 - > **Window cleaning:** Inward opening casement windows, cleaning by residents. Outward opening balcony doors and glazing cleaning by residents.
 - > **Façade maintenance:** Proposed as mobile elevated work platform from the street, scaffold strategy to the rear gardens (for houses).

Designing for Adaptability or Flexibility

- 6.43** 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.
- 6.44** The concrete frames designed by Structural Engineers (Price and Myers) have flat slabs and minimal internal columns and no loadbearing partitions. These two features mean that future layout changes are relatively simple.
- 6.45** Both cycle and vehicle parking have been designed to allow for future changes in provision, with sufficient space provided to allow for these to be increased in future if required.
- 6.46** All glazing will be able to be replaced from inside the building, aiding the replacement and maintenance cycles. The proposed window system will have an internal glazing bead and could be transported via residential lifts on a trolley. Glazed units will be manoeuvred into the window frame using a lightweight hoist if required.

- 6.47** The mechanical equipment has been designed with maintenance and replacement in mind. The smaller modules of rooftop plant will be replaced using the lifts and craned to roof level using the fixed building maintenance hoist. Units will be lifted in to place in parts and assembled on site. Rooftop plant parts that are too large for this method will be replaced using a crane from the street.
- 6.48** The proposed development has also incorporated the following adaptability measures:
- > Reconfigurable furniture in private dwellings that can be repurposed to allow for easy reconfiguration of rooms for other purposes.
 - > It will be possible to remove and replace all major items of plant within the building without needed to demolish sections of wall or floor. Lifting beams and hoists will be incorporated into the design where necessary.
 - > The partitions 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.
 - > 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).
 - > The site features a large range of dwelling types, with various internal layouts, bedroom numbers, and tenure types, including the provision of affordable housing. As per the policy in providing more housing within the Borough, St Ann's New Neighbourhood development ensures that the community needs are met, and the range of housing provided allows for future flexibility.

Lean Design

- 6.49** Throughout the design stages, considerations have continually been made with regard to improving the design while considering circular economy principles.
- 6.50** Throughout the design process, the masterplan has been refined to respond to key stakeholder feedback received as well as in response to heritage and trees. Building footprints and heights were adjusted to retain as many Category A trees as possible whilst maintaining a suitable and balanced mix and tenure provision per phase.
- 6.51** Building massing has been re-distributed to create a series of new open spaces and courtyards around trees, loosening up the masterplan grid and giving greater emphasis to movement and routes through the Site.

Standardisation

- 6.52** 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.
- 6.53** The development will aim to use standardised design formats to enable future reuse, e.g., no bespoke cutting of materials as this can make replacements difficult to obtain.
- 6.54** The plasterboard contractor (once appointed) is to be set a target of 5% waste within their contract conditions, based on final fixed quantities of plasterboard. It will be a requirement that plasterboard sheet sizes will be matched to storey height, loading out to correct quantities.

Bill of Materials

- 6.55** A Bill of Materials has been provided using the inputs from the Whole Life Cycle Carbon Assessment (Hodkinson, December 2023). This is provided within the appended Circular Economy Statement. In accordance with the GLA guidance, the Bill of Materials includes kg/m² for the proposed new development and commits to target a benchmark of 20% (by value) for reused or recycled content.

Managing Waste

Site Waste Management

- 6.56** As part of the Hybrid Planning application a Site Waste Management Plan was produced by Waterman (May 2022). The plan 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. This SWMP has been provided in **Appendix C** and should be referred to for more detail.
- 6.57** The plan sets the following targets:
- > Construction waste target of <6.5 tonnes per 100m² GIA.
 - > Diversion of 98% non-hazardous waste from landfill.
- 6.58** 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. Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination landfill(s) has/have the capacity to receive waste.

- 6.59** Waste facility sites in the London Borough of Haringey 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.
- 6.60** 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. 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.
- 6.61** As part of their commitment to divert construction waste from landfill, the Client or contractor will be required to regularly monitor and record the site's waste reduction performance. This will be compared against a target benchmark where at least 98% (by volume) of non-hazardous construction and demolition waste is to be reused or recycled. A benchmark of 95% for potential excavation waste put to beneficial use will also be set. This will be checked monthly, as noted in the SWMP in **Appendix C**.

Construction Waste Monitoring

- 6.62** The Client and contractor are committed to reducing construction waste from landfill and they will be required to regularly monitor and record the site's waste reduction performance. A weekly 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 week's activity during report compilation.
- 6.63** The Proposed Development has a BREEAM 'Excellent' target, with an aim to achieve one Waste 01 credits. Through targeting Waste 01 credits the scheme will aspire to a high level of construction waste efficiency (<6.5 tonnes/m² GIFA).
- > 6.5 tonnes per 100m² = 2,874 tonnes.
- 6.64** Workshops at RIBA Stage 3 and 4 will track the development of potential waste opportunities and identify additional measures to ensure these targets are met.

Operational Waste

- 6.65** 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.
- 6.66** 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 4, 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).

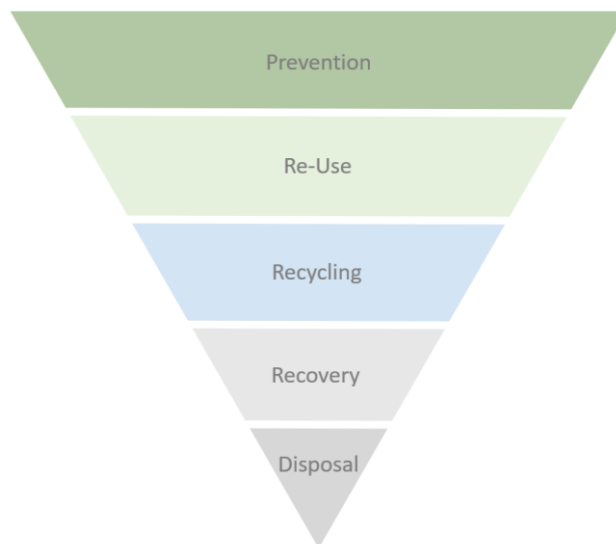


Figure 4: Waste Hierarchy

Waste Arising & Storage

- 6.67** An Operational Waste Management Strategy was produced as part of the Hybrid Planning Application by Waterman (May 2022). It outlines how both residential and commercial waste should be stored and collected in line with London Borough of Haringey's requirements. This strategy has been provided in **Appendix D** and should be referred to for more information. An update to the refuse storage requirements outlined in Appendix D has been provided in **Appendix E** and should be referred to for the latest refuse provision.
- 6.68** The refuse store will be clearly labelled to ensure accurate segregation of refuse, mixed recycling, and food waste. Waste management facilities for the proposed development have been designed in accordance with London Borough of Haringey's (LBH) 'Sustainable Design & Construction Supplementary Planning Document' (Adopted March 2013).
- 6.69** The scheme has been designed to enable as many building frontages as possible to be directly accessible to refuse vehicles. Refuse stores are accessed externally from streets and are within the 30m travel distance. The majority of refuse stores are located fronting onto the main routes around the Site and are within 10m of the street.

- 6.70** All waste will be separated into at least three distinct streams – residual, mixed dry recycling (MDR), and food. Sufficient containment capacity will be provided in all residential waste storage areas (communal and private) to allow for separate storage of these three waste streams.
- 6.71** Residents will further be encouraged to separate their wastes at source. This should help to maximise opportunities for recovery and recycling.
- 6.72** Waste generation benchmarks have been used to estimate the number of bins required (**Appendix E**). These are derived from BS 5906:2005 which estimates 30 litres per dwelling plus 70 litres per bedroom. These are considered to provide a reasonable estimate for the calculation of storage requirements, given the scale of the development and the extensive provision of facilities management support.
- > Total waste generated per week = 72,300 (9.03 tonnes)
 - > Total waste generated per annum = 3,755,960 (469.50 tonnes)
- 6.73** A space provision in line with the BREEAM guide is recommended for the commercial unit. This is equivalent to:
- > 2m² per 1,000m² net internal area (NIA) for mixed dry recycling;
 - > 2m² per 1,000m² NIA for catering waste (food, glass, etc.); and
 - > 2m² per 1,000m² NIA for residual waste.
- 6.74** Using the above, a space of at least 6m² will be allocated to the commercial unit. This space will be incorporated into the curtilage of the non-residential buildings during detailed design. It will be sized to accommodate the appropriate number, size, and type of bins required.

Operational Waste Monitoring

- 6.75** 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.
- 6.76** A project-specific Operational Waste Management Strategy has been prepared in accordance with relevant requirements, in order to embed and enable sustainable waste management in operation, please refer to **Appendix D** for more information.
- 6.77** 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.

- 6.78** 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 Haringey 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 aims to collect leftover paint and redistribute it to benefit individuals, families, charities and communities in need at an affordable cost;
 - > **Council Reuse and Recycling Centre** - Reuse and recycling centres allow residents to dispose of a wide range of reusable and recyclable items for free on Western Road, London.
 - > **The Felix Project** – Receives fresh, nutritious food that cannot be sold and deliver this surplus food to charities and schools.
 - > **LoveJunk** – database of licenced, trusted waste collectors.
 - > **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

- 6.79** 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 site waste management plan, which will contain improved estimates for figures shown in Table 2.

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

		Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m² GIA)		TBC	0.508	0.065	0.011
% Reused on or off site		>95%	>95%	>95%	>65%
% Recycled or composted, on or off site					
	% to landfill	0	Max 5%	Max 5%	

		Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
% not reused or recycled	% to other management (e.g. incineration)	0	Max 5%	Max 5%	Max 35% and no recyclable or compostable waste

Plans for Implementation

- 6.80** Throughout planning and early design stages, circular economy principles have been incorporated into the decision-making process, as outlined within this report.
- 6.81** Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):
- > Sub-contractors (when appointed).
 - > Project Architect (Karakusevic Carson Architects)
 - > Structural Engineers (Price and Myers)
 - > Construction and Operational Waste (Watermans)
 - > Client (Peabody Trust, Catalyst by Design and Hill Residential Limited)
- 6.82** A brief plan of implementation (short, medium, and long term) and action list has been compiled. Key actions of which included:
- > The pre-demolition audit has identified some waste that would be suitable for re-use, actual amounts to be re-used on and offsite will be explored post planning.
 - > Ensure the operational waste strategy is sufficient with both local authority and end user requirements.
 - > Review and confirm the decision to use GGBS and reinforced concrete frames with 97% recycled steel as sustainable materials.
 - > Set targets/KPIs for construction site energy use, water consumption and transport of materials and waste. Assign responsibility to an individual for monitoring, recording and reporting energy use, water consumption and transportation data resulting from all on-site construction processes throughout the build-programme.

- > Further consider how flexibility and adaptability can be considered in the design process. The commercial unit has proposed a shell only specification and lightweight partition to facilitate the change in layout and flexible building services.
 - > Continue to compile an access and maintenance strategy to ensure that all building elements are designed with maintenance and longevity in mind.
- 6.83** 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.
- 6.84** Waste is a key performance indicator 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.
- 6.85** 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.
- 6.86** The contractor 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.
- 6.87** It is proposed the following actions are taken to implement and monitor the actions included in this Circular Economy Statement:
- > Ensure a phase specific SWMP is created and populated ahead of start on site with the targets and actual waste data.
 - > Provide an updated bill of materials.
 - > Update recycling and waste forms.
 - > Complete cut and fill calculations and Excavated Materials Options Assessment and put in procedures in place for ensuring 95% of excavation waste is put to beneficial use.
 - > Undertake scenario modelling and lean design options appraisal.
 - > Undertake a lesson learned workshop at the end of the project.

End of Life Strategy

- 6.88** The client and main contractor are committed to a planning condition that will require a revised Circular Economy Statement Report at RIBA Stage 4 / Pre-construction to capture the detailed information not available at this stage of design. An end-of-life strategy will be produced prior to construction to describe how building materials, components and products can be disassembled and re-used at the end of their useful life. This will include how the information will be communicated to future building users.
- 6.89** 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.
- 6.90** 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.
- 6.91** Where individual elements have shorter design life periods, the development seeks to design for the repurpose and independent replacement of these individual elements.
- 6.92** Exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.
- 6.93** 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
- 6.94** 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.
- 6.95** 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.
- 6.96** 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, December 2023).

7. CONCLUSION

- 7.1** This detailed Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Peabody and Hill. It has been produced for the proposed development at St Ann's New Neighbourhood located in the London Borough of Haringey.
- 7.2** 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. The following measures have been considered:
- > Conserve resources and source ethically.
 - > Design to eliminate waste (and for ease of maintenance).
 - > Manage waste sustainably and at the highest value.
- 7.3** The above has been undertaken throughout RIBA stages 2/3 and this statement will be included within the Reserved Matters Application. It has addressed the requirements set out in Condition 70 of the hybrid planning application (HGV/2022/1833).
- 7.4** This report should be read in conjunction with the GLA Circular Economy Spreadsheet which will be submitted alongside this report.
- 7.5** 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.
- 7.6** 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

Circular Economy Workshop

Appendix B

Pre-Demolition Audit

Appendix C

Site Waste Management Plan

Appendix D

Operational Waste Strategy

Appendix E

Updated Refuse Calculations

Appendix A

Circular Economy Workshop

ST ANN'S – CLIMATE CHANGE, LCA AND CIRCULAR ECONOMY WORKSHOP

Date: 06.07.2023

Time: 14:30

Location: Remote (teams)

Attendees: Frazer Collett (Hill)

David Wakeford (Peabody)

Kishan Ladva (AWA Consultants)

Rebecca Durrant (Hodkinson Consultancy)

Zeta Stebbings (Hodkinson Consultancy)

Input provided by Karakusevic Carson Architects ahead of the workshop

Item	Summary	Action
1	Climate Change Adaption	
	Being undertaken to satisfy condition 78 of the hybrid planning application.	Note
	In lieu of formal guidance, the BREEAM methodology has been used. This allows us to claim the BREEAM Wst 05 credits too	Note
	Some plant rooms could be at risk of flooding as these are below ground level. Hodkinson and AWA to check this to ensure the BREEAM credits are not compromised.	AWA
	Water meters in place but leak detection has not been considered. FC to ask Hill if they are willing to implement this, could only be a consideration for the commercial unit.	Hill
2	Circular Economy Detailed Circular Economy Statement to be prepared. Hill to provide estimates of the following waste amounts (t/m ³): - Excavation waste - Demolition waste - Construction waste	Hill

	Municipal waste	
	Pre-fabrication elements includes: - Buffer vessels, ASHP are all made externally and delivered to site. - Balconies, columns and other pre-cast elements.	AWA Consultants Karakusevic Carson Architects
	The frame of the buildings will consist of reinforced concrete – a durable material that can be recycled at the end of its life. The external façade will comprise of brickwork which can be reused and recycled at the end of its life.	Price and Myers
	Access and maintenance report to be provided by Karakusevic Carson Architects to feed into the Circular Economy Statement.	Karakusevic Carson Architects
	The concrete frame has flat slabs and minimal internal columns and no loadbearing partitions. These two features mean that future layout changes are relatively simple.	Price and Myers
	Both cycle and vehicle parking have been designed to allow for future changes in provision, with sufficient space provided to allow for these to be increased in future if required.	Transport Consultant
3	Whole life carbon Hybrid application LCA was high level, this reserved matters LCA will contain significantly more detail.	Note
	Landscaping overview including quantities to be provided by Adam Sutherland to ensure it feeds into the LCA.	Adam Sutherland
	Post meeting note: AWA advised that propane is the proposed refrigerant for the ASHP. Approximately 112kg.	AWA Consultants
	Finishes schedule to be issued.	Hill
	Post meeting note: Standard specification will be for CEM III/A cement or CIIIA combination to be used, which is 36-65% GGBS.	Price and Myers

Appendix B

Pre-Demolition Audit



Report From:

**Katherine Adams
Circular Economy and Waste Specialist
Reusefully Ltd**

Report Prepared For:

Catalyst and Hill

**Pre-demolition and pre-refurbishment audit
of St Ann's Hospital**

24th November 2021 (revised 29th April 2022)

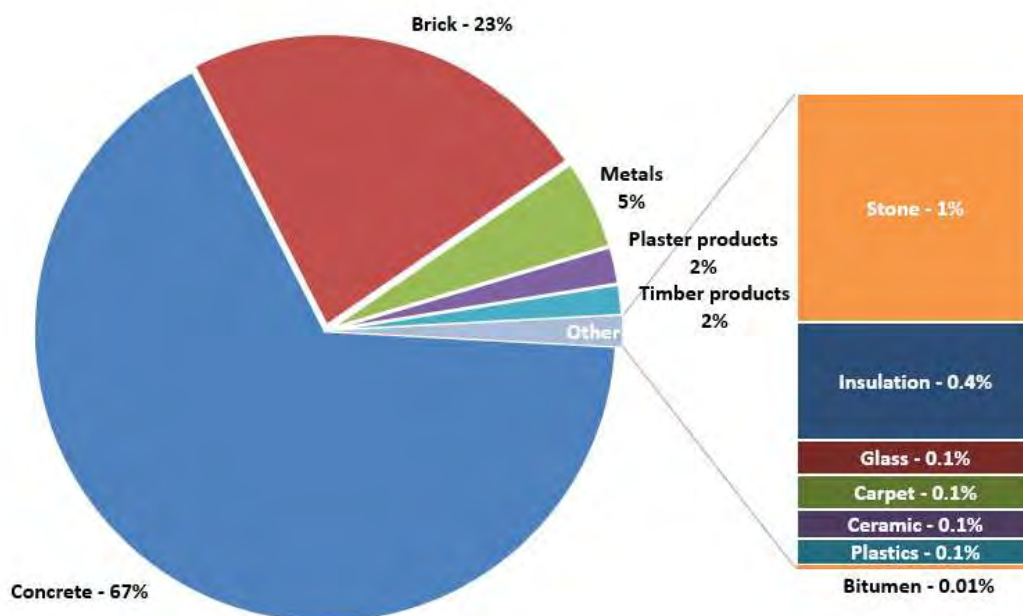
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Executive Summary

The pre-demolition and refurbishment audit was undertaken between August 2021 and October 2021, by Katherine Adams and Toby Balson of Reusefully Ltd.

A visual survey of the buildings (where accessible), combined with analysis of the plans provided, was used to calculate the Key Demolition and Refurbishment Products. Ranked by percentage total weight, these are:



The table below provides weight, volume and European Waste Codes (EWC) for each material:

	Weight (tonnes)	Volume (m³)	EWC
Concrete	15183.27	7622.05	17 01 01
Brick	5228.66	3075.68	17 01 01
Metal	1133.43	150.28	17 04 05
Plaster products	467.26	576.92	17 08 02
Timber products	385.16	747.19	17 02 01
Stone	185.08	69.46	01 04 13
Insulation	94.81	1080.85	17 06 04
Glass	28.61	11.63	17 02 02
Carpet	28.12	34.02	20 01 11
Ceramic	23.38	9.74	17 01 03
Plastics	21.33	23.99	17 02 03
Bitumen	3.04	4.95	17 03 02
WEEE*	-	-	16 02 14
Grand Total	22,782	13,407	

*Not quantified

It is recommended that an overall recycling target is set prior to the demolition phase commencing based on the recommendations of this report. An estimate on the total percentage of waste materials that can be recycled, and thus diverted from landfill on this project is 98% (by weight) but

it should be possible to reach a figure of nearly 100% diversion from landfill, if the inert waste (concrete and brick) is all recycled. An estimated 1,155 tonnes of materials are potentially suitable for reuse (at around 5%). This does not include the reuse of inert waste as fill onsite.

From the buildings that are to be demolished, there is an estimated 22,471 tonnes of materials arising, equivalent to 13199m³. From the buildings that are being refurbished, the total tonnage of materials estimated to be produced is 312 tonnes, equivalent to 208m³.

1. The Requirement

Catalyst and Hill have engaged Reusefully Ltd to carry out a pre-demolition audit and pre-refurbishment audit of the buildings at St Ann's Hospital which is located in Tottenham, London. ,

The aim of the audit is:

- To provide an understanding of the types and amounts of products and materials arising during the demolition.
- To optimise the management of products and materials from the demolition and provide recommendations to the design team and demolition contractor in line with the waste hierarchy i.e. maximise reuse and recycling and minimise waste to landfill
- To provide technical advice on the reuse of products and recycling of material on site
- To facilitate better links and communication within the supply chain and provide details of local charities, organisations and companies who may be able to deal with the products and materials arising
- To provide data to help with populating the Resource Management Plan and in support of the BREEAM assessment and the Greater London Authority Circular Economy Statement
- To advise on targets for reuse and recycling for products and materials arising during the demolition

2. Site details

The buildings are located on the hospital site of St Ann's in Tottenham, London. There are 36 buildings which are to be demolished as shown by the map below displaying the location and extent of the demolition works. There are further 7 buildings which are being retained and refurbished.



3. The Pre-Demolition and Refurbishment Audit

The pre-demolition and refurbishment audit was undertaken through a number of site visits: 20th August, 10th September and the 14th of October consisting of a non-invasive visual survey of the buildings. There were a number of buildings that were inaccessible either due to be unsafe or being occupied, hence construction details and materials have been inferred based on typical practice. Survey notes and photographs were taken, and plans of the building showing floor area and internal layout were provided following the visits.

On the basis of information gathered and provided, a full analysis of materials arising from the demolition and refurbishment has been undertaken, with results reported in both weight and volume. The weight has been calculated using standard density figures for the materials identified.

For Waste Electrical and Electronic Equipment (WEEE) weight/volume figures are not included, however WEEE items observed on site have been logged and relevant reuse options are suggested within the report. A reinforced concrete floor slab has been assumed for the most of the buildings.

The buildings that are being demolished as referenced in Appendix A of this report can be grouped as follows:

Victorian

- 25 - X Ray Store & East Generator

- 33 - Fitters Workshop
- 34 - Old Boiler
- 35 - Works Offices, Queen Street
- 42 - Elm House
- 43 - Porters Store
- 44 - Block A
- 45 - Block B
- 46 - Block C
- 47 - Block E
- 48 - Block D
- 49 - Block F
- 50 – Pharmacy

Post War

- 09 - Block L
- 10 - Block M
- 13 - Block P
- 14 - Block Q
- 26 - Kate Marsden
- 27 - Woodlands TPC
- 28 - Wheelchair Clinic
- 30 - Old GUM Clinic
- 31 - Admin Block
- 32 - Restaurant

1980s/1990s building

- 24 - Mulberry Studio
- 41 - Westside Generator
- 53 - Greentrees Unit
- 57 - Greentrees Boiler
- 58 - Oak House

Prefabricated

- 21 - Bungalow 2
- 22 - Bungalow 1
- 29 - KM Portacabin
- 59 - Bungalow 5

Sheds/units

- 36 - New Boiler
- 38 - Main Stores
- 40 - Laundry Store
- 72 - Tennis Court Boiler

The buildings that are being refurbished are all Victorian. These are:

- 23 - Mulberry House
- 31 - Admin Block (part retain)
- 51 - Water Tower
- 52 - Block 6
- 60 - Mayfield House
- 61 - West Gate Lodge
- 62 - East Gate Lodge

Appendix A, shows a site plan with the numbers of each building on.

4. Potential for refurbishment

Seven of the buildings in site are to be refurbished for use by Catalyst and will be rented out. The remaining buildings which are to be demolished are in various states of repair; many are reaching the end of their technical service life. Catalyst and Hill are developing the site, which is due to start in 2023, of which 60% of the houses will be affordable.

5. Overall Results (Pre-demolition and Refurbishment Audit)

Overall, there is an estimated 22,782 tonnes (13,407m³) arising from the demolition. Concrete is the largest material (15,183 tonnes) followed by Brick (5,229 tonnes), Metal (1,133 tonnes) Plaster products including plasterboard (467 tonnes), Timber products (385 tonnes) and Stone (185 tonnes) as shown in Figure 1 and Table 1. There are also smaller quantities of insulation, glass, carpet, ceramics, plastics and bitumen. In volume, the largest material is Concrete (7623m³), followed by Brick (3076 m³), Insulation (1081 m³), Timber products (747m³), Plaster products (577 m³), and Metal (150m³), as shown by Figure 2. Each of these materials has its own section later in the report detailing their arising and management options. Appendix B and C have the results for each building (demolition and refurbishment) as well as relevant photographs.

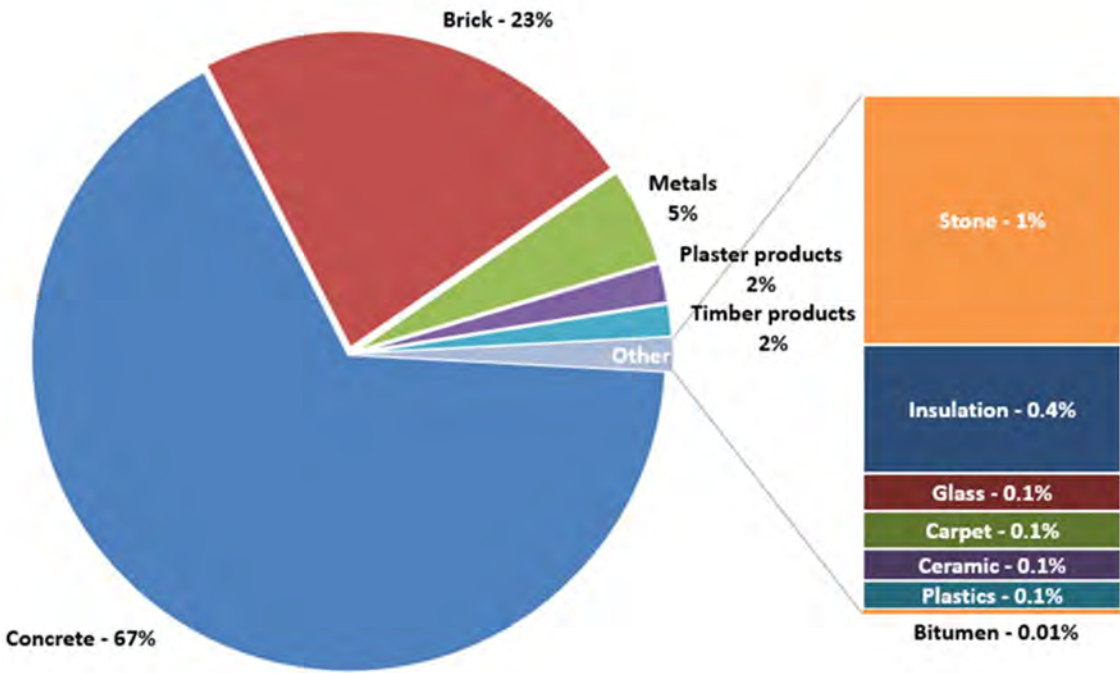


Figure 1: Results – Materials arising by weight (tonnes)

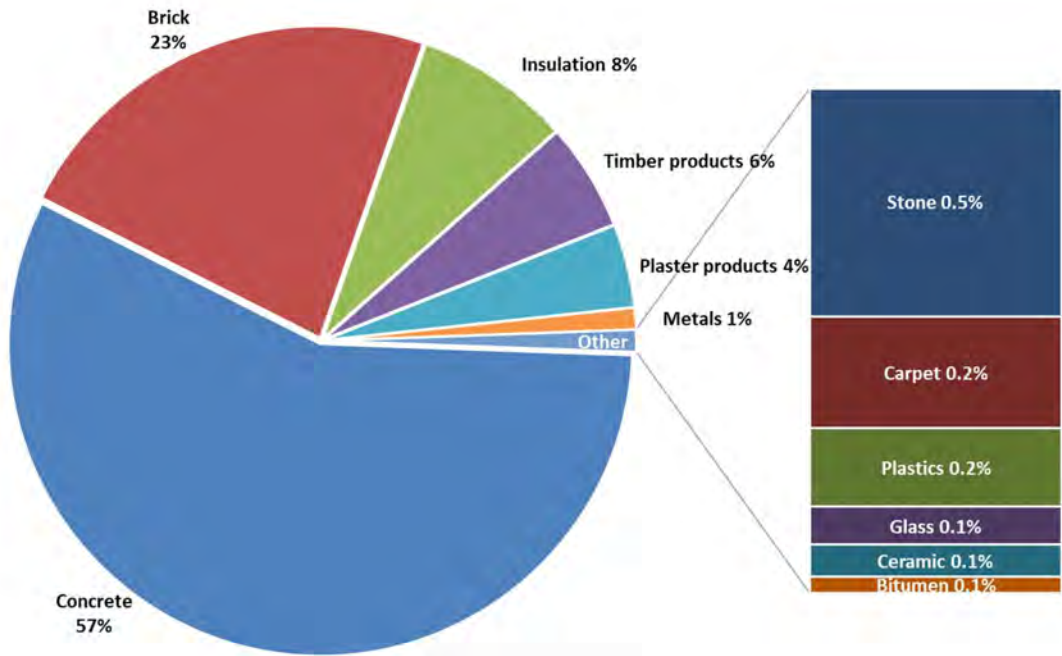


Figure 2: Materials arising by volume (m³)

Table 1 provides the weight (tonnes), volume (m³) and European Waste Codes for each material.

	Weight (tonnes)	Volume (m³)	EWC
Concrete	15183.27	7622.05	17 01 01
Brick	5228.66	3075.68	17 01 01
Metal	1133.43	150.28	17 04 05
Plaster products	467.26	576.92	17 08 02
Timber products	385.16	747.19	17 02 01
Stone	185.08	69.46	01 04 13
Insulation	94.81	1080.85	17 06 04
Glass	28.61	11.63	17 02 02
Carpet	28.12	34.02	20 01 11
Ceramic	23.38	9.74	17 01 03
Plastics	21.33	23.99	17 02 03
Bitumen	3.04	4.95	17 03 02
WEEE*	-	-	16 02 14
Grand Total	22,887	13,407	

*Not quantified

Table 1: Results - KDP's by tonnage and volume (m³)

6. Pre-Demolition Audit Results

Overall, there is an estimated 22,471 tonnes (13,199m³) arising from the demolition of the 30 buildings. Concrete is the largest Key Demolition Product (KDP) (15,110 tonnes) followed by Brick (5,033 tonnes), Metal (1,128 tonnes) Plaster products including plasterboard (446 tonnes), Timber products (372 tonnes) and Stone (185 tonnes) as shown in Figure 3 and Table 2. There are also smaller quantities of insulation, glass, ceramics, plastics and bitumen. In volume, the largest material is Concrete (7591m³), followed by Brick (2961 m³), Insulation (1081m³), Timber products (723m³), Plaster products (551 m³), and Metal (150m³), as shown by Figure 4. Each of these materials has its own section later in the report detailing their arising and management options.).

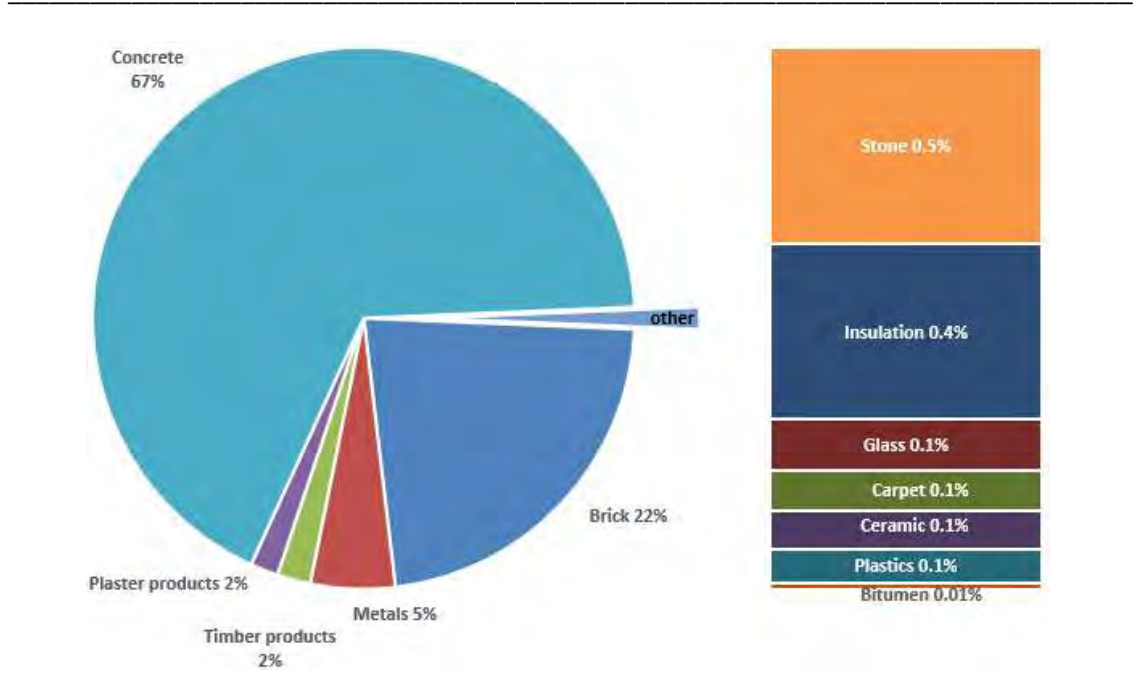


Figure 3: Results - KDP's by tonnage (demolition only)

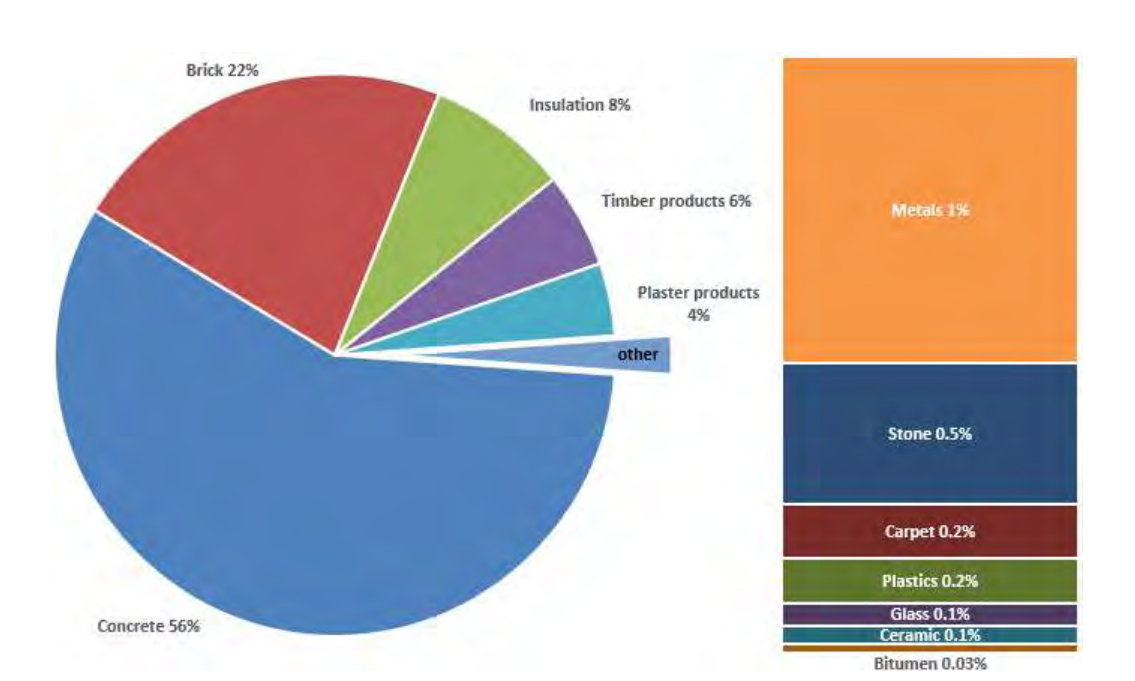


Figure 4: Results - KDP's by tonnage (demolition only)

Table 2 provides the weight (tonnes), volume (m³) and European Waste Codes for each KDP.

	Weight (tonnes)	Volume (m ³)	EWC
Concrete	15119.1	7590.9	17 01 01
Brick	5033.0	2960.6	17 01 01
Metal	1128.2	149.6	17 04 05
Plaster products	446.2	550.6	17 08 02
Timber products	372.4	723.6	17 02 01
Stone	185.1		01 04 13
Insulation	94.8	1080.8	17 06 04
Glass	27.5	11.2	17 02 02
Carpet	22.1	26.5	20 01 11
Ceramic	20.3	8.5	17 01 03
Plastics	19.0	22.0	17 02 03
Bitumen	2.9	4.8	17 03 02
WEEE*	-	-	16 02 14
Grand Total	22470.6	13198.5	

*Not quantified

Table 2: Results - KDP's by tonnage and volume (m³) (demolition only)

7. Concrete

Concrete is the largest KDP identified, estimated to be approximately 15,158 tonnes as shown by Table 3. This is from a number of sources, the largest being the floor slabs which is assumed to be in many of the buildings – mostly the ground floor slab at 10,014 tonnes. This should be higher quality concrete than other types (e.g. concrete block and clinker) and maybe more suitable for reprocessing into a higher grade material. Clinker concrete (at 2,117 tonnes) is assumed to be used within the floor constructions of the Victorian properties as an infill to the wrought iron joists – this is likely to be of lower quality. Block walls are found in a variety of locations and accounts for approximately 740 tonnes. There is also a considerable amount of screed on the floor slabs (575 tonnes) and cement mortar used within the brick and block structures. Any cement-based mortar is likely to be difficult to remove from the blocks/bricks. Other sources of concrete are the pre-fab walls (some of which are precast panels), concrete roof tiles and grout (cement).

Most of the concrete is likely to be unsuitable for reuse, though the precast concrete panels may be suitable depending on their fixing (however, for the purposes of this report they are not counted as reusable).

It is recommended that the concrete should be segregated either onsite (there should be enough space on this site) or at a waste facility and crushed to produce recycled concrete aggregate (RCA)¹ in accordance with the WRAP Quality Protocol for aggregates² from inert waste. It can also be used for lower value applications such as for piling mats and temporary/permanent fill (infilling). If

¹ Recycled concrete aggregate is aggregate resulting from the processing of inorganic material previously used in construction and principally comprising crushed concrete [BS 8500-1: 2002].

² <https://www.gov.uk/government/publications/quality-protocol-production-of-aggregates-from-inert-waste>

reprocessed, stored and/or used onsite then appropriate permits³ or exemptions will be required for these operations.

Various options are available to utilise RCA as listed below.

Recycled concrete aggregates can be used in:

1. Bitumen bound materials – Recycled concrete aggregate can be used may be used in a variety of base course and binder course mixtures.
2. Concrete – Recycled concrete aggregate is permitted for use in certain grades of concrete. It is generally acknowledged that RCA can potentially be used to replace 20% of the coarse aggregate in concrete up to Grade 50.
3. Pipe bedding – suitably graded recycled concrete aggregate is used in pipe bedding.
4. Hydraulically bound mixtures (HBM) for subbase and base – recycled concrete aggregate can be suitable for use in HBMs. These can be used in the construction of car parks, estate/minor roads and hard standing.
5. Unbound mixtures for subbase – suitably graded recycled concrete aggregate is used as subbase.
6. Capping – Recycled concrete aggregate is suitable for capping applications.

There is an opportunity to reuse the concrete paving stones used in the hardstanding (at least 50%) which appear to be of good quality.

Item	Tonnes	Volume
Concrete floor slab	10014	4172
Clinker concrete	2117	1496
Block wall - single	741	530
Screed	575	575
Concrete roof tiles	529	221
Brick wall - double 9" (mortar)	422	222
Brick wall - 13" (mortar)	311	164
Brick wall - single 4" (mortar)	304	160
Block wall - single (mortar)	71	37
Pre-fab wall	63	26
Cobbles - mortar	6	3
Grout	5	3
Total	15158	7609

Table 3: Estimated concrete arisings

Local waste management companies

Local waste management companies that could manage the concrete waste include:

- Powerday, <https://www.powerday.co.uk/> T: 020 3858 0504

³ <https://www.gov.uk/guidance/waste-environmental-permits>

- Norris Skips, <https://norriskips.co.uk/skip-hire/> T: 020 8698 8000
- RTS Waste, www.rtswaste.co.uk T: 020 7232 1711
- Days Group, <http://www.daygroup.co.uk/> T: 0845 065 4655

Alternatively, licensed waste management contractors or demolition contractors should be able to reprocess concrete waste into aggregates.

8. Brick

Brick is the second largest material waste stream at an estimated 5,107 tonnes (23% of the weight) originating from walls in the buildings – external and internal. They are thought to be a mix of brick types and thicknesses. The buildings that are Victorian are thought to have bricks mainly bonded with lime mortar as such it is estimated that around 15% are reusable (these could be sold as some have an architectural value, such as London Stock bricks). This accounts for around 766 tonnes of brick.

Item	Tonnes	Volume
Brick wall - double 9"	2103	1237
Brick wall - single 4"	1519	893
Brick wall - 13"	1485	874
Total	5,107	3,004

Table 4: Estimated bricks arising

It is recommended that bricks that are unable to be reused are segregated either onsite or at a waste facility and crushed to produce recycled aggregate (RA). Considering the size of the site this could occur onsite. This RA can be used as fill materials. Finished recycled aggregates should not contain more than 1% (by weight of clay, soil, metals, wood, plastic, rubber and gypsum plaster, in line with the limits set within the aggregates standards. It is recommended that they are processed where possible into recycled aggregates (RA). The Quality Protocol for inert materials should be followed.

Waste management companies

Local waste management companies that could manage the brick waste include:

- Brewsters Waste, <https://brewsterswaste.co.uk/> T: 020 7474 3535
- Ohara Bros, <http://oharabros.co.uk/services/aggregates-recycling>, 020 8424 2220
- RTS Waste, www.rtswaste.co.uk T: 020 7232 1711
- Days Group, <http://www.daygroup.co.uk/> T: 0845 065 4655

Alternatively, licensed waste management contractors/demolition contractors should be able to reprocess the brick waste into aggregates.

If any of the bricks are suitable for reclamation, then local reclamation companies that can be contacted with regard to reclaiming the bricks and the value in doing so include:

- London Reclaimed Brick Merchants, www.lrbm.com, T: 020 8452 1111
- Premier Reclaimed Bricks, <http://www.premierreclaimedbricks.co.uk/>, T: 020 8684 3537
- Contact Salvo, <https://www.salvoweb.com/>

On site, there may be opportunity for some of the bricks to be used in the landscaping features.

9. Metal

Metal accounts for 1,129 tonnes (150m³) of materials arising from the demolition as shown by Table 5. This comes from a variety of sources, with the largest (1,001 tonnes) from the wrought iron joists used in the floor construction in the Victorian building. Corrugated metal sheeting which used on the roofs accounts for 26 tonnes, some of this maybe reusable. Some of the steel joists and rafters may also be reusable from the shed type buildings. Other reusable items include some of the cast iron radiators and metal doors (depending on certification). There is likely to be more metals arising from the plant and associated pipework which has not been quantified.

Metals should be segregated on site. It is common practice for demolition contractors to reduce their contract value by allowing for the income from the recycling of metals during demolition. Standard skip hire companies are likely to charge for haulage costs only and may give back a small rebate on the metals. For the items that may be suitable for reuse, they could be advertised on Salvo (www.salvoweb.com)

With regard to the reuse of steel, the SCI has produced a protocol for its reuse⁴ including how to test for recertification. This describes the following process:

- A building is offered for salvage of the steelwork for reuse. Considerations include the acceptability of the source material, the demountability of the structure, the increased cost of careful demolition, etc.
- A business case is established between the holder of stock and the company responsible for demolition.
- Important details of the anticipated salvaged steel are recorded as described in the document
- Salvaged steelwork is received by the stockholder, grouped and listed as described in the document. The necessary grouping has an important impact on the extent of testing required.
- Members are inspected and tested in accordance with the guidance with the information appended to the stock data. The testing regime involves a combination of non-destructive and optional destructive testing, with the opportunity to make conservative assumptions about certain material characteristics. Testing may be completed at any convenient time, but the seller of the stock is responsible for declaring the necessary characteristics as the material is sold.
- Material is sold, with an accompanying declaration of the material characteristics by the holder of salvaged stock.
- Structural design and member verification is completed with certain modifications, as
- described in the document.

⁴ <https://steel-sci.com/assets/downloads/steel-reuse-protocol-v06.pdf>

For the items that may be suitable for reuse, they could be advertised on Salvo (www.salvoweb.com); there are some companies that will sell cast iron radiators (e.g. <https://www.ukaa.com/cast-iron-radiators/reclaimed-radiators> and https://www.englishsalvage.co.uk/radiators_itemcat_1050). There are also white and blue columns supporting a walkway, which would be suitable for reuse and manholes.

Item	Tonnes	Volume
Wrought iron floor joists	1005.5	132.3
Corrugated metal sheeting	26.2	3.7
Steel joists	18.92	2.43
Steel rafters	13.71	1.76
Steel rebar	10.7	1.4
Radiator - large	9.8	1.40
Metal door, solid	6.2	0.8
Metal door, half glazed	6.2	0.8
Metal door frame	6	0.8
Radiator - medium	5.9	0.8
Metal railings	3.03	0.39
Metal steps	2.99	0.384
Radiator - small	2.9	0.4
Aluminium window frame	2.7	1.0
Corrugated metal sheets - walls	2.63	0.38
Pre-fab steel fixings	2.1	0.3
Steel window frame	1.5	0.19
Metal studwork - joists	1	0
Secondary glazing - metal frames	0.6	0.2
Metal door, fully glazed	0.3	0.0
Total	1,129	150

Table 5: Estimated metal arisings

Local waste management companies

Local waste management contractors include:

- Capital Metal Recycling, <http://capitalmetalrecycling.co.uk/> T: 0208 964 2120
- London Scrap Metal Recycling, <http://www.londonscrapmetalrecycling.com> T: 0208 809 1019
- EMR Group <http://www.emrgroup.com/>

10. Plaster products

There is an estimated 450 tonnes of plaster and plasterboard arising from the demolition as shown by Table 6. Of this, 113 tonnes is estimated to be from plasterboard stud walls and 51 tonnes within the ceilings. Plaster skim is assumed to be used on the internal walls, estimated to be 209 tonnes. Lathe and plaster is likely to have been used for some of the ceilings of the Victorian buildings, estimated to be 76.5 tonnes.

Plasterboard should if be possible be segregated on site or if room does not permit then segregated at a waste transfer station; for this site there is enough room to segregate on site. The plaster maybe difficult to remove from the brickwork, and as such it can be treated with the bricks as RA, if it is in low quantities. There are a number of companies within the London area that offer recycling services, as long as the plasterboard is relatively free from contamination. Some of the recycling routes can include being used in the plasterboard manufacturing process (check with the waste/recycling company for their recycling routes). If it is sent to disposal, then it should be landfilled in a monocell (i.e. landfilled separately from the other waste). It is likely to be difficult to recycle the lathe and plaster.

Item	Tonnes	Volume
Plasterboard - walls	113	151
Plaster skim (modern) walls	80	94
Lathe and plaster - plaster layer	76.5	90.0
Plaster skim (period) walls	74	87
Plasterboard -ceilings	51	68
Plaster skim (period)	43.2	50.8
Plaster skim (modern)	11.6	13.6
Total	450	555

Table 6: Estimated plaster and plasterboard arisings

Local waste management companies

Local waste management options include:

- Powerday, <https://www.powerday.co.uk/> T: 020 3858 0504
- Plasterboard Recycling Solutions <http://www.plasterboardrecyclingsolutions.co.uk/> T: 0780 118 6380
- Hinton's Waste, <https://www.hintonswaste.co.uk/recycling-facilities/plasterboard-recycling/> T:020 3322 3476
- Hippo Waste (collect in bags), <https://www.hippowaste.co.uk/blog/plasterboard-recycling-removal/> T: 0333 9990 999
- RTS Waste Management, <https://www.rtswaste.co.uk/plasterboard-mobile-compaction-service/> T: 020 7232 1711

11. Timber products

As shown by Table 8, there is an estimated 376 tonnes (730m³) of timber arising from the demolition. This is from a number of sources and different types of timber. Solid timber originates from the timber within the roof joists in the Victorian Buildings and some of the other buildings (84 tonnes), the timber studwork in the internal walls (31 tonnes), doors and frames (29 tonnes), skirting boards (20 tonnes), timber floor joists (4 tonnes), floorboards and tongue and groove boarding.

Board products are likely to have been used for the kitchen cabinets (5 tonnes), laminate worktops (3 tonnes) as well as the use of OSB in some of the construction.

Most of the solid timber can be recycled, usually into chipboard. For the panel-based products, these will be suitable for energy recovery. Due to the age of the building, some of the timber may be hazardous due to the coatings and preservatives used. Guidance has been issued for this⁵. It is recommended that a local wood recycling organization is contacted to see what timber items are suitable for reclamation and reuse. Where reclamation is not possible the timber should be segregated on site if space permits, or offsite and sent to a licensed waste management contractor for recycling.

Items that could be potentially reused include some of the roof joists, laminate worktops, kitchen and timber cabinets and doors (depending on fire certification requirements). The glulam timber beams also have the potential to be reused, together with the floorboards and some of the flooring e.g. parquet. This may be more suitable within the refurbishment of the buildings, rather than the new build, or sold for reuse.

⁵ <https://condemwaste.org/wp-content/uploads/2021/07/CIWM-CD-Waste-Wood-Guide-v1.0.pdf>

Item	Tonnes	Volume
Timber rafters	133	266
Timber roof joists	84	168
Timber studwork - joists	22	43
Timber solid door with vision panel	21	42
Timber skirting board	20	39
Lathe and plaster - timber layer	15	30
Timber battens	12	24
OSB sheets	11	17
Timber studwork - sole+head plates	9	18
Timber door frame	7	14
Cubicle walls	7	9
Glued laminated timber beams	6	10
Timber panel door	5	11
Timber floorboards	5	7
Kitchen cabinets	5	7
MDF skirting board	4	5
Timber floor joists	4	7
Laminate worktops	3	4
Timber window frame	2	5
Timber solid door	1	2
Tongue and groove boarding	1	2
Total	376	730

Table 7: Estimated timber arisings

Local Waste management companies

These include:

- Community Wood Recycling, www.communitywoodrecycling.org.uk. The nearest enterprise is Shaw Trust Wood Recycling (Croydon); T: 020 8300 9744,
- LASSCO, www.lassco.co.uk/locations/brunswick-house/ T:020 7394 2100
- SALVO, www.salvo.co.uk, lists details of architectural salvage and can list demolition projects
- Solo Wood Recycling; www.solowoodrecycling.co.uk

12. Stone

There is an estimated 185 tonnes of stone, as shown by Table 8. 107 tonnes of this is from the slate tiles that have been used on the roofs of the Victorian buildings. These have a salvage value and it is

estimated that around 75% could be reusable, if removed carefully. Potential buyers include: the Reclaimed Company (<https://shop.thereclaimedcompany.co.uk/home/reclaimed-roof-tiles/>) or a reclamation yard such as: <https://authentic-reclamation.co.uk/stock-categories/reclaimed-roof-tiles-slates/>.

There are around 78 tonnes of cobbles, covering an estimated 330m² which are suitable for reuse. They could be on Salvo (www.salvoweb.com); or a reclamation company may buy them e.g. <https://authentic-reclamation.co.uk/stock-categories/reclaimed-cobbles-kerbs-setts/reclaimed-cobbles-setts/>

Item	Tonnes
Slate tiles	106.6
Stone cobbles	78
Total	185

Table 8: Estimated stone arisings

13. Other materials

Insulation

There is an estimated 95 tonnes (1081m³) of insulation arisings from the demolition. From a visual inspection it is difficult to ascertain the type of insulation used and the extent of it. As such, it is assumed that there is around 40 tonnes (794m³) of mineral wool insulation used in some of the cavity wall constructions. There is also thought to be foam insulation board in the prefabricated buildings and sheds. There may also be some phenolic insulation on the pipework that has not been quantified. There may also be foam insulation present in the flat roof structures. Recovery of insulation material is unlikely to be possible if it is bonded to the substrate. Insulation is usually disposed of to landfill via a licensed waste management contractor or could be sent for energy recovery if foam-based insulants can be successfully disaggregated. There is a pilot project looking at the recycling of insulation including from Knauf: <https://www.knaufinsulation.com/news/knauf-insulations-new-customer-waste-take-back-scheme-good-for-environment-and-business-0> and Rockwool offer a recycling scheme: <https://www.rockwool.co.uk/about/sustainability/recycling/>. Care should be taken to ensure that insulation that may contain ozone-depleting substances are removed and handled carefully.

Within this category, mineral fibre tiles used in the ceiling are also included at an estimated 49 tonnes. Some of these (around 20%) may be reusable. There is a recycling programme for ceiling tiles, run by Zenith (Armstrong Ceiling Tiles), which requires the ceiling tiles to be stacked on pallets. They have to be dated after January 2000 (it is assumed that these are due to their condition (the date should be stamped on the back of the tiles). They have to be replaced by Armstrong Ceiling Tiles. More details are available at: <https://www.zentia.com/en-gb/media/content/dam/armstrongceilings/commercial/europe/brochures/end-of-life-off-cut-recycling-brochure.pdf>

Glass

Glass is estimated to be 29 tonnes, arising from the windows and glazing within the doors. Whilst there are some schemes that will take back flat glass for recycling, due to the age of the glass, the amount and its condition, it is recommended to be crushed into aggregate with the other inert waste. If it is to be segregated on site for reuse/recycling, there is a health and safety consideration for the workforce as it needs to be handled carefully and have no contamination from other materials. Glass recyclers are:

- RTS Waste (www.rtswaste.co.uk T: 020 7232 1711). Note they may require the glass to be removed and stacked as panels.
- Berryman Glass Recycling (www.berrymanglassrecycling.com E: info@berryman-uk.co.uk)
- May Glass Recycling (<http://www.mayglassrecycling.co.uk/>) ; may only take new glass
- Viridor (<https://www.viridor.co.uk/siteassets/document-repository/brochures/glass-recycling-ukviridor-low-res.pdf>).

Carpet

There is an estimated 22 tonnes of carpet arising from the office spaces. The condition of this is variable but is estimated that around 5% is reusable. Carpet tiles can potentially be reused/recycled via:

- Carpet Tile Recycling; <http://www.carpettilerecycling.co.uk>; 01115 940 4454 (these need to be stacked on a pallet)
- Envirocycle; <http://envirocyclelondon.com/recycle-office-carpet-tiles/>; 07549448123 (these will also offer a removal service)
- Used Carpet Tiles, offer a pick up service; <https://www.usedcarpettiles.com/>; T: 0800 014 8591

Some manufacturers also offer a reuse/recycling service:

- Interface works with ReEntry Partners (social enterprise); https://www.interface.com/EU/en-GB/campaign/reentry/reentry-en_GB
- Milliken; <https://floors.milliken.com/floors/sustainability/end-of-life>; t: 01942 612777

Potential recycling routes can also be searched at: <https://carpetrecyclinguk.com/find-a-recycler/>. If it is not suitable for recycling it can be sent for energy recovery via a waste transfer station.

Ceramics

There is an estimated 21 tonnes (9m³) of ceramic materials arising. These are from a number of sources: 11 tonnes arising from the ceramic tiles used in the bathrooms and kitchens (floor and wall) and a further 6 tonnes from the WCs and 4 tonnes from the basins. The ceramic materials are unlikely to be reusable due to their age and condition. It is recommended that these are crushed with the inert waste on site and used to produce RA.

Plastic

There is an estimated 19 tonnes (16m³) of plastic arising, mostly from the vinyl flooring (11.4 tonnes) and the resin flooring (6 tonnes). There are smaller amounts from the uPVC windows and doors and

the ceiling tile grid. As most is in small quantities it is likely to be sent for sorting at a waste transfer station; and then for incineration. The uPVC may be collected through the Recovynyl scheme: https://axiongroup.co.uk/wp/wp-content/uploads/2018/10/Recovynyl_Recyclers_2018.pdf. It should be noted that there is likely to be more plastic arising than estimated from hidden components such as cabling.

Schemes exist to recycle old vinyl flooring, depending on the quality and amount of screed attached. This can either be dropped off at specific locations or collected. There could potentially be issues related to the adhesives and possible asbestos which will need investigating. See <http://www.recofloor.org/about-us/#specifications> for more details. If the product does not meet the specification for recycling, then it is likely to be sent for energy recovery.

Bitumen

Asphalt account for an estimated 3 tonnes of KDP, arising from the flat roofs. As the age of this material is unknown, core sampling should be undertaken to determine any coal tar content, which might result in it being deemed hazardous waste.

Asphalt within the hardstanding areas should be processed inline with the Quality Protocol for inert waste, and potential recycling routes include sub-base, capping or used in hot-mix asphalt (dependant upon the amount of tar); and into other bituminous mixes. The waste management companies highlighted for brick and concrete should be able to manage this waste. ADEPT and the Construction Demolition Waste Forum have created a guidance note on Managing Reclaimed Asphalt which provides further information - it is available at: <https://adeptnet.org.uk/system/files/documents/ADEPT%20Guide%20to%20Managing%20Reclaimed%20Asphalt%20Version%202019%20Rev%201.pdf>

WEEE

There are a number of Waste Electrical and Electronic Waste Equipment (WEEE) which were identified; as shown by Table 9. Note, these are assumed in terms of the type and number per building. Some of the lighting may be suitable for reuse in another project or via the community. Any fluorescent lighting should be segregated onsite, collected and disposed by a licensed hazardous waste carrier. Alternatively, schemes such as Recolight, <https://www.recolight.co.uk/> offer collection and drop off services. The metal fittings, if not suitable for reuse should be segregated with the other metal for recycling.

Any waste electrical and electronic equipment should be separated on site and sent to a specialist recycling facility, such as the following: www.wasteserviceslondon.co.uk/weee_recycling.htm; www.pureplanetrecycling.co.uk/weee-recycling-london. If items are in good condition, then they could be given to the London Reuse Network - www.londonreuse.org or advertised for resale. Note, there are likely to be more items of WEEE that were not visible when undertaking the survey. There is considerable plant in some of the buildings.

Item	Number
Suspended ceiling lights - fluorescent	1029
Strip lights	992
2D lights	391
Pendant lights	175
Shower units	8
Total	2595

Table 9: Estimated WEEE arisings

Hazardous materials

Some materials may be hazardous in nature. This could include materials contaminated with oil, treated timber, bitumen and asbestos. It is recommended that the demolition contractor undertakes appropriate testing to determine the hazardousness of materials and how they should be managed. Initial surveys have been undertaken with regard to asbestos. This may affect some of the recycling opportunities presented.

14. Pre-refurbishment audit results

Overall, there is an estimated 312 tonnes (208m³) arising from the refurbishment of the 7 buildings. Brick is the largest Key Demolition Product (KDP) (196 tonnes) followed by Concrete (64 tonnes), Plaster and Plaster Products (21 tonnes), Timber products (13 tonnes) and Carpet (6 tonnes) as shown in Figure 3 and Table 10. There are also smaller quantities of metal, ceramic, plastics, glass and bitumen. In volume, the largest material is Brick (115m³), followed by Concrete (31 m³), Plaster products (26 m³), and Timber products (24 m³), as shown by Figure 4. More details for each material is provided below. The recovery options are presented in the pre-demolition section for each material.

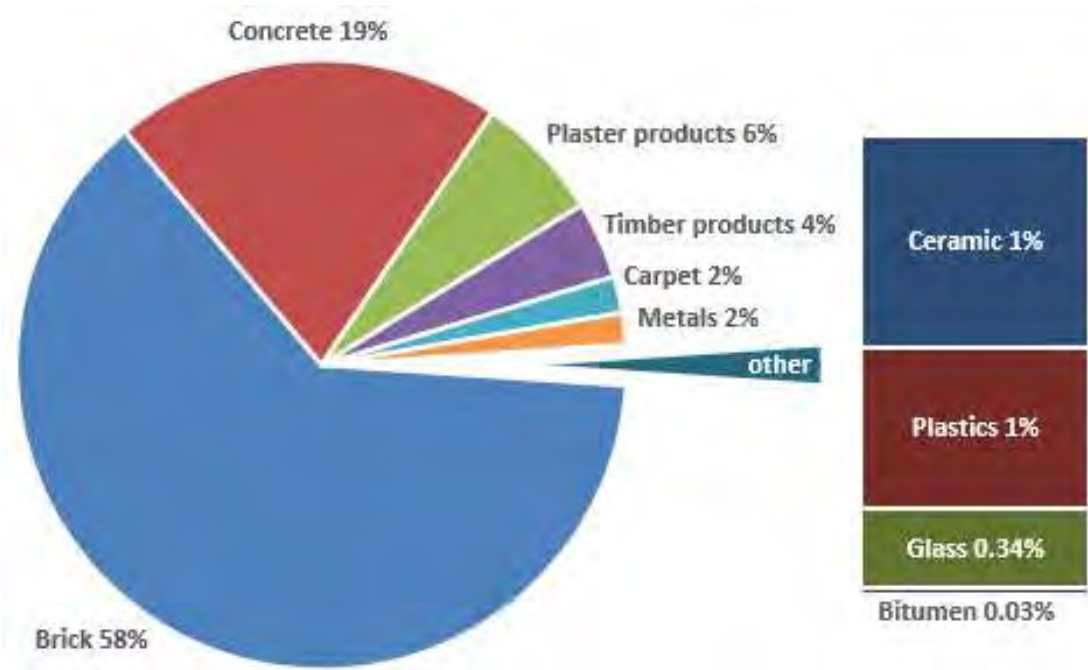


Figure 5: Results - KRP's by tonnage (refurbishment only)

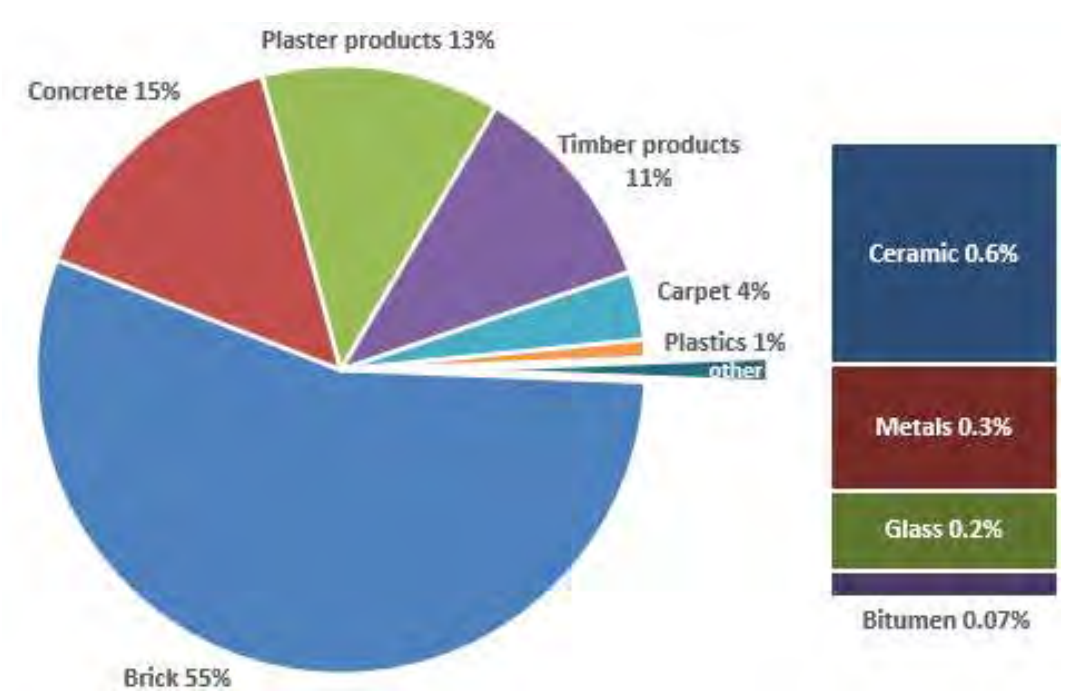


Figure 6: Results - KRP's by volume m³ (refurbishment only)

Table 10 provides the weight (tonnes), volume (m³) and European Waste Codes for each KDP.

	Weight (tonnes)	Volume (m ³)	EWC
Brick	195.6	115.1	17 01 01
Concrete	64.2	31.1	17 01 01
Plaster products	21.0	26.4	17 08 02
Timber products	12.8	23.6	17 02 01
Carpet	6.0	7.5	20 01 11
Metal	5.2	0.7	17 04 05
Ceramic	3.1	1.3	17 01 03
Plastics	2.4	2.0	17 02 03
Glass	1.1	0.5	17 02 02
Bitumen	0.1	0.2	17 03 02
WEEE*	-	-	16 02 14
Grand Total	311.5	208.2	

*Not quantified

Table 10: Results - KDP's by tonnage and volume (m³) (demolition only)

Brick

Table 11 shows that the brick waste arising is 196 tonnes, with 131 tonnes from single brick walls and 40 tonnes from double brick walls. Around 15% of this is thought to be reusable.

Item	Tonnes	Volume
Brick wall - single 4"	131	77
Brick wall - double 9"	40	24
Brick wall - 13"	24	14
Total	196	115

Table 11: Estimated brick arisings

Concrete

Table 12 shows that the brick waste arising is 64 tonnes, with 22 tonnes from the floor slab from Block 6 refurbishment. The remainder is mostly mortar from the brick walls and concrete roof tiles from Block 6. The mortar maybe difficult to remove from some of the bricks.

Item	Tonnes	Volume
Brick wall - single 4" (mortar)	26	14
Concrete floor slab	22	9
Brick wall - double 9" (mortar)	8	4
Brick wall - 13" (mortar)	5	3
Concrete roof tiles	2	1
Grout	1	0
Total	64	31

Table 12: Estimated concrete arisings

Plaster products

There is 21 tonnes of plaster products, with 10 tonnes coming from the removal of internal walls; and 3 tonnes from the removal of assumed lathe and plaster ceilings as shown by Table 13. The plaster skim on the internal walls is assumed to be around 8.4 tonnes – some of this maybe difficult to remove from the brickwork.

Item	Tonnes	Volume
Plasterboard - walls	10.2	13.6
Plaster skim (modern) walls	7	8
Lathe and plaster - plaster layer	3	3
Plaster skim (period)	1.4	1.7
Total	21	26

Table 13: Estimated plaster products arisings

Timber products

Timber accounts for 13 tonnes, as shown by Table 14, and comes from a variety of sources, the largest from the stud walls (2.7 tonnes). Other solid wood includes solid doors and frames, rafters and skirting boards. Board products are from the bathroom cubicles (estimated to be 1.7 tonnes) and kitchen cabinets (estimated to be 0.6 tonnes). Some of the solid timber may be reusable, such as the internal doors.

Item	Tonnes	Volume
Timber studwork - joists	1.9	3.8
Cubicle walls	1.7	2.3
Timber panel door	1.2	2.4
Timber skirting board	1.1	2.2
Timber solid door	0.9	1.9
Timber solid door with vision panel	0.9	1.8
Timber studwork - sole+head plates	0.8	1.5
Timber door frame	0.7	1.4
Kitchen cabinets	0.6	0.8
Lathe and plaster - timber layer	0.5	1.1
Timber rafters	0.4	0.7
Total	13	24

Table 14: Estimated timber products arising

Carpet

There is 6 tonnes of carpet arising from the refurbishment of the buildings covering an area of 1145m²— around 10% of this is thought to be reusable as carpet tiles.

Metal

Metal accounts for 5 tonnes, as shown by Table 15, and comes the radiators (2.7 tonnes), some of which have architectural value. Other items include metal ceiling tiles (may potentially be reusable), railings and steps (from Mulberry House) and steel window frames.

Item	Tonnes	Volume
Radiator - large	2.0	0.3
Radiator - medium	1	0.2
Radiator - small	0.6	0.1
Metal railings	0.5	0.1
Metal steps	0.5	0.1
Steel window frame	0.28	0.036
Metal ceiling tiles	0.14	0.02
Ceiling tile grid	0.02	0.00
Total	5.2	0.7

Table 15: Estimated plaster products arising

Ceramic

There is an estimated 3 tonnes of ceramic waste, with other half (1.6 tonnes) from ceramic tiles in the kitchen and bathrooms. The remainder is from the WC's (0.87 tonnes) and basins (0.5 tonnes).

Plastics

There is an estimated 2.37 tonnes of plastic waste, with the majority coming from the vinyl flooring that is being removed. There are other small amounts from the uPVC windows.

Glass

There is an estimated 1.1 tonnes of glass from the windows that are to be removed.

Bitumen

There is a small amount of bitumen on the roof from Block 6 covering 12m² equating to 0.03 tonnes.

WEEE

Table 16 shows the amount of WEEE arising i.e lighting. The type and number are assumed per building type. There are also 2 shower units to be removed. There may be more WEEE which has not been identified visually.

Item	Number
Strip lights	355
2D lights	67
Pendant lights	22
Shower units	2
Total	446

Table 16: Estimated WEEE arising

15. Maximising Reuse

It is advised that a long lead-in time as possible and maximum exposure are required to enable the reuse of products and components. Note, reuse is where the product is used again, with minimal processing. The best chances for reuse, with the associated environmental and economic benefits, are as near to site as possible:

- Used by the same client locally
- Sold or given away locally

Table 17 shows the items that maybe suitable for reuse. The following recommendations may assist in maximising the reclamation potential of the items identified:

- Consult the client on the findings of this report and consider any options for closed-loop re-use in a similar project (or within the hospital)
- Consider setting aside storage on site for segregation of salvage items.

There are a few organisations that may be able to assist with the reuse of items, which are listed below in London:

- Reyooz: <http://www.reyooz.com/about/clients>. Offer a service to collect surplus and distribute to charities, schools and small businesses.
- Globechain: <https://globechain.com/>; a reuse marketplace that donates to charities, schools and small businesses
- Reuse Network: <https://reuse-network.org.uk/donate-items/#/>
- Collecteco: <https://www.collecteco.co.uk/>; donation of furniture and equipment to charities, schools and small businesses.
- London Reuse Network - <http://lcrn.org.uk/projects-services/london-re-use-network/>
- Scrapstores: <https://www.workandplayscrapstore.org.uk/> and Reuseful UK <https://www.reusefuluk.org/>

There is also an interactive map available from the Supply Chain Sustainability School, which shows geographically the different platforms available for material exchange.

<https://www.supplychainschool.co.uk/school-launches-new-mep-mapping-tool/>

For items that may have some architectural salvage value, e.g. the cast iron guttering, specific salvage items can be advertised for free on www.salvo.co.uk or low value materials on www.salvomie.co.uk. Salvo also operate a demolition/refurbishment alert service on their website which serves to bring forthcoming demolition products to the attention of potential buyers or users. Local architectural salvage merchants about specific items can also be contacted. Salvo publish a directory on their website. Ensure that salvaged items are removed and stored in such a way that all components remain together, e.g. doors in their frames.

Material/product	Reuse potential	Considerations
Brick work from the Victorian buildings	Reuse: Sold to a reclamation company for reuse (if in good condition). The majority is likely to be crushed on-site and used for ground stabilisation and as sub base for drainage.	Suggest around 15% could be reused as bonded with lime mortar which could happen offsite (i.e. being sold). Some could also be used within the landscaping design or refurbishment. Some bricks are yellow stock which has good resale value. It should be noted that the condition of the bricks is variable, some are 'etched' which will not be suitable for reuse within a building, however they could be used for landscaping purposes
Roof tiles from the Victorian buildings	Sold to a reclamation company where can be removed carefully and safely.	Have a good resale value (around 50%); note percentage is dependant upon limiting damage through the demolition process.

Material/product	Reuse potential	Considerations
	Otherwise crushed for the pile matt.	
Structural beams (steel and cast iron) and portal frames	Steel reuse for modern warehouses and farm buildings, if a buyer can be found. If not, then can dealt with as metal waste.	Need to establish condition and span etc; growing reuse market for these items
Structural beams (Glulam)	Low potential, as ability to remove without damaging is limited. If not, then dealt with as wood waste.	Good condition; ability to reuse is questionable
Timber beams (also timber flooring) and timber flooring	Low potential, as difficult to reuse as beams; can be dealt with as wood waste	Most not seen; could be used for remanufacture in to flooring etc
Concrete precast panels	Located in the wall construction of the pre-fab buildings; if not suitable for reuse then can be crushed and remain on site for piling mat/fill.	Potential limited market
Doors	Could be collected by a specialist reuse organization or local salvage company	Could be difficult to reuse fire doors (due to certification requirements)
Flooring – carpet tiles	Could be collected by a specialist reuse organization or local salvage company	Varying condition
Flooring – timber (hardwood)	Via local salvage companies	Could be reused (some value); Mix of old and new
Ceiling tiles	Could be collected by a specialist reuse organization or local salvage company.	Medium – age and condition dependent
Radiators	Via local salvage companies and some could be used on site.	Resale value for architectural items should be good; A mix of radiators – some with architectural value.
Stone cobbles	Via local salvage companies	Most in good quality
Chimneys	Via local salvage companies	Varying condition
Manhole covers	Onsite as part of landscaping or reclamation/salvage dealer	Good condition and of architectural value

Material/product	Reuse potential	Considerations
Blue and white column supports	Onsite as part of landscaping or reclamation/salvage dealer	Around 50 columns with heritage value. Varying condition, some may need to be cleaned and repainted.

Table 17: Potential Items for reuse

16. Targets

It is highly recommended that to maximise the recycling of the KDP's and KRP's that the following materials are segregated on site:

- concrete
- brick
- metal
- timber
- carpet
- plasterboard
- hazardous waste

Recycling/reuse targets

It is recommended that an overall recycling target is set prior to the demolition phase commencing based on the recommendations of this report. An estimate on the total percentage of waste materials that can be recycled, and thus diverted from landfill on this project is 98% (by weight) but it should be possible to reach a figure of nearly 100% diversion from landfill, if the inert waste (concrete and brick) is all recycled. An estimated 1,155 tonnes of materials are potentially suitable for reuse (at around 5%). This does not include the reuse of inert waste as fill onsite.

It is recommended that the targets set out in Table 18 could be set per material.

	Weight (tonnes)	Reuse rate	Recycling rate	Sent to efW/landfill
Concrete	15,183	0%	98%	2%
Brick	5,229	15%	73%	2%
Plaster products	467	0%	75%	25%
Bitumen	3	0%	50%	50%
Metal	1,133	1%	99%	0%
Timber products	385	1%	50%	49%
Ceramic	23	0%	98%	2%
Carpet	28	5%	25%	65%

Glass	29	0%	100%	0%
Plastics	21	0%	50%	50%
Insulation	95	0%	25%	75%
Stone	185	75%	25%	0%

Table 18: Recommended waste management targets

During the demolition, details of the actual materials arisings and the waste management methods used should be recorded to compare actual with forecast and to assess performance against the targets set. Following completion of the project, any barriers to achieving the targets should be reviewed to ensure that in future projects these barriers can be overcome.

Appendix A – Site Plan showing building numbers



Appendix B – Results by Building Types to be Demolished

Building 9, 10, 13 and 14 (Blocks L, M, P, Q)

These buildings are of post war construction and of a brick/block construction with metal framed windows; some of which are secondary glazed. They have pitched roofs (assumed to be timber) with concrete roof tiles. They are currently occupied, so access was limited. Some of the areas have a suspended ceiling with mineral tiles; there are also plasterboard ceilings. Flooring is a mix of vinyl and carpet tiles (in office areas). There is a mix of internal walls (brick/block) and timber stud.

Material	Tonnes
Concrete	4459.4
Brick	972.6
Plaster products	106.2
Timber products	82.6
Insulation	24.6
Metals	16.4
Glass	9.8
Plastics	5.9
Ceramic	5.7
Carpet	4.6
Grand Total	5687.8

Reuse Potential

Items that are potentially suitable for reuse include carpet tiles, suspended ceiling tiles, internal doors (depending on their warranty). Some of the timber may be reusable (e.g. used as frames within partitions). Reuse may be on this project if suitable or for reuse elsewhere.



Building 21,22 and 59 (Bungalows 1, 2 and 5)

These three buildings are prefabricated buildings composed of rendered pre-cast concrete panels with a polystyrene insulation, covered with plasterboard, a timber roof, a mix of uPVC and timber framed windows, plasterboard ceilings and concrete roof tiles. Bungalows 1 and 2 also has a number of loose items in (for storage purposes). No access was provided to Bungalow 5, so this is assumed to be of the same construction type and interior as the other two bungalows.

Material	Tonnes
Concrete	242.4
Plaster products	9.0
Timber products	7.2
Metals	1.2
Carpet	0.8
Glass	0.5
Ceramic	0.5
Plastics	0.1
Grand Total	261.7

Reuse Potential

The items that maybe suitable for reuse or remanufacture are the precast concrete panels (estimated to be 62 tonnes) and possibly some of the timber joists and rafters; the internal doors are also in good condition. Reuse may be on this project if suitable or for reuse elsewhere.



Building 24 (Mulberry Studio)

This is a small building which is occupied with brick cavity walls (assumed to have mineral wool insulation in) with a flat roof and uPVC windows. Internally there is carpet and plasterboard ceiling.

Material	Tonnes
Concrete	22.9
Brick	21.8
Plaster products	1.4
Timber products	0.8
Insulation	0.4
Carpet	0.1
Glass	0.1
Bitumen	0.1
Plastics	0.0
Metals	0.0
Grand Total	47.6

Reuse Potential

The carpet tiles maybe reusable. Reuse may be on this project if suitable or for reuse elsewhere.



Building 25 (X Ray Store and East Generator)

This is an older building of brick construction with steel windows and a pitched timber roof with slate tiles on the roof. The windows and doors are in relatively poor condition. The building holds plant equipment. This plant equipment may need to be treated a hazardous waste if contained with oil and should be managed accordingly.

Material	Tonnes
Concrete	89.5
Brick	50.0
Stone	2.5
Timber products	2.0
Metals	1.2
Glass	0.1
Plaster products	0.1
Grand Total	145.3

Reuse Potential

Some of the bricks are likely to be reusable (an estimated 15%) as they are likely to be bonded with lime mortar. The slate tiles (around 75%) are also suitable for reuse. As the windows and doors are in poor condition, these are unlikely to be reusable. Reuse may be on this project if suitable or for reuse elsewhere.



Building 26 (Kate Marsden)

This building is a post-war brick and block construction with a flat roof and uPVC windows. There are internal brick and stud wall partitions with plasterboard ceilings. The interior is in a poor condition. There are numerous loose items including furniture.

Material	Tonnes
Concrete	469.7
Brick	126.9
Plaster products	11.9
Timber products	11.2
Carpet	1.8
Bitumen	1.5
Metals	1.1
Glass	0.9
Ceramic	0.6
Grand Total	625.6

Reuse Potential

There are few items that maybe suitable reuse as they could have an architectural value including the radiators and butler sink (see pictures). The skylight may also have an architectural value, if it can be removed in one piece. Due to the condition of the interior of the building it is unlikely that other items could be reused; however, some of the furniture may be suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.





Building 27 (Woodlands TBC)

This building is a post-war brick and block construction with a pitched roof (steel rafters) with uPVC windows. There are internal stud wall partitions with a vaulted ceiling. The interior is in a good condition as it is currently occupied as 'The Hub'.

Material	Tonnes
Concrete	192.0
Brick	55.3
Metals	16.8
Timber products	5.3
Plaster products	5.1
Ceramic	0.6
Glass	0.2
Grand Total	275.5

Reuse Potential

There are few items that maybe suitable reuse such as the kitchen unit (if this can be removed without damage), internal fire door (if has its warranty/can be warranted); the floorboards (these look solid wood) and cast-iron radiator. The roof structure (steel beams) could also be suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



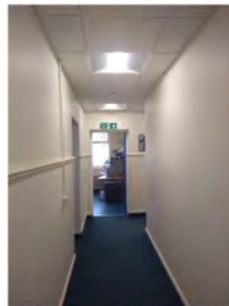
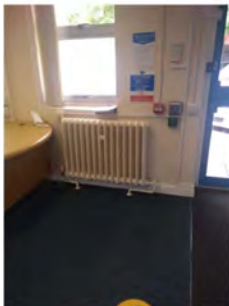
Building 28 (Wheelchair Clinic)

This building is a post-war brick and block construction with a flat roof and uPVC windows. There are internal stud wall partitions with a mix of suspended ceiling tiles and plasterboard ceilings. The interior is in a good condition as it is currently occupied as the 'Maple Unit'. There are carpet tiles present and resin flooring in the kitchen.

Material	Tonnes
Concrete	181.9
Brick	52.0
Timber products	4.8
Plaster products	2.7
Carpet	0.6
Bitumen	0.6
Insulation	0.6
Ceramic	0.5
Metals	0.4
Glass	0.4
Plastics	0.1
Grand Total	244.6

Reuse Potential

There are few items that maybe suitable reuse such as the kitchen unit (if this can be removed without damage), internal fire door (if has its warranty/can be warranted); carpet tiles; cast-iron radiators and suspended ceiling tiles. The guttering appears to be cast iron, which may have some architectural value. Reuse may be on this project if suitable or for reuse elsewhere.



Building 29 (KM Portacabin)

This building is a portacabin in poor condition. It is on a iron/steel frame with mineral wool in the floor construction. The panels are assumed to be timber, with a flat roof and metal windows. There was no access internally to the building.

Material	Tonnes
Metals	8.3
Plaster products	6.2
Timber products	5.0
Concrete	2.1
Insulation	1.0
Carpet	0.3
Bitumen	0.2
Glass	0.1
Grand Total	23.2

Reuse Potential

There is unlikely to be any materials suitable for reuse.



Building 30 (Old GUM Clinic)

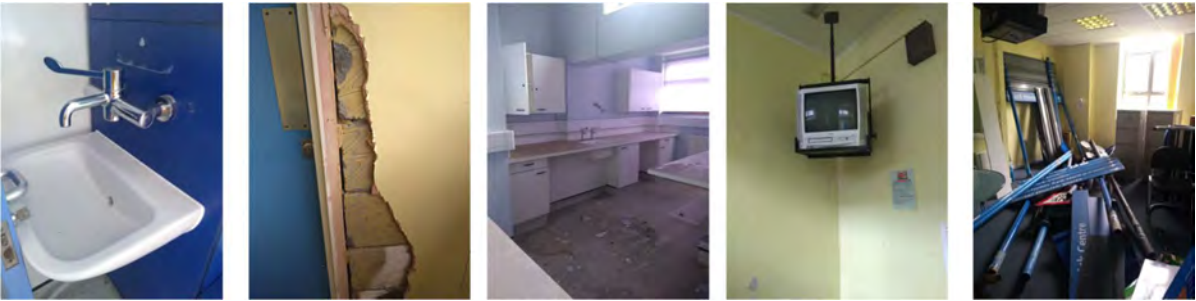
This building is a post-war brick and block construction with a pitched timber roof and concrete roof tiles, with aluminium windows. Internally there are a mix of timber stud walls and brick/block walls and plasterboard and suspended ceilings. There is a concrete staircase and a mix of flooring types. Some of the internal space has been used for storage.

Material	Tonnes
Concrete	528.0
Brick	138.8
Plaster products	13.4
Timber products	9.2
Insulation	1.7
Metals	1.2
Carpet	1.1
Ceramic	0.6
Plastics	0.6
Glass	0.4
Grand Total	694.9

Reuse Potential

Some of the items that maybe suitable for reuse include the internal doors (dependant on warranty if a fire door), mineral ceiling tiles and the wooden handrail on the stairs (may have architectural value). The kitchen units are in good condition but there may be health and safety aspects to their reuse. An old television may have 'retro' appeal. Reuse may be on this project if suitable or for reuse elsewhere.





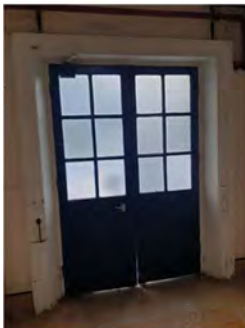
Building 31 (Admin Block) -Portion that is to be demolished

This is a 2 storey, solid brick construction, assumed to be Victorian in age. It is of brick construction with a pitched roof with slate tiles. There are chimneys present. Internally it is a mix of timber stud walls and brick. Some areas are heavily portioned. The ceiling is mostly plasterboard. The floor is assumed to be wrought iron joists infilled with concrete and covered with screed. There is carpet and vinyl, though this is in poor condition. The windows are timber sash.

Material	Tonnes
Concrete	587.2
Brick	314.7
Metals	230.8
Plaster products	31.9
Timber products	21.6
Stone	19.0
Carpet	2.4
Plastics	1.2
Ceramic	0.8
Glass	0.6
Insulation	0.4
Grand Total	1210.5

Reuse Potential

It is likely that the bricks (around 15%) could be reusable and the roof slates (around 75%). There is little potential for reuse of internal items, some of the doors may have architectural value, and the stairs handrail. Reuse may be on this project if suitable or for reuse elsewhere.



Building 32 (Restaurant)

This building is a brick and block construction with a pitched timber roof and concrete roof tiles and uPVC windows. Internally there are a mix of timber stud walls and brick/block walls and plasterboard and suspended ceilings. The flooring is mostly vinyl.

Material	Tonnes
Concrete	444.5
Brick	105.7
Timber products	10.3
Plaster products	3.8
Insulation	2.7
Metals	1.8
Glass	0.8
Plastics	0.5
Ceramic	0.2
Grand Total	570.2

Reuse Potential

Some of the items that maybe suitable for reuse include the ceiling tiles, the kitchen units and the catering equipment. Reuse may be on this project if suitable or for reuse elsewhere.



Building 33 (Fitters Workshop)

This building is assumed to be of a solid brick construction, with a timber pitched roof and timber windows, which are in relatively poor condition. There was no access internally. The concrete is assume to be from the floor slab and mortar.

Material	Tonnes
Concrete	100.1
Brick	69.4
Timber products	3.0
Stone	2.7
Plaster products	2.7
Metals	0.2
Glass	0.1
Ceramic	0.1
Grand Total	178.4

Reuse Potential

The slate tiles (around 75%) and the bricks (around 15%) are reusable on this project or sold for reuse.



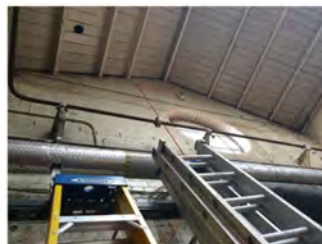
Building 34 (Old Boiler)

This building is believed to be Victorian in age, of a solid brick construction with parts if as a metal/timber roof, which acts as a warehouse. There are a number of rooms internally, mainly of solid brick construction. Some of the ceilings are assumed to be lathe plaster due to the age of the building. Some of the flooring internally and in the rear yard is stone cobbles (estimated to be 213m²)

Material	Tonnes
Concrete	507.0
Brick	260.2
Stone	92.6
Timber products	12.6
Plaster products	3.6
Metals	0.7
Glass	0.5
Ceramic	0.1
Grand Total	877.4

Reuse Potential

The bricks (around 15%) are thought to be reusable, and some of the slate tiles. The stone cobbles could be reclaimed as they have architectural value. Reuse may be on this project if suitable or for reuse elsewhere.



Building 35 (Works Offices, Queen Street)

This building is similar to the other Victorian buildings and is a solid brick construction with a timber pitched roof and slate tiles. The windows are timber sash. This is divided into a number of offices by brick walls. On the road by these work offices, are the stone cobbles, estimated to cover an area of 165m².

Material	Tonnes
Brick	78.7
Concrete	15.8
Timber products	8.5
Plaster products	6.4
Stone	5.5
Carpet	0.4
Metals	0.2
Glass	0.2
Ceramic	0.1
Grand Total	115.8

Reuse Potential

The bricks are reusable (estimated at around 15%) and the slate roof tiles (estimated to be at 75%) are reusable. The cobbles are also reusable with a salvage value. Reuse may be on this project if suitable or for reuse elsewhere.



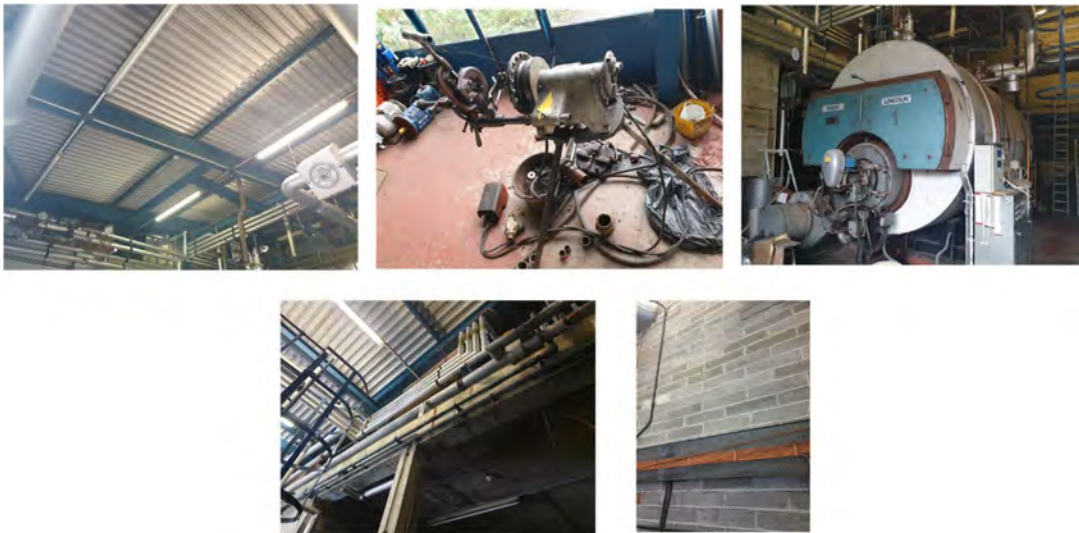
Building 36 (New Boiler)

This building is brick structure with a large metal framed glass windows at the front and a metal corrugated roof and roof supports. It was used for the boiler and as such there is a considerable amount of plant within the building, which needs to be dealt with accordingly. It is likely that some of this will be hazardous due to the amount of oil within the plant. Other materials may also be contaminated with the oil, for example the concrete floor slab, piping and ductwork.

Material	Tonnes
Concrete	89.5
Brick	50.0
Stone	2.5
Timber products	2.0
Metals	1.2
Glass	0.1
Plaster products	0.1
Grand Total	145.3

Reuse Potential

The corrugated roofing maybe reusable. It is unlikely that the plant equipment can be reused due to its size and age. Reuse may be on this project if suitable or for reuse elsewhere.



Building 38 (Main Stores)

This is a prefabricated building with concrete block walls, concrete floor with steel columns, joists and rafters in a portal frame. There may be asbestos present in the roof panels. There is little internally, acting as the stores with racking present.

Material	Tonnes
Concrete	424.1
Metals	25.6
Plaster products	3.8
Timber products	1.5
Plastics	1.2
Glass	0.2
Ceramic	0.1
Grand Total	456.5

Reuse Potential

The items that maybe suitable for reuse or remanufacture are the steel joists, rafters and columns, estimated to be around 20 tonnes. Reuse may be on this project if suitable or for reuse elsewhere.



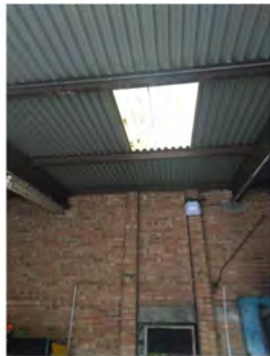
Building 40 (Laundry Store)

This is a small building used for equipment storage. Its is brick built, with iron/steel roof joists and corrugated metal sheeting.

Material	Tonnes
Concrete	113.7
Brick	23.1
Metals	5.2
Timber products	1.1
Plaster products	0.7
Plastics	0.4
Glass	0.1
Grand Total	144.2

Reuse Potential

The iron/steel roof joists and some of the corrugated metal roof sheeting (approx. 25%) maybe suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Building 41 (West Side Generator)

This is a newer building, of brick and block construction. There was no access to this building so it is assumed that there is screed on the floor on a concrete floor slab, with a timber roof and metal corrugated sheeting.

Material	Tonnes
Concrete	111.2
Brick	53.6
Metals	5.9
Timber products	0.9
Plaster products	0.1
Glass	0.01
Grand Total	171.6

Reuse Potential

There is unlikely to be anything suitable for reuse.



Building 42 (Elm House)

This building is Victorian of a solid brick construction with a pitched timber roof and slate tiles. The interior is in reasonable condition with carpet tiles and vinyl as floor covering and suspended mineral ceiling tiles and plasterboard ceilings. There may also be lathe and plaster ceilings present due to the age of the building. There is furniture stored within the building.

Material	Tonnes
Brick	44.7
Concrete	9.0
Timber products	4.6
Plaster products	4.4
Stone	2.8
Insulation	0.6
Carpet	0.3
Glass	0.1
Ceramic	0.1
Metals	0.1
Plastics	0.1
Grand Total	66.9

Reuse Potential

The bricks (around 15%) are estimated to be reusable and around 75% of the slate tiles. Internally, the ceiling tiles and carpet tiles maybe suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Building 43 (Porters Store)

Material	Tonnes
Brick	30.2
Concrete	6.1
Timber products	1.7
Stone	1.0
Plaster products	0.9
Ceramic	0.1
Glass	0.0
Metals	0.0
Grand Total	40.1

Reuse Potential



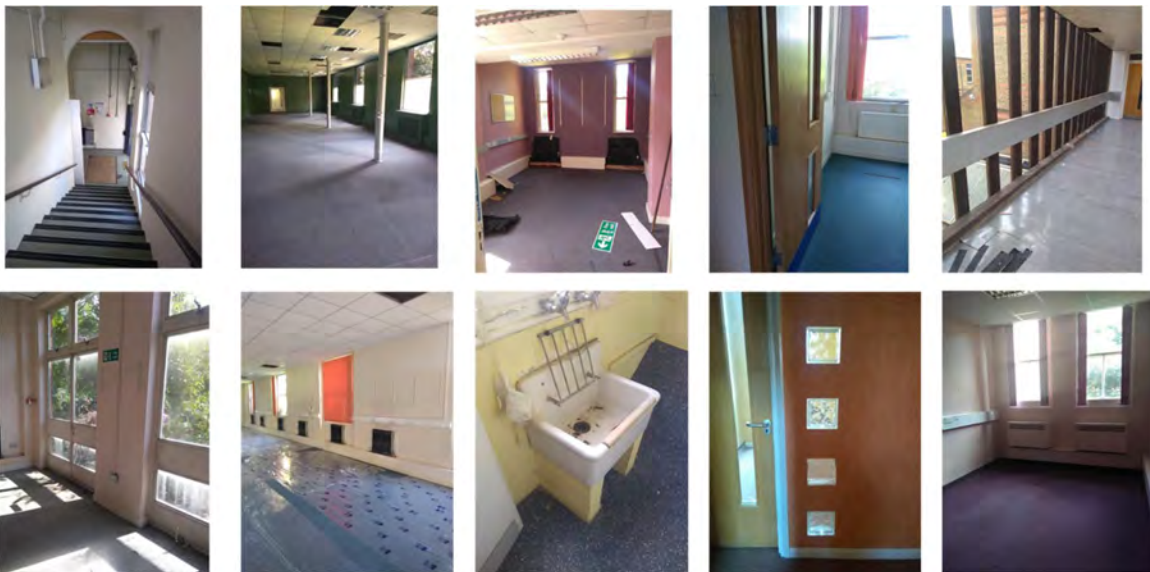
Buildings 44,45,46,47,48 and 49 (Blocks A,B,C,D,E)

There was no access to 47 and 49. These are mostly Victorian built structures with pitched roofs with slate tiles and timber windows. There are some newer extensions. Some of these are two storey. The internal fit outs vary.

Material	Tonnes
Concrete	2372.8
Brick	1627.2
Metals	783.2
Plaster products	147.5
Timber products	75.3
Stone	52.6
Insulation	18.5
Carpet	7.9
Glass	5.3
Ceramic	4.2
Plastics	4.0
Bitumen	0.5
Grand Total	5099.0

Reuse Potential

There are a number of items such as the parquet flooring , granite/marble flooring (could be used as Terrazzo), the brick work (around 15%), slate tiles, cast iron radiators, butler sink, which may be suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Buildings 44 and 45



Buildings 46 and 48





Building 50 (Pharmacy)

No access was provided to this building, It is Victorian brick built with a pitched roof with chimneys.

Material	Tonnes
Brick	56.0
Concrete	11.3
Timber products	10.0
Plaster products	8.5
Stone	6.3
Insulation	1.1
Carpet	0.5
Ceramic	0.3
Metals	0.3
Plastics	0.2
Glass	0.2
Grand Total	94.6

Reuse Potential

The slate roof tiles, bricks (around 15%) and chimneys are suitable for reuse.



Building 53 (GreenTrees Unit)

This is large building (3000m²) with a variety of construction methods, including brick, concrete block and glulam beams. There are internal walls of both blockwork and stud work. There is also a variety of windows. It is thought to be from the 1980s.

Material	Tonnes
Concrete	3125.8
Brick	472.8
Timber products	82.3
Plaster products	63.7
Insulation	38.3
Metals	6.2
Glass	5.8
Ceramic	4.6
Plastics	4.2
Grand Total	3803.6

Reuse Potential

The main element of reuse are the glulam beams which are in excellent condition and should have some service life left. Whilst it is acknowledged that there is little reuse of CLT panels currently, this could make a good case study/research project in terms of establishing the requirements for reuse (not necessarily on this project). Reuse may be on this project if suitable or for reuse elsewhere.



Building 57 (Greentrees Boiler)

No access was provided to this building. It is brick-built building with metal windows and doors.

Material	Tonnes
Concrete	315.4
Brick	60.5
Metals	8.2
Timber products	3.6
Plaster products	0.2
Glass	0.0
Grand Total	387.8
Brick	56.0

Reuse Potential

There is unlikely to be anything suitable for reuse.



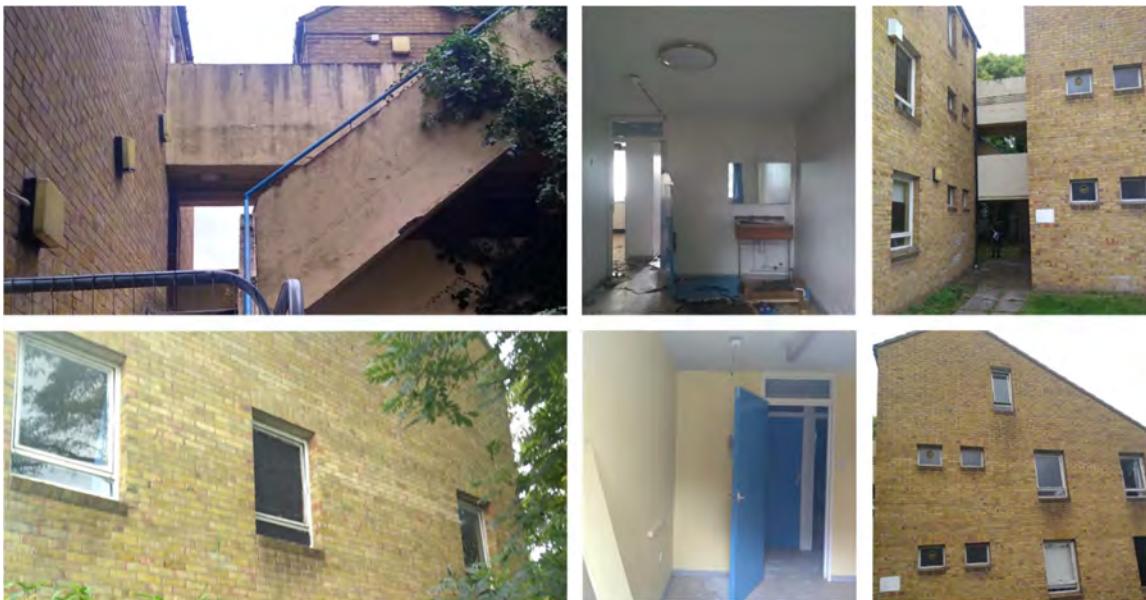
Building 58 (Oak House)

This is 3-storey brick and block construction (assumed) with an external concrete staircase and a pitched timber roof. It was used as flats, so it is assumed there are brick/block internal partitions. There was no access internally.

Material	Tonnes
Concrete	448.9
Brick	418.5
Plaster products	12.0
Timber products	6.6
Insulation	4.7
Metals	1.5
Carpet	1.3
Ceramic	1.0
Glass	0.8
Plastics	0.3
Grand Total	895.6

Reuse Potential

There is unlikely to be any materials available for reuse; due to the age of the building, the bricks are likely to be bonded in cement mortar making them difficult to separate for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Building 72 (Tennis Court Boiler)

This is small building housing plant equipment.

Material	Tonnes
Concrete	10.0
Metals	4.0
Brick	0.5
Insulation	0.3
Plaster products	0.2
Timber products	0.2
Glass	0.0
Grand Total	15.2

Reuse Potential

There is unlikely to be anything suitable for reuse.



Appendix C – Results by Building Types to be Refurbished

Building 23 (Mulberry House)

This Victorian building refurbishment involves the removal of internal walls, windows and internal fixtures.

Row Labels	Sum of Tonnes
Brick	5.4
Plaster products	1.4
Metals	1.2
Concrete	1.1
Timber products	0.7
Glass	0.6
Carpet	0.3
Plastics	0.3
Ceramic	0.2
Insulation	0.0
Grand Total	11.2

Reuse Potential

Some of the bricks (15%) may be suitable for reuse; also the carpet tiles (if in good condition). Reuse may be on this project if suitable or for reuse elsewhere.



Building 31 (Admin Block) – retention

This is a Victorian building which half is being refurbished including the removal of walls, windows and internal fittings.

Material	Tonnes
Brick	31.2
Plaster products	8.4
Concrete	6.3
Timber products	3.9
Carpet	3.5
Metals	1.3
Plastics	0.8
Ceramic	0.5
Glass	0.2
Grand Total	56.1

Reuse Potential

Some of the brick work, doors and radiators maybe suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Building 51 (Water Tower)

This Victorian building refurbishment involves the removal of internal walls, windows and stairs.

Material	Tonnes
Brick	23.8
Concrete	4.8
Timber products	0.6
Metals	0.3
Plaster products	0.1
Grand Total	29.6

Reuse Potential

Some of the brick work maybe suitable for reuse (15%). Reuse may be on this project if suitable or for reuse elsewhere.



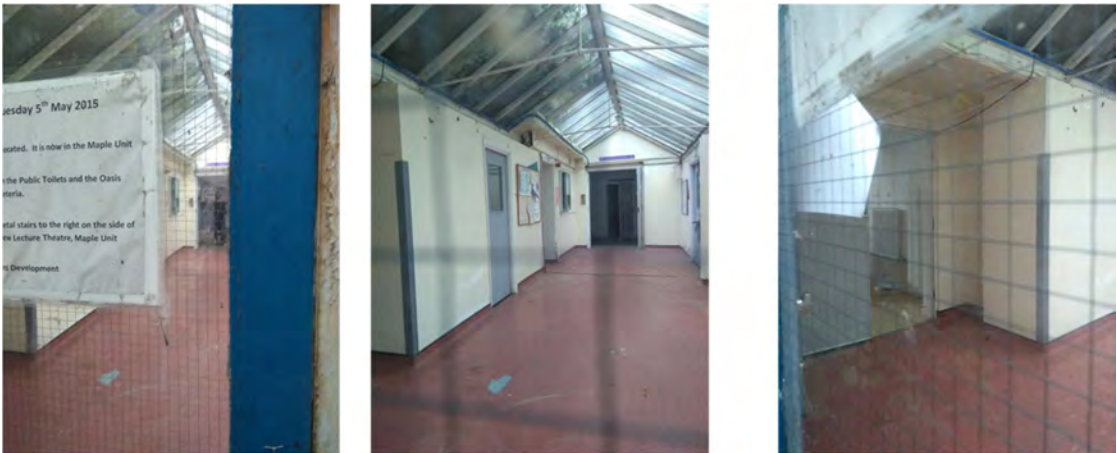
Building 52 (Block 6)

This is a Victorian building which is being refurbished including the removal of walls, windows and internal fittings.

Material	Tonnes
Brick	73.7
Concrete	39.3
Plaster products	3.8
Timber products	3.6
Metals	1.1
Ceramic	1.0
Glass	0.2
Grand Total	122.8

Reuse Potential

Some of the radiators, doors, carpet tiles and brickwork (15%) maybe suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



Building 60 (Mayfield House)

This is a Victorian building which is being refurbished including the removal of walls, windows and internal fittings.

Material	Tonnes
Brick	51.6
Concrete	10.6
Plaster products	4.8
Timber products	2.7
Carpet	1.4
Plastics	1.0
Ceramic	1.0
Metals	0.9
Bitumen	0.1
Grand Total	79.7

Reuse Potential

Some of the radiators, doors, carpet tiles and brickwork (15%) maybe suitable for reuse. Reuse may be on this project if suitable or for reuse elsewhere.



B61 and B62 (West Gate and East Gate Lodge)

These are Victorian buildings which are being refurbished including the removal of walls, windows and internal fittings.

Material	Tonnes
Brick	9.9
Plaster products	2.5
Concrete	2.1
Timber products	1.4
Carpet	0.7
Metals	0.5
Ceramic	0.4
Plastics	0.2
Grand Total	17.7

Reuse Potential

Some of the radiators, doors, carpet tiles and brickwork (15%) maybe suitable for Reuse. Reuse may be on this project if suitable or for reuse elsewhere.



External walkway

There is an external walkway with decorative iron columns, that maybe suitable for reuse/salvage (estimated to be around 100 in number).



Appendix C

Site Waste Management Plan



Site Waste Management Plan

St Ann's New Neighbourhood

May 2022

Waterman Infrastructure & Environment Limited

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Client Name: Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited
Document Reference: WIE18513-100-R-2-2-6-SWMP
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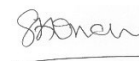
Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
Draft	April 2022	Ellie Booth Milly Bowen		

Comments	Issued in draft with team notes for client, design team, and legal review.			
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Final	May 2022	Ellie Booth	Milly Bowen	Sarah Owen Senior Associate
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Comments	Issued in final for planning following receipt of project planning consultant and legal review comments.
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Disclaimer

This report has been prepared by Waterman Infrastructure & Environment Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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- A. Soilfix Material Balance Summary
- B. Common Construction and Demolition Waste Codes

1. Introduction

1.1 The Brief

Waterman Infrastructure & Environment Limited (Waterman) has been instructed by Hill Residential Limited, Catalyst Housing Limited, and Catalyst by Design Limited (the Applicant) to prepare a site waste management plan (SWMP) for the redevelopment of part of St Ann's hospital (the Site). The Site lies within the administrative boundary of the London Borough of Haringey (LBH).

1.2 Description of Development

This SWMP accompanies a hybrid planning application seeking permission for:

- 1) detailed planning for Phase 1a, for:
 - a) the change of use, conversion and alteration of seven existing hospital buildings within Phase 1a for a flexible range of uses (Use Class E, F1 / F2);
 - b) the demolition of some existing buildings (in accordance with the demolition plan);
 - c) the erection of new buildings for residential uses (Use Class C3); and
 - d) alterations to the existing access road and installation of new vehicular, pedestrian and cycle accesses; landscaping including enlargement of the Peace Garden, associated car and cycle parking spaces and servicing spaces.
- 2) the demolition of existing buildings and structures in Phases 1b, 2 and 3 (in accordance with the demolition plan);
- 3) outline planning (all matters reserved except access) for Phases 1b, 2 and 3 for:
 - a) the erection of new buildings for residential development (Use Class C3), commercial business and service (Use Class E), and local community and learning (Use Class F1 / F2); and
 - b) associated pedestrian and cycle accesses; landscaping including enhancements to the St Ann's Hospital Wood and Tottenham Railsides Site of Importance for Nature Conservation (SINC) car and cycle parking spaces and servicing spaces.

More detail about proposed uses and areas is set out in section 3.

1.3 Report Scope

The purpose of this outline SWMP is to:

- a) summarise the benefits of waste minimisation and management (WMM) and relevant guidance, policies, and standards.
- b) describe the Site, existing uses, and the proposed development;
- c) forecast how much excavation, demolition, and construction waste might arise.
- d) set out ways to minimise and manage this waste; and
- e) outline WMM measures and performance targets for the construction phase.

This document should be read in conjunction with other submission documents, including the Operational Waste Management Strategy, the Sustainability Statement, and the Circular Economy Statement.

1.4 Exclusions and Limitations

This report was undertaken in accordance with a scope of works agreed between Waterman and the Applicant.

The benefit of this report is made to Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited.

Waterman has endeavoured to assess all information provided to it during this work but makes no guarantees or warranties as to the accuracy or completeness of this information.

The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at the Site.

When appointed, it is assumed the Principal Contractor will agree to comply with this SWMP and future revisions. It will implement and update the SWMP throughout the project.

It is assumed this SWMP will be reviewed and further developed prior to construction to include additional WMM measures.

2. Guidance, Policies, and Standards

The following guidance, policies, standards were considered in developing this SWMP.

2.1 Benefits of Waste Minimisation and Management (WMM)

Benefits of waste minimisation and management (WMM) include:

- a) reducing disposal and material costs by designing to be resource efficient, reducing ordering, and reducing waste taken to landfill (or other disposal);
- b) reducing carbon dioxide emissions;
- c) satisfying planning requirements; and
- d) complementing other aspects of sustainable design.

WMM should follow the principles of the waste hierarchy¹: prevention; prepare for reuse; recycling; recovery; then disposal. In the first instance, finding ways to reduce waste generation. Where this is not possible, materials should be reused and recycled.

Waste minimisation includes designing out waste and limiting waste arising during construction. Waste management involves identifying potential waste streams, setting target recovery rates, and overseeing the process to meet these targets.

Fully benefitting from WMM means adopting its principles at the earliest possible stage, preferably mandated by the Applicant through procurement requirements.

2.2 Guidance

2.2.1 Government Guidance²

Waste management guidance is produced by government bodies including Defra³, the Environment Agency, and Ministry of Housing, Communities & Local Government. It advises on disposing, moving, licencing, storing, treating, and using waste.

2.2.2 Defra Non-Statutory Guidance for Site Waste Management Plans 2008⁴

The Defra guidance on SWMPs explains how to implement and save money with a SWMP.

2.2.3 Building Research Establishment's Environmental Assessment Method

The Building Research Establishment's Environmental Assessment Method (BREEAM) process evaluates the procurement, design, construction, and operation of a development against targets that are based on performance benchmarks. It applies to non-residential buildings only.

Under BREEAM New Construction 2018 issue Wst 01 (construction waste management), credits are available for:

- preparing a pre-demolition audit;
- preparing a compliant Resource Management Plan (RMP);
- meeting construction waste resource efficiency benchmarks; and
- diverting resources from landfill.

¹ DEFRA (2011) 'Guidance on applying the Waste Hierarchy', [Online]. Available at www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy (accessed 1 April 2022).

² UK Government guidance, "Environmental Management: Waste", available from <https://www.gov.uk/topic/environmental-management/waste> (accessed 1 April 2022).

³ Department for Environment, Food & Rural Affairs (Defra).

⁴ DEFRA, "Non-statutory guidance for site waste management plans", April 2008.

More information about the credits available as part of Wst 01 and the Applicant's waste targets are summarised in section 5.2.1 below.

2.2.4 Building Research Establishment SmartWaste Plan⁵

The BRE SmartWaste Plan is a virtual tool for preparing, implementing, and reviewing SWMPs.

2.2.5 Waste Resources Action Programme guidance

Useful Waste Resources Action Programme (WRAP) resources include the following guidance documents:

- a) *"Procurement guidance for construction: Setting a requirement for Waste Minimisation and Management"*;
- b) *"Practical Solutions for Sustainable Construction: Achieving Good Practice Waste Minimisation and Management"*;
- c) *"The Demolition Protocol: Aggregates Resource Efficiency in Demolition and Construction"*; and
- d) an online tracker designed to assist the collation and analysis of data associated with SWMPs.

WRAP recommended construction waste recovery rates are set out in section 5.2.2.

2.2.6 Definition of Waste: Development Industry Code of Practice (DoW CoP)⁶

The definition of waste code of practice is helpful when:

- a) assessing if an excavated material is classified as waste;
- b) determining if treated excavation waste ceases to be waste for a particular use;
- c) determining if excavated materials are not classified as waste, and when they can be reused;
- d) establishing and operating fixed soil treatment facilities;
- e) putting together a materials management plan (MMP);
- f) reusing contaminated and uncontaminated material at source or between sites within defined cluster projects; and
- g) transferring and reusing clean naturally occurring soils between registered sites.

A MMP details the type, volume, and quality of material. It should be submitted to a suitably qualified person for review. Then the project can be declared to CL:AIRE. A verification report is needed at the end of the project to confirm compliance with the MMP.

2.3 Legislation

2.3.1 Environmental Protection Act 1990

Section 34 of the Environmental Protection Act 1990 sets out the requirements for the 'duty of care' for controlled waste. The 'duty of care' applies to all businesses that produce, import, carry, keep, treat or dispose of controlled waste from business or industry, or act as a waste broker in this respect. Its purpose is to ensure that all parties in the waste handling chain take all reasonable steps to ensure that waste is handled legally and safely when being passed along the links in the chain between the waste producer and the site of final disposal or recovery.

All businesses are responsible for the safe and proper disposal of waste, even once it has been passed to a third party. This 'duty of care' extends to the point where the waste has either been satisfactorily disposed of, or fully recovered.

The 'duty of care' requires that:

⁵ BRE SmartWaste, available from www.smartwaste.co.uk/ (accessed 1 April 2022).

⁶ CL:AIRE, *Definition of Waste Code of Practice*, available from <http://www.claire.co.uk/projects-and-initiatives/dow-cop> (accessed 1 April 2022).

- a) all waste is stored and disposed of responsibly;
- b) waste is only handled or dealt with by individuals or businesses that:
 - i. are authorised to deal with it;
 - ii. have an Environmental Permit or relevant waste exemption;
 - iii. are a registered carrier of controlled waste; and
- c) a record is kept of all waste received or transferred through the provision of written information about the waste (previously known as a waste transfer note – WTN – a term still in common usage).

Regulation 35 of the Waste (England and Wales) Regulations 2011 (see below) sets out the content of the written information / transfer note.

The failure of a person who produces, treats, or passes on waste to comply with the ‘duty of care’ is a criminal offence under section 34 of the Environmental Protection Act 1990, regardless of whether environmental harm has occurred.

Statutory guidance on how to meet the ‘duty of care’ is outlined in *Waste Duty of Care, Code of Practice*⁷.

2.3.2 The Waste (England and Wales) Regulations 2011

The Waste Regulations 2011 require waste producers or those handling waste to comply with the waste hierarchy (prevention, prepare for reuse, recycling, recovery, disposal) unless it can be justified on environmental or technical grounds that this is not appropriate.

The requirements include that:

- a) waste is stored correctly i.e. it must be properly contained;
- b) waste is only collected by registered waste carriers;
- c) records of transfers of waste are kept for at least two years; and
- d) waste is only taken to an appropriately authorised facility.

Businesses that carry their own waste need to be registered as a waste carrier. Lower tier waste carriers register once only. Companies transporting construction and demolition waste, whether their own waste or not, need to register as upper tier waste carriers and so must renew their waste carriers licence every three years.

2.3.3 Environmental Permitting (England and Wales) Regulations 2016

These regulations stipulate when an Environmental Permit (EP) is required for the storage or management of wastes. For a demolition or construction site, an EP could be required for the use of mobile plant to process waste on-site.

2.3.4 Hazardous Waste (England and Wales) Regulations 2005

If controlled waste is classified as hazardous, in accordance with the Hazardous Waste Regulations 2005, enhanced ‘duty of care’ requirements apply. Facilities receiving hazardous waste must report to the waste producer and the regulator as to the receipt and fate of each consignment of hazardous waste. The written information requirements are met by the use of the consignment note (enabling tracking of waste from producer to final disposal / recovery facility).

⁷ HSMO, *Waste Duty of Care, Code of Practice*, available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759083/waste-code-practice-2018.pdf (accessed 1 April 2022).

2.4 Planning Policy

2.4.1 National Planning Policy Framework (NPPF) 2021⁸

The NPPF introduces the presumption in favour of sustainable development. One of the objectives of sustainable development is environmental protection. Minimising waste is one of the ways of achieving the environmental objective.

2.4.2 National Planning Policy for Waste (NPPW) 2014⁹

The NPPW instructs local planning authorities to ensure that the reuse / recovery of construction waste is maximised. Off-site disposal should be minimised.

2.4.3 London Plan 2021¹⁰

London Plan policy SI 7, reducing waste and supporting the circular economy, promotes minimising waste, reusing materials, and recycling. It aims to meet or exceed the following targets:

- a) zero biodegradable or recyclable waste to landfill by 2026;
- b) reuse / recycle / recover 95% of construction and demolition waste; and
- c) beneficial use of 95% of excavation waste (though all inert excavation waste should be put to beneficial uses). Beneficial use includes placement to land in a way that provides environmental benefits such as restoration of priority habitat or flood alleviation.

2.4.4 Mayor of London guidance

Sustainable Design and Construction Supplementary Planning Guidance¹¹

Section 2.7 of this guidance, minerals and waste, provides guidance on design and construction stages including pre-fabrication, choice of materials, and managing existing resources.

Circular Economy Statement guidance¹²

The Mayor of London's circular economy statement guidance encourages applicants to record the source of all waste arisings during construction and monitor using a waste management tool such as SmartWaste.

2.4.5 London Borough of Haringey Local Plan

LBH Strategic Policies 2017¹³

Strategic policy SP6, waste and recycling, requires SWMPs for all major applications. It expects SWMPs to identify demolition and construction waste types, volumes, and WMM during construction.

⁸ NPPF 2021, available from <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (accessed 1 April 2022).

⁹ NPPW 2014, available from <https://www.gov.uk/government/publications/national-planning-policy-for-waste> (accessed 1 April 2022).

¹⁰ GLA London Plan 2021 available from <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021> (accessed 1 April 2022).

¹¹ Mayor of London's Sustainable Design and Construction SPG available from <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/sustainable-design-and> (accessed 8 April 2022).

¹² Mayor of London's Circular Economy Statement guidance available from <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/circular-economy-statement-guidance> (accessed 8 April 2022).

¹³ LBH Local Plan: Strategic Policies 2013 (with alterations 2017) available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-strategic-policies> (accessed 1 April 2022).

LBH Development Management Development Plan Document 2017¹⁴

Policy DM4 of LBH's Development Management Development Plan Document (DPD) expects all proposals to consider sustainable management of waste arising from design and construction.

LBH New Local Plan 2021¹⁵

LBH started the process of preparing a new Local Plan in 2020. The formal consultation on its "*New Local Plan: First Steps*" document ran from November 2020 until March 2021. A draft Local Plan is expected in summer 2022.

The "*New Local Plan: First Steps*" identified minimising waste and reducing emissions from resource use as a key issue to be addressed by the New Local Plan. It suggested the New Local Plan would set expectations on how proposed developments will minimise waste over its entire lifespan, which includes minimising the quantities of resources used in construction and demolition.

Sustainable Design and Construction SPD 2013¹⁶

LBH's "*Sustainable Design and Construction Supplementary Planning Document*" (SPD) advocates the waste hierarchy, reusing construction material, modern methods of construction, and responsibly sourcing materials. It expects development involving demolition of buildings to undertake a Demolition Waste Audit which should be considered from early in the design process.

¹⁴ LBH Local Plan: Development Management DPD (July 2017) available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-development-management-dpd> (accessed 1 April 2022).

¹⁵ Information about LBH New Local Plan process available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/new-local-plan-first-steps-engagement> (accessed 1 April 2022).

¹⁶ LBH Sustainable Design and Construction Supplementary Planning Document available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/supplementary-planning-documents-spds> (accessed 1 April 2022).

3. The Site and Proposed Development

3.1 Site Location

The Site is bound by St Ann's Road to the north, Hermitage Road to the east, a railway line to the south, and the rear of a residential street Warwick Gardens to the west. It occupies an area of 7.2 hectares.

3.2 Existing Uses and Layout

The Site currently comprises over 40 buildings formerly part of St Ann's hospital. Most of the buildings are no longer operational. They vary in height from two to three storeys.

The Site has a relatively flat topography with a gentle fall west to east and north to south. It comprises a mix of natural landscaped elements including a SINC to the south. The SINC comprises standalone mature trees covered by individual tree protection orders (TPOs) and a lawn in the centre known as the Peace Garden.

3.3 Proposed Uses and Areas

The proposed development is described in section 1.2. It is divided into four phases: 1a, 1b, 2, and 3. Planning permission for Phase 1a is being sought in detail, with the rest (phases 1b, 2, and 3) in outline. Proposed areas are summarised in the table below.

Table 1: Proposed residential and non-residential areas

Use	Proposed gross internal area (GIA) m ²
Residential	Up to 97,500
Non-residential	Up to 4,150

3.4 Enabling Works

Initial activities to prepare for construction are likely to include:

- establishing Site access;
- geotechnical and ground investigations to inform the detailed structural design and confirm ground conditions at the Site;
- arboricultural works – including the protection of any trees / vegetation to be retained and / or removed;
- ecological works, where required;
- installing Site hoarding and further security fencing;
- ground re-profiling works;
- service disconnections and diversions;
- general clearance; and
- installation of temporary surface water management measures.

3.5 Demolition

Demolition is likely to include:

- internal strip out of the existing buildings and associated structures;
- removal of all mechanical plant and equipment; and
- deconstruction of the existing buildings and associated structures.

The 36 buildings proposed for demolition are detailed in the Applicant's pre-demolition and pre-refurbishment audit prepared by Reusefully Ltd presented elsewhere in the planning application. They include a workshop building, an office, a pharmacy, stores, and bungalows. Seven buildings will be retained and refurbished on-site. It is understood the buildings being retained will support most of the proposed non-residential space.

The pre-demolition audit outlines opportunities for reusing and recycling waste materials as much as possible (see section 5.1.1).

3.6 Groundworks and Excavation

Groundworks will include installation of piled foundations across the development.

Below ground / substructure works are likely to involve:

- a) groundworks to create level development platforms;
- b) excavation for foundations and to allow installation of any below ground services;
- c) installation of ground slabs (ground bearing or suspended block) and supporting beams; and
- d) remedial works if any contamination is identified.

More detail about the proposed substructure works is set out in Environmental Statement Chapter 5: Construction Methodology and Phasing (a separate submission document).

3.7 Construction

Construction is likely to include:

- a) building superstructure (constructing the main building envelope, pouring concrete, installing steel frames, etc.);
- b) internal fit out and finishes (installing block work, dry lining to internal walls, mechanical and electrical installations, etc.);
- c) landscaping works (ground modelling, vegetation planting, constructing footpaths, etc.); and
- d) hand over.

4. Estimated Waste Types and Arisings

4.1 Demolition, Groundworks and Excavation

4.1.1 Anticipated waste types

A list of common demolition wastes is presented in Appendix B.

A pre-demolition audit prepared by Reusefully Ltd is presented elsewhere in the planning application. It details the 36 buildings to be demolished, the 7 buildings to be retained, and results of pre-demolition and pre-refurbishment assessments.

The Applicant's contaminated land assessment (presented elsewhere in the planning application) identifies former uses of the Site resulted in contamination principally within Made Ground by substances including arsenic, asbestos, and lead. It is therefore likely that hazardous and non-hazardous material will be encountered during groundworks and excavation. Anticipated waste types will be refined using the results of future ground investigations.

4.1.2 Anticipated arisings

In its pre-demolition audit, Reusefully Ltd estimates 22,782 tonnes of material might arise from demolition. This includes concrete, brick, metal, plaster products, and timber products. Further details can be found in the pre-demolition audit presented elsewhere.

Material balance calculations have been undertaken by Soilfix (see Appendix A). The calculations include material to be generated from demolition (and processed into recycled aggregates) and soils to be cut and filled across the Site. Soilfix estimate approximately 60,000m³ of material could be generated during demolition and excavation works – namely soil and top soil, capping hardcore, sub-base, tarmac, and drainage aggregate. Soilfix estimate about 77% of this material (approximately 46,000m³) could be reused on-site, which equates to a surplus of approximately 14,000m³ of material which will require removal from Site.

4.2 Construction

4.2.1 Anticipated waste types

A list of common construction wastes is included in Appendix B.

Any hazardous wastes would require special management to prevent environmental harm.

4.2.2 Anticipated arisings

The BRE SmartWaste waste benchmark calculator has been used to estimate types and amounts of construction waste arising from the proposed residential areas. Non-residential areas are discounted as these areas are within the existing buildings to be refurbished (with one exception, see note beneath table below). These data should be used for guide purposes only.

Table 2: Estimated construction waste types and arisings

Waste product	Waste benchmark calculator estimations (tonnes)
	Residential only
Bricks	1,087.17
Tiles and ceramics	77.74
Concrete	1,471.13
Inert	4,237.82
Insulation materials (non-hazardous)	74.87
Metals	206.69
Packaging materials	409.84
Plasterboard / gypsum	515.37
Binders	18.80
Plastic (excluding packaging)	276.11
Timber	1,249.53
Floor coverings (soft)	8.13
Electric and electronic equipment (non-hazardous)	5.57
Furniture	1.65
Canteen / office / ad-hoc waste	153.93
Liquids	7.81
Oils	2.33
Bituminous mixtures (non-hazardous e.g. asphalt)	85.43
Hazardous waste	89.64
Other waste	392.94
Mixed construction and / or demolition waste	4,204.51
Total	14,577.01

The waste benchmark calculator estimations in the table above are based:

- on the residential GIAs presented in Table 1;
- the BRE SmartWaste categories “Residential – Houses / Flats / Apartments”;
- proposed non-residential space being provided in retained buildings with the exception of one unit (a food store) which will form part of the outline component to be confirmed during detailed design; and
- the total number of residential units proposed (995). Of these, 239 are proposed for Phase 1a (the detailed element), equalling 24% of the total units. On this basis, about 24% of the waste predicted to arise in the table above is predicted to arise during construction of Phase 1a.

5. Waste Minimisation and Management Measures, Targets, and Monitoring

It is recognised there is an opportunity to reduce the use of natural resources through the detailed design processes, procurement, and construction. The following measures and targets are applicable to all phases of the development.

5.1 WMM Measures

5.1.1 Design and Specification

The design will consider:

- a) modern construction methods (which will be determined at detailed design stage);
- b) using prefabricated materials, standardised modulation components, or low waste fabrication techniques where feasible, e.g., utility cupboards will be prefabricated;
- c) the use of recyclable or second-hand materials (rather than non-recyclable materials) from local or sustainable sources where available;
- d) retaining existing features where possible, e.g., seven of the existing buildings and existing bricks to be used within the refurbishment areas;
- e) reusing waste that is created as much as possible, such as, the reuse of bricks in the landscaping and the reuse of cobbles, bollards, manholes, and the iron columns supporting the external walkway; and
- f) recycling waste that is created as much as possible, e.g., concrete from demolition will be crushed on-site and utilised to form the drainage layer.

Further circular economy design measures (involving conserving resources and eliminating waste) can be found in the Applicant's Circular Economy Statement prepared by XCO2.

5.1.2 Procurement

The Applicant will ensure the Principal Contractor is aware of appropriate WMM measures through the tendering and contract processes. It will ensure drawings are adequately specified and dimensioned so that accurate quantities of materials can be ordered. It will maintain a role in the management of the supply chain during construction to encourage opportunities to minimise waste.

Communication with suppliers would be undertaken to:

- a) reduce over-ordering;
- b) specify materials to be delivered with minimum packaging and to seek recyclable packaging;
- c) encourage waste minimisation opportunities such as bulk buying;
- d) return reusable packaging to the supplier;
- e) use and / or recycle off-cut material; and
- f) return surplus materials to supplier e.g. plasterboard.

5.1.3 Waste Disposal

Waste disposal will be minimised as much as possible, in line with the waste hierarchy. However, if demolition, excavation, or construction waste is to be disposed of, it requires pre-treatment before disposal at landfill. Pre-treatment must be a physical, thermal, chemical, or biological process (including sorting on-site) that changes the characteristics of the waste to reduce its volume, reduce its hazardous nature, facilitate its handling, and enhance its recovery.

Waste classification technical guidance¹⁷ requires that within a mixed waste the separately identifiable wastes are assessed separately.

Mixing hazardous waste, including mixing different types of hazardous waste or mixing hazardous waste with other waste substances, is prohibited under the Hazardous Waste Regulations 2005. Wastes that have been mixed must be separated whenever possible.

Before a waste can be accepted at a landfill site, the landfill operator must be satisfied the waste meets:

- a) its permit conditions;
- b) waste acceptance procedures (WAP); and
- c) waste acceptance criteria (WAC).

If disposal to landfill is the best management option, the waste producer must follow these procedures or the operator may refuse to accept the waste.

Before a waste producer can take waste to a landfill site for disposal, they need to check the landfill site has the appropriate permit¹⁸ and must have completed the following:

- a) duty of care transfer note / hazardous waste consignment note;
- b) pre-treatment declaration form¹⁹;
- c) basic characterisation of the waste, to include:
 - i. description of the waste;
 - ii. waste code (using List of Wastes²⁰);
 - iii. composition of the waste (by testing, if necessary); and
 - iv. WAC testing (if required).

5.1.4 Demolition

Before

A pre-demolition audit has been undertaken to identify and maximise material that could be saved or recycled. The audit can also be used to support the BREEAM assessment process. The result of this audit is often known as a Demolition Bill of Quantities.

The purpose of the audit is to:

- a) specify types of materials;
- b) estimate the amount of material expected;
- c) record the condition of materials. Cleaner material is easier to recycle;
- d) identify potential applications for the reuse and recycling of demolition materials; and
- e) identify possible contamination by hazardous materials like asbestos or lead. These materials will limit reuse / recycling options and are more likely to require disposal.

During

Soft strip before demolition allows items to be reclaimed for use on-site or sold to a reclamation yard. The construction programme should allow time for this reclamation to take place.

Accurate data records on all demolition waste arisings and management routes should be added to the SWMP.

¹⁷ Technical Guidance WM3 available from <https://www.gov.uk/government/publications/waste-classification-technical-guidance> (accessed 1 April 2022).

¹⁸ See <https://www.gov.uk/guidance/waste-environmental-permits> (accessed 1 April 2022).

¹⁹ Environment Agency guidance, *Treatment of waste for landfill*, available from <https://www.gov.uk/government/publications/treatment-of-waste-for-landfill> (accessed 1 April 2022).

²⁰ More information about the List of Wastes, or European Waste Catalogue codes, is available from <https://www.gov.uk/how-to-classify-different-types-of-waste> (accessed 1 April 2022).

5.1.5 Excavation

Before

Ground investigations will be undertaken at detailed design stage and a suitable remediation strategy will be established if required.

A waste classification assessment should be carried out when the extent of excavation (and so waste arising) is established. This should minimise the volume of hazardous waste excavated and maximise opportunities for reuse or recovery.

A MMP should be prepared if excavated material is to be reused.

During

Contaminated and uncontaminated soils are likely to be mixed during the piling process. A watching brief should be maintained to segregate different soils and reduce mixing.

As described in section 4.1, Soilfix estimate about 77% of material to be generated from demolition and excavation could be reused on-site. Excavated material will therefore be handled carefully to maximise reuse opportunities.

Excess excavated soils will be analysed and classified prior to disposal.

5.1.6 Construction

Before

The Applicant / Principal Contractor will develop a detailed construction SWMP that:

- a) identifies likely hazardous waste and procedures for management;
- b) identifies registered waste carriers (for hazardous waste), authorised recycling facilities, and authorised disposal contractors;
- c) instructs how to check valid authorisation of these waste carriers / contractors; and
- d) ensures detailed procedures are in place for the transfer of waste to registered carriers or other hauliers (for non-hazardous waste) and that all contractors, including subcontractors and their personnel, are fully aware of those procedures.

The Principal Contractor must ensure:

- a) responsibility for waste management is assigned;
- b) the responsible party has the necessary training and authority to ensure compliance;
- c) waste is stored in accordance with relevant legislation, notably section 34 Environmental Protection Act 1990;
- d) waste collection is undertaken only by registered waste carriers;
- e) waste is deposited at authorised treatment and disposal sites;
- f) when waste is removed from Site the following information is recorded:
 - i. the quantity of waste leaving (volume or tonnage);
 - ii. the identity of the person removing the waste;
 - iii. the relevant waste carrier registration number;
 - iv. a written description of the waste; and
 - v. the destination of the waste.
- a) resources are reused within the Site where possible;
- b) waste segregation is undertaken as appropriate following assessment of waste types and quantities to

arise at various stages of the project and the local waste reprocessing market e.g. existing bricks not used within the refurbishment will be segregated on-site to create a pile mat;

- c) waste is sorted and recycled on-site into as many of the following categories as possible / practical;
 - i. inert / hardcore;
 - ii. metals;
 - iii. plastics;
 - iv. concrete;
 - v. glass;
 - vi. cardboard / paper;
 - vii. gypsum / plasterboard;
 - viii. miscellaneous;
 - ix. timber; and
 - x. hazardous e.g. chemicals and oils.
- j) on-site segregation receptacles are marked, clearly signposted, and easily accessible;
- k) on-site segregation is considered in the first instance. If this is not possible, off-site sorting of mixed wastes should be undertaken in preference to disposal; and
- l) a 'quick wins' approach is adopted. This should target waste with high impact on cost. It should focus on moving from disposal to recycling / recovery. Waste timber (from formwork) and plasterboard off cuts are often chosen.

Quick wins can offer significant cost savings to the project. WRAP identifies a waste recovery quick win as: *"an improvement in recovery (reuse or recycling) for a specific construction waste material which will deliver a higher than standard practice recovery without increasing costs, preferably with a cost saving"*²¹.

During

The Principal Contractor is encouraged to recycle and reuse locally available construction, demolition, and excavation waste materials.

The Principal Contractor should arrange audits to:

- a) ensure waste actually reaches its planned destination; and
- b) record amounts of waste reused, recycled, recovered and sent to landfill against targets.

The Principal Contractor should seek to establish a strong partnership with a waste management contractor from the outset to enable fast flow of data returns after collection.

At least every six months during construction works the Principal Contractor should review the plan, record the types, quantities and disposal method of all wastes, and subsequently update the plan as necessary.

5.2 WMM Targets

5.2.1 Applicant's Sustainability Targets

The Applicant's sustainability targets are set out in its Circular Economy Statement and Sustainability Statement (both presented as separate submission documents). Those of relevance to this SWMP are summarised below.

²¹ WRAP, *Practical solutions for sustainable construction: Waste Recovery Quick Wins: Improving recovery rates without increasing costs*, July 2007, page 8.

BREEAM New Construction 2018 (non-residential areas only)

The Applicant is targeting an 'Excellent' rating under BREEAM New Construction 2018 for the proposed non-residential areas. Its BREEAM pre-assessment, presented in the Sustainability Statement, explains how the Applicant is targeting four credits as part of Wst 01. The pre-assessment commits to satisfying the following criteria under Wst 01:

- completing a pre-demolition audit;
- implementing a compliant RMP;
- achieving a construction resource efficiency of < 6.5 tonnes of construction waste generated per 100m² of GIA; and
- diverting at least 80% of non-demolition waste and 90% of demolition waste from landfill.

Circular economy commitments

The Circular Economy Statement commits to the following Site-wide targets (applicable to residential and non-residential areas):

- at least 95% of all demolition waste will be repurposed, recycled and / or reused (with maximised reuse on-site, for example within sub-base);
- at least 95% of construction waste will be reused, returned to supplier for recycling and / or recycled (i.e. diverted from landfill); and
- at least 95% of excavation waste will be diverted from landfill and put to beneficial use.

5.2.2 Best and Good Practice Recovery Rates

WRAP guidance²² details standard, good practice, and best recovery rates. These are summarised in Table 5.

Before works start, waste targets will be set by the Applicant. Due consideration will be given to the rates below. Standard recovery rates should be adopted as the minimum.

²² WRAP, *Achieving good practice Waste Minimisation and Management*, n.d.

Table 3: Standard, good, and best practice recovery rates by material, extracted from WRAP guidance

Material	Standard recovery rate (%)	Good practice quick win rate (%)	Best practice recovery rate (%)
Timber	57	90	95
Metals	95	100	100
Plasterboard	30	90	95
Packaging	60	85	95
Ceramics	75	85	100
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical equipment	Limited Information	70*	95
Furniture	0-15	25	50
Insulation	12	50	75
Cement	Limited Information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information**	Limited information**

Notes from the WRAP guidance:

* "This is a required recovery target for the type of WEEE likely to be produced from construction sites e.g., lighting (Waste Electrical and Electronic Equipment (WEEE) Regulations 2013)"

** "This cannot be 100%, as some hazardous waste (e.g., asbestos) must be landfilled."

5.3 WMM Monitoring

The Principal Contractor will review the SWMP at least every month. It will check it meets the needs of the project's WMM and recycling rates. Quantities of waste reused, recycled, recovered, incinerated, or landfilled will be recorded. A comparison should be made with estimated waste arisings where relevant. Targets should be adjusted / improved where possible.

6. Roles and Responsibilities

The responsibilities of each party in the development and monitoring of the SWMP are outlined in the table below.

Table 4: Roles and responsibilities

Organisation	Timeframe	Responsibilities
The Applicant: Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited		The overriding responsibility for ensuring that a SWMP is prepared and implemented lies with the Developer. However, on appointment of a Principal Contractor, responsibility is shared.
	Pre-construction	a) ensure updated SWMP is prepared before any construction work begins and ensure it is clear and comprehensive; b) appoint Principal Contractor, provide a copy of this planning stage SWMP to the Principal Contractor; c) require a pre-demolition audit to identify materials that could be salvaged and reused; and d) require soft strip of the existing buildings before demolition.
	During construction	e) alongside Principal Contractor, update SWMP as project progresses and ensuring effective implementation; f) pay waste contractors only when evidence of delivery at an authorised site is provided; and g) undertake periodic checks and audits.
	Post Construction	h) require Principal Contractor to produce detailed SWMP; i) keep a copy of SWMP for two years; and j) together with Principal Contractor undertake a review of waste arisings and fate against estimated waste arisings and identify strengths and weaknesses of waste management method. And explore opportunities for future improvement.
Author: Waterman	Pre-construction	k) Preparation of outline SWMP (this document).
	Construction / post construction	Not applicable – responsibility for updating and implementation should lie with the Applicant / Principal Contractor.
Principal Contractor: To be confirmed	Pre-construction	l) produce detailed SWMP (to assist evidencing Applicant's waste targets and BREEAM assessment; m) produce MMP for any excavation waste that is proposed for reuse; n) undertake pre-demolition audit to identify materials that could be salvaged and reused; and o) undertake a soft strip of the existing buildings before demolition
	During construction	p) ensure SWMP is kept at either the Site office, or a central location, and ensure it is available to all contractors and that its location is known; q) ensure subcontractors adhere to the SWMP; r) provide induction and training to all workers, and brief subcontractors; s) make and maintain arrangements to ensure cooperation and develop and promote sustainable waste management and monitoring of effectiveness; t) ensure waste produced during construction is reused, recycled or recovered; u) review and update the SWMP to record all waste removed from Site: i. identity of person removing waste and the waste carrier

Organisation	Timeframe	Responsibilities
		- registration number; ii. copy of written description of waste; and iii. the site the waste is being taken to and whether it is permitted or exempt.
		v) update the plan (a minimum of every six months and recommended every three months) to record types and quantities of waste that is: i. reused (whether on or off-site); ii. recycled (whether on or off-site); iii. sent for recovery (physical sorting, chemical biological treatment, composting, incineration with energy and remedial treatment of soil) (whether on or off-site); iv. landfilled; and v. disposed of by other means (including burning without recovery or where quantities of mixed waste that are landfilled, reused, recycled or recovered are not known). w) review waste quantities against estimated waste arisings every month; and x) set up a recycling centre on-site to facilitate achieving highest recycling rates.
	Post construction	Within three months the following would be undertaken: y) confirm the plan has been monitored and updated as required; z) explain differences between estimated waste arisings and likely destination of waste and actual performance. - aa) estimate likely cost savings that have been achieved by implementing the SWMP; and - bb) a copy of SWMP would be kept for two years at place of work or Site office. Other responsibilities: - cc) undertake review of waste arisings and disposal method against estimated waste and arisings and identify strengths and weaknesses of waste management method, and opportunities for future improvement.

7. Training and Communication

The Applicant/ Principal Contractor will provide regular training to staff and contractors to enable them to stay compliant with the SWMP. Training will be provided in the form of inductions or toolbox talks, for example.

The table below offers a template to help identify relevant training and communication activities, and how to record these have been undertaken.

Table 5: Summary of training record

Task	Details	Responsibility
Ensure all staff and subcontractors (where relevant) are briefed on waste management practices and the SWMP as part of induction and ensure attendance.		
Place information boards on waste management practices in accessible locations (e.g. in the canteen).		
Distribute a copy of the SWMP to all key personnel each time it is updated including where relevant: a) Principal Designer; b) Client; c) Site manager; and d) Subcontractor(s).		
Undertake inspections and independent audits to ensure waste management is being undertaken in accordance with legislation and to identify if targets are being met.		
Provide update bulletins outlining results of audits and performance against reuse and recycling targets.		
Provide appropriate training and ensure it is up to date.		

APPENDICES

A. Soilfix Material Balance Summary

MATERIAL BALANCE SUMMARY

<u>KEY</u>	
SOIL FINES	
CONCRETE & hardcore	
TOPSOIL FINES	
TARMAC	
SUB-BASE	
DRAINAGE AGGREGATE	

<u>TOTAL SOIL REQUIREMENTS</u>			
<u>TOTAL REQUIRED</u>	21080.40	m3	
<u>GENERATED</u>	21565.15	m3	
<u>BALANCE</u>	484.75	m3	TBC

<u>TOTAL CAPPING hardcore REQUIRMENTS</u>			
<u>TOTAL REQUIRED (WITHIN SOILFIX CONSTRUCTION)</u>	6239.90	m3	
<u>GENERATED</u>	16706.26	m3	
<u>BALANCE</u>	10466.36	m3	SURPLUS

<u>TOTAL TOPSOIL REQUIRMENTS</u>			
<u>TOTAL REQUIRED (ABOVE SOILFIX FORMATION)</u>	6109.20	m3	
<u>GENERATED</u>	7472.76	m3	
<u>BALANCE</u>	1363.56	m3	SURPLUS

<u>TOTAL SUB-BASE REQUIRMENTS</u>			
<u>TOTAL REQUIRED (ABOVE SOILFIX FORMATION)</u>	5995.00	m3	
<u>GENERATED</u>	6934.70	m3	
<u>BALANCE</u>	939.70	m3	SURPLUS

<u>TOTAL TARMAC REQUIRMENTS</u>			
<u>TOTAL REQUIRED (ABOVE SOILFIX FORMATION)</u>	1028.78	m3	
<u>GENERATED</u>	1028.78	m3	
<u>BALANCE</u>	0.00	m3	TBC

<u>TOTAL DRAINAGE AGGREGATE REQUIRMENTS (IN CONSTRUCTION PHASE)</u>			
<u>TOTAL REQUIRED</u>	6003.00	m3	
<u>GENERATED</u>	6676.06	m3	
<u>BALANCE</u>	673.06	m3	SURPLUS

B Common Construction and Demolition Waste Codes

Appendices

B. Common Construction and Demolition Waste Codes

The list below is available online from the Gov.uk website²³. You can find additional codes for other waste and advice on how to apply these codes in the Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste.

An asterisk (*) at the end of a code means the waste is hazardous.

Insulation and asbestos materials

Waste type	Waste status	Waste code
Insulation containing asbestos	Hazardous	17-06-01*
Other insulation containing hazardous substances	Hazardous	17-06-03*
Other insulation materials	Non-hazardous	17-06-04
Other construction materials containing asbestos	Hazardous	17-06-05*

Concrete, bricks, tiles and ceramics

This list excludes asbestos-containing materials – refer to the insulation and asbestos materials table for any waste with asbestos.

Waste type	Waste status	Waste code
Concrete	Non-hazardous	17-01-01
Bricks	Non-hazardous	17-01-02
Tiles and ceramics	Non-hazardous	17-01-03
Concrete, bricks, tiles and ceramics (alone or in mixtures) containing hazardous substances	Hazardous	17-01-06*
Concrete, bricks, tiles and ceramics in mixtures, containing no hazardous substances	Non-hazardous	17-01-07

Wood, glass and plastic

This list excludes packaging wastes and domestic type recyclables - refer to the [packaging section](#) for related codes.

Waste type	Waste status	Waste code
Wood - untreated	Non-hazardous	17-02-01
Glass - uncontaminated	Non-hazardous	17-02-02
Plastic - excludes packaging waste	Non-hazardous	17-02-03
Treated wood, glass, plastic (alone or in mixtures) containing hazardous substances	Hazardous	17-02-04*

²³ Gov.uk *Classify different types of waste*, available at: <https://www.gov.uk/how-to-classify-different-types-of-waste/construction-and-demolition-waste> (accessed 21 October 2021).

Bituminous mixtures, coal tar and tar

Waste type	Waste status	Waste code
Bituminous mixtures containing coal tar	Hazardous	17-03-01*
Other bituminous mixtures	Non-hazardous	17-03-02
Coal tar and tarred products	Hazardous	17-03-03*

Metallic waste, including cable

Waste type	Waste status	Waste code
Copper, bronze and brass	Non-hazardous	17-04-01
Aluminium	Non-hazardous	17-04-02
Lead	Non-hazardous	17-04-03
Iron and steel	Non-hazardous	17-04-05
Tin	Non-hazardous	17-04-06
Mixed metals	Non-hazardous	17-04-07
Metals containing hazardous substances	Hazardous	17-04-09*
Cables containing oil, coal tar and other hazardous substances	Hazardous	17-04-10*
Other cables	Non-hazardous	17-04-11

Soil, contaminated soil, stones and dredging spoil

You must be able to prove that your waste does not contain any hazardous substances to classify soil as non-hazardous. You will always need to assess the soil before you hand it over to be collected.

The presence of any fragments of asbestos-containing material in the soil results in a mixed hazardous waste – refer to the insulation and asbestos materials table for more guidance.

Waste type	Waste status	Waste code
Soil and stones containing hazardous substances	Hazardous	17-05-03*
Other soil and stones	Non-hazardous	17-05-04
Dredging spoil containing hazardous substances	Hazardous	17-05-05*
Other dredging spoil	Non-hazardous	17-05-06

Gypsum

Waste type	Waste status	Waste code
Gypsum materials containing hazardous substances	Hazardous	17-08-01*
Other gypsum materials	Non-hazardous	17-08-02

Cement

Waste type	Waste status	Waste code
Un-used or un-set cement	Hazardous	17-09-03*

Appendices

Paints and varnishes

Waste type	Waste status	Waste code
Containing organic solvents or other hazardous substances	Hazardous	08-01-11*
Not containing organic solvents or other hazardous substances	Non-hazardous	08-01-12
Paint or varnish remover	Hazardous	08-01-21*
Paint cans	Hazardous	Refer to packaging waste and recyclables section

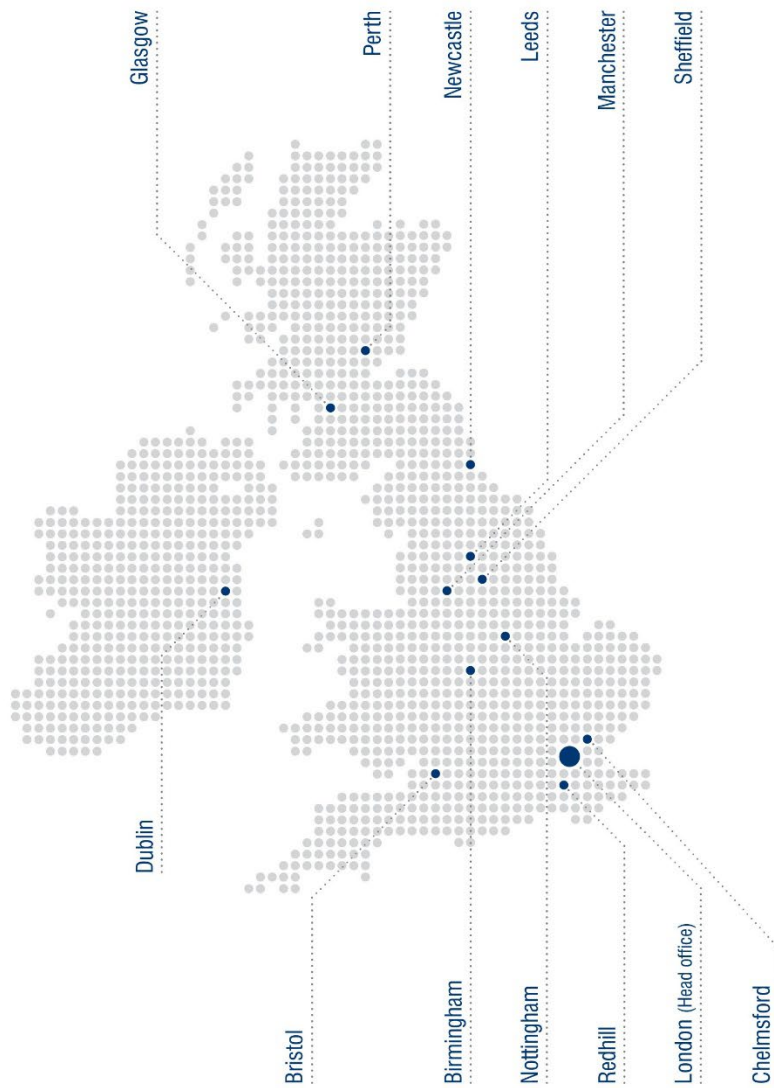
Adhesives and sealants

Adhesives and sealants of a type normally used by householders can be classified under the codes indicated in brackets if separated out from other waste.

Waste type	Waste status	Waste code
Containing organic solvents or other hazardous substances	Hazardous	08-04-09* (20-01-27*)
Not containing organic solvents or other hazardous substances	Non-hazardous	08-04-10 (20-01-28)
Adhesive or sealant containers	Hazardous	Refer to packaging waste and recyclables section

Appendices

UK and Ireland Office Locations



Appendix D

Operational Waste Strategy



Operational Waste Management Strategy

St Ann's New Neighbourhood

May 2022

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Client Name: Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited
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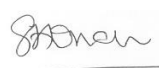
This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
Draft	April 2022	Milly Bowen		

Comments	Issued in draft with team notes for client, design team, and legal review.			
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Second	May 2022	Milly Bowen	Sarah Owen	Sarah Owen Senior Associate 
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Comments	Second issue for planning following receipt of project planning consultant and legal review comments.			
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Third	May 2022	Milly Bowen	Sarah Owen	Sarah Owen Senior Associate 
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Comments	Third issue for planning following receipt of client comments.			
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Disclaimer

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1. Introduction

1.1 The Brief

Waterman Infrastructure & Environment Limited (Waterman) has been instructed by Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited (the Applicant) to prepare an operational waste management strategy (OWMS) to support a hybrid planning application for the redevelopment of part of St Ann's hospital (the Site). The Site lies within the administrative boundary of the London Borough of Haringey (LBH).

1.2 Description of Development

This OWMS accompanies a hybrid planning application seeking permission for:

- 1) detailed planning for Phase 1a, for:
 - a) the change of use, conversion and alteration of seven existing hospital buildings within Phase 1a for a flexible range of uses (Use Class E, F1 / F2);
 - b) the demolition of some existing buildings (in accordance with the demolition plan);
 - c) the erection of new buildings for residential uses (Use Class C3); and
 - d) alterations to the existing access road and installation of new vehicular, pedestrian and cycle accesses; landscaping including enlargement of the Peace Garden, associated car and cycle parking spaces and servicing spaces.
- 2) the demolition of existing buildings and structures in Phases 1b, 2 and 3 (in accordance with the demolition plan);
- 3) outline planning (all matters reserved except access) for Phases 1b, 2 and 3 for:
 - a) the erection of new buildings for residential development (Use Class C3), commercial business and service (Use Class E), and local community and learning (Use Class F1 / F2); and
 - b) associated pedestrian and cycle accesses; landscaping including enhancements to the St Ann's Hospital Wood and Tottenham Railsides Site of Importance for Nature Conservation (SINC) car and cycle parking spaces and servicing spaces.

More detail about proposed uses and areas is set out in section 3.

1.3 Report Scope

The purpose of this OWMS is to detail how waste will be stored, managed, and collected when the development is complete. It outlines the types and volumes of waste predicted to arise. It sets out anticipated waste storage capacity requirements (bin numbers) for the proposed uses. More detail about these provisions, particularly those associated with the outline element of the scheme, will be provided as part of subsequent reserved matters applications.

This document should be read in conjunction with other submission documents, including the Sustainability Statement, Circular Economy Statement, and Site Waste Management Plan.

1.4 Exclusions and Limitations

This report was undertaken in accordance with a scope of works agreed between Waterman and the Applicant. The benefit of this report is made to Hill Residential Limited, Catalyst Housing Limited and Catalyst by Design Limited.

Waterman has endeavoured to assess all information provided to it during this work but makes no guarantees or warranties as to the accuracy or completeness of this information.

The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at the Site.

2. Guidance and Standards

The following guidance and standards were considered in developing this OWMS.

2.1 The Building Regulations 2010 Approved Document H¹

This Approved Document provides practical guidance. It sets out the requirements of Schedule 1 and Regulation 7 of the Building Regulations 2010 (SI 2010/2214) for England and Wales. Requirement H6, “Solid Waste Storage” specifies:

- “(1) Adequate provision shall be made for storage of solid waste.
- (2) Adequate means of access shall be provided:
 - (a) for people in the building to the place of storage
 - (b) from the place of storage to a collection point [...]

Requirement H6 stipulates waste storage should be designed and sited so as not to be prejudicial to health or local amenity.

2.2 British Standard 5906:2005²

This British Standard is a code of practice for methods of storage, collection, segregation for recycling and recovery, and on-site treatment of waste. This standard relates to residential and non-residential buildings and healthcare establishments. It is applicable to new buildings, refurbishments and conversions of residential and non-residential buildings, including but not limited to retail and offices. It expands upon the legal requirements set out in The Building Regulations 2010, Approved Document H, requirement H6 as above. BS 5906:2005 advises that:

“Designers should consider:

- Easy and safe access for waste producers, including older persons or persons with disabilities
- Easy and safe access for collectors and collection vehicles
- Location and space (including avoidance of opportunity to cause nuisance or injury) [...]
- Special requirements (e.g., separate storage and collection provisions for healthcare waste and bulky waste)”

2.3 Building Research Establishment’s Environmental Assessment Method

The Building Research Establishment’s Environmental Assessment Method (BREEAM) process evaluates the procurement, design, construction, and operation of a development against targets that are based on performance benchmarks.

The BREEAM New Construction UK technical manual³ advises on allocating waste storage provision for undetermined uses. It recommends the following provisions for recyclable wastes as a minimum:

- a) at least 2m² per 1,000m² of net floor area for buildings < 5,000m².
- b) a minimum of 10m² for buildings ≥ 5,000m²; and
- c) an additional 2m² per 1,000m² of net floor area where catering is provided (with an additional minimum of 10m² for buildings ≥ 5,000m²).

¹ GOV.UK (2010) ‘The Building Regulations 2010, Drainage and Waste Disposal’ H6 Solid Waste Storage, page 53. Available at www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h (accessed 31 March 2022).

² British Standard BS5906:2005: Waste management in buildings – Code of practice, December 2005 Revision, Committee reference B/508/1.

³ Technical Manual SD5078: BREEAM UK New Construction 2018 1.2.

The net floor area should be rounded up to the nearest 1,000m². We recommend a similar allocation is made for residual waste (albeit minus the additional provision required for catering).

2.4 London Plan (2021)⁴

London Plan policy SI 7, reducing waste and supporting the circular economy, promotes minimising waste, reusing materials, and recycling. It encourages developments to be designed with “...adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food”.

2.5 London Plan Guidance: Circular Economy Statements (2022)⁵

The Greater London Authority's Circular Economy Statements guidance expects adequate and easily accessible storage and collection space to be provided for at least three waste streams – dry recyclable waste, residual waste, and food waste. It encourages applicants to be more ambitious than London Plan policy targets for recycling etc. where possible, and to monitor performance during operational phases.

2.6 London Borough of Haringey Local Plan

2.6.1 LB Haringey Strategic Policies (2017)⁶

Strategic policy SP6, waste and recycling, seeks to minimise waste creation, increase recycling rates, and decrease disposal. It requires integrated, well designed recycling facilities to be incorporated into all new developments.

2.6.2 LB Haringey Development Management DPD (2017) ⁷

Policy DM4 of LBH's Development Management Development Plan Document (DPD) expects all proposals to consider how to sustainably manage waste arising from the occupation of new developments. It requires provision to be made for separately storing residual, recyclable, and organic waste. These provisions must be adequate to manage the volume of waste arising from the site, accessible, safe, sensitively located and integrated into the development.

2.6.3 New Local Plan (2021)⁸

LBH started the process of preparing a new Local Plan in 2020. The formal consultation on its “*New Local Plan: First Steps*” document ran from November 2020 until March 2021. A draft Local Plan is expected in summer 2022.

The “*New Local Plan: First Steps*” identified minimising waste and reducing emissions from resource use as a key issue to be addressed by the New Local Plan. It suggested the New Local Plan would set expectations on how new developments should be designed to support reuse / recycling / composting and to be adaptable / flexible / useful for as long as possible.

⁴ GLA London Plan 2021 available from <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021> (accessed 31 March 2022).

⁵ GLA Circular Economy Statements Guidance (March 2022) available from <https://consult.london.gov.uk/circular-economy-statements> (accessed 30 March 2022).

⁶ LBH Local Plan: Strategic Policies 2013 (with alterations 2017) available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-strategic-policies> (accessed 30 March 2022).

⁷ LBH Local Plan: Development Management DPD (July 2017) available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-development-management-dpd> (accessed 30 March 2022).

⁸ Information about LBH New Local Plan process available from <https://www.haringey.gov.uk/planning-and-building-control/planning-policy/new-local-plan-first-steps-engagement> (accessed 30 March 2022).

2.6.4 Sustainable Design and Construction SPD (2013)⁹

LBH's "*Sustainable Design and Construction Supplementary Planning Document*" (SPD) advises:

- a) residents should not be expected to walk more than 30m to dispose of their wastes;
- b) bulk bins must be located within 10m of the point of collection;
- c) sufficient facilities should be provided to store residual, recyclable, and food waste separately;
- d) the following containers (images below) should be provided per house:
 - i. 1No. 240 litre bin for residual waste;
 - ii. 1No. 240 litre bin for mixed dry recyclable (MDR) waste; and
 - iii. 1No. caddy for food waste.
 - iv. residents with gardens can sign up to LBH's chargeable garden waste collection service¹⁰ (a large bin (240 litre), small bin (140 litre), or sack serviced weekly).
- e) for flats, communal storage facilities should be sized to accommodate:
 - i. 1No. 1,100 litre bin for residual waste per 6 dwellings;
 - ii. 1No. 1,100 litre bin for MDR waste per 10 dwellings; and
 - iii. 1No. 360 litre bin for food waste per 40 dwellings.
- f) storage areas for residential waste and commercial waste should be distinct and separate to avoid misuse of household waste facilities by businesses;
- g) routes from waste stores to collection points must be as straight as possible with no kerbs or steps. Dropped kerbs should be installed as necessary;
- h) layouts should allow all bins to be easily accessible to collectors and occupants;
- i) all doors and pathways must be 200mm wider than any bins that need to pass through or over them;
- j) refuse collection vehicles (RCVs) should not be expected to reverse; and
- k) adequate waste storage arrangements must be made so that waste does not need to be placed on the public highway other than immediately before it is due to be collected.

⁹ LBH Sustainable Design and Construction Supplementary Planning Document available from <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/supplementary-planning-documents-spds> (accessed 31 March 2022).

¹⁰ More information about LBH garden waste collection service available from <https://www.haringey.gov.uk/environment-and-waste/refuse-and-recycling/garden-waste/sign-up> (accessed 31 March 2022).

Table 1: LBH standard bin types

Property type	Waste stream	Bin type	Image
Individual house	Residual	240 litre wheeled bin	
	MDR	240 litre wheeled bin	
	Food	Caddy	
Flats	Residual	1,100 litre wheeled bin	
	MDR	1,100 litre wheeled bin	

Property type	Waste stream	Bin type	Image
	Food	360 litre wheeled bin	

Source: LBH website <https://www.haringey.gov.uk/environment-and-waste/refuse-and-recycling/which-bin-to-use#different-bins> (accessed 1 April 2022).

3. The Proposed Development

3.1 Overview

The Site occupies a 7.2 ha parcel of land. It comprises a number of buildings formerly part of St Ann's hospital. The majority of existing buildings are no longer in active use. They range in height from two to three storeys.

The masterplan is proposed to be delivered in four phases as illustrated in the figure below. Phase 1a is covered by the detailed component of this hybrid planning application. Phases 1b, 2, and 3 are within the outline component and are anticipated to come forward as future reserved matters applications.

Figure 1: Detailed and outline components of the planning application



Source: Design and access statement page 46.

The proposed development is described in section 1.2. It includes:

- a) up to 995 residential dwellings – 239 in detail and up to 756 in outline (as summarised in table below);
- b) up to 4,150m² gross internal area (GIA) of non-residential floorspace (Use Class E / F1 / F2), most of which will be arranged across retained buildings; and
- c) 167 parking spaces.

Table 2: Indicative residential unit mix (detailed and outline)

Phase	Dwelling size				Count
	One bed	Two bed	Three bed	Four bed	
Outline (total)	241	380	99	36	756
Detailed (total)	104	102	15	18	239
Maximum (total)	345	482	114	54	995

3.2 Detailed Phase 1a

The detailed part of the scheme, Phase 1a, will involve the demolition and retention of buildings. Seven existing hospital buildings are being retained for a flexible range of non-residential uses. New buildings are being erected for residential uses.

The proposed residential uses will be arranged across four plots (A to D). Plot A in the north and B in the west will comprise individual three- and four-bedroom houses. Plots C and D in the centre will comprise a mix of one-, two-, and three-bedroom flats.

The diagram in Appendix A highlights residential waste storage areas. The individual houses in plots A and B will have their own bins in front garden areas. Residents of plots C and D will share communal bin stores at ground level.

3.3 Outline Phases 1b, 2, and 3

The outline part of the scheme, phases 1b to 3, will comprise around 25 buildings arranged across 10 plots (E to O). The detail of these areas will be set out in future reserved matters applications.

4. Operational Waste Management Strategy

4.1 Overview

4.1.1 Residential waste

Three waste streams are anticipated to arise from residential areas on a weekly basis: residual, MDR, and food. Bulky waste (such as fridges, mattresses, sofas, etc.) is expected to arise occasionally.

Residents will be expected to separate their wastes at source, likely within kitchen areas. Then they will deposit it into a container which will be presented for collection.

A wheeled bin based solution is anticipated for residential waste. Bins will be stored privately (e.g. front garden areas of individual houses) or communally (e.g. a shared bin store at ground level).

LBH will collect residential waste from the development. Its standard service offers at least weekly collections of residual, MDR, and food waste. Residents will be expected to liaise with LBH if and when bulky waste arises.

4.1.2 Non-residential waste

Non-residential tenants will be responsible for segregating, storing, and managing their waste.

Specific arrangements for the storage, management, and collection of non-residential waste will be determined during detailed design.

4.2 Detailed Phase 1a

4.2.1 Estimated storage requirements

Residential waste storage requirements have been estimated using the method outlined in LBH's SPD (see section 2.6.4). The subsequent storage requirements for phase 1a are summarised in the table below.

Table 3: Phase 1a residential waste storage capacity requirements

Plot / building	No. residential units	Waste storage capacity requirements			Total no. containers
		Residual waste	MDR waste	Food waste	
A	8	8No. 240 litre bins	8No. 240 litre bins	8No. caddies	24
B	18	18No. 240 litre bins	18No. 240 litre bins	18No. caddies	54
C1	38	7No. 1,100 litre bins	4No. 1,100 litre bins	1No. 360 litre bin	12
C2	34	6No. 1,100 litre bins	4No. 1,100 litre bins	1No. 360 litre bin	11
C3	34	6No. 1,100 litre bins	4No. 1,100 litre bins	1No. 360 litre bin	11
D1	34	6No. 1,100 litre bins	4No. 1,100 litre bins	1No. 360 litre bin	11
D2	22	4No. 1,100 litre bins	3No. 1,100 litre bins	1No. 360 litre bin	8
D3	51	9No. 1,100 litre bins	6No. 1,100 litre bins	2No. 360 litre bin	17

4.2.2 Storage provisions

Storage provisions are shown on the Karakusevic Carson Architects drawings presented in Appendix A and the design and access statement (DAS) presented elsewhere.

Houses in plots A and B will store their bins in private front garden areas. Each house will have three bins as described in the table above.

Flats in plots C and D will share communal bin stores at ground level. These stores have been sized to hold a week's worth of waste from the flats they serve.

4.2.3 Collection

Waste will be presented for collection at ground level in bins. It will be collected once a week by LBH.

LBH collection operatives will be expected to service bins directly from communal storage areas or from outside front gardens. RCVs will stop adjacent to each residential bin store / bin presentation area. LBH operatives will transfer bins to and from the RCV.

Residents will arrange the date, time, and access for bulky waste collections with LBH.

More information about RCV access is set out in the Applicant's DAS and Transport Statement presented elsewhere.

4.2.4 Non-residential

As the precise end uses of the flexible non-residential space proposed in phase 1a is yet to be determined, a space provision in line with the BREEAM guide is recommended (see section 2.3 above). This is equivalent to:

- 2m² per 1,000m² net internal area (NIA) for MDR waste;
- 2m² per 1,000m² NIA for catering waste (food, glass, etc.); and
- 2m² per 1,000m² NIA for residual waste.

This space will be incorporated into the curtilage of the non-residential buildings during detailed design. It will be sized to accommodate the appropriate number, size, and type of bin depending on the end use.

The tenants of the unit will be responsible for segregating, storing, and managing their waste. They will appoint a commercial contractor to collect waste at a suitable frequency. This is likely to be once or twice a week depending on the nature and quantity of waste arisings and space available for storage. Tenants will ensure their wastes are presented for collection at the time and place agreed with their waste management contractor(s).

Information about non-residential waste collections can be found in the DAS and Transport Statement presented elsewhere.

4.3 Outline Phases 1b, 2, and 3

Traditional bin based systems are anticipated for all proposed outline land uses. Outline detail on the OWMS for these uses is provided in the sections below. More information about operational waste management will accompany future reserved matters planning application(s).

4.3.1 Residential

Residential waste will be stored and collected in line with LBH's requirements. It will be separated into at least three distinct streams – residual, MDR, and food. Sufficient containment capacity will be provided in all residential waste storage areas (communal and private) to allow for separate storage of these three waste streams.

Residents will be encouraged to separate their wastes at source. This should help to maximise opportunities for recovery and recycling.

Sharing initiatives such as Freecycle or repair cafés will also be explored at the appropriate time.

Space for facilities to compost green (garden) waste has been allocated in the growing hub. Refer to the Applicant's Landscape Design and Access Statement for details.

Where possible, flexibility will be built into the design of residential waste storage areas to enable the development to adapt to future change (e.g. improving recycling rates).

4.3.2 Non-residential

Commercial tenants will be responsible for segregating, storing, and managing their waste. They will be expected to consider the waste hierarchy when making decisions about off-site waste management solutions for their waste.

Commercial waste management contractor(s) will be appointed to collect waste at a suitable frequency. This is likely to be once or twice a week depending on the nature and quantity of waste arisings and space available for storage. Tenants will ensure their wastes are presented for collection at the time and place agreed with their waste management contractor(s).

Non-residential spaces have been designed to be flexible and adaptable to multiple uses. For instance, internal partitions will be removable. This will enable the development to adapt to future change as well as the specific waste storage needs of each tenant.

Storage and collection arrangements for each use will be determined during detailed design.

APPENDICES

A. Plans and Drawings

DAS extract – refuse strategy diagram.

3.16 Refuse Strategy

Waste management facilities for the proposed development have been designed in accordance with London Borough of Haringey's (LBH) 'Sustainable Design & Construction Supplementary Planning Document' (Adopted March 2013). Residential waste storage capacity has been calculated using the metric provided by the LBH SPD guidance.

LBH collect each residential waste stream on a weekly basis; on the nominated collection day, the Refuse Collection Vehicle (RCV) will stop adjacent to each residential waste store to collect the bins, returning them once emptied. The development roads will be designed to accommodate for a fully loaded 26 tonne LBH refuse vehicle.

The scheme has been designed to make as many building frontages as possible directly accessible to refuse vehicles. The majority of refuse stores are located fronting onto the main route around the site and are within 10m of that street. The villa blocks to the south have bin stores located further from the road, primarily to maintain an active frontage along the street with refuse vehicles reversing into dedicated refuse bays to maintain compliant drag distances.

Please refer to the accompanying Operational Waste Management Strategy, Transport Statement and drawings for further information.



Ground floor illustrative masterplan drawing showing refuse store locations

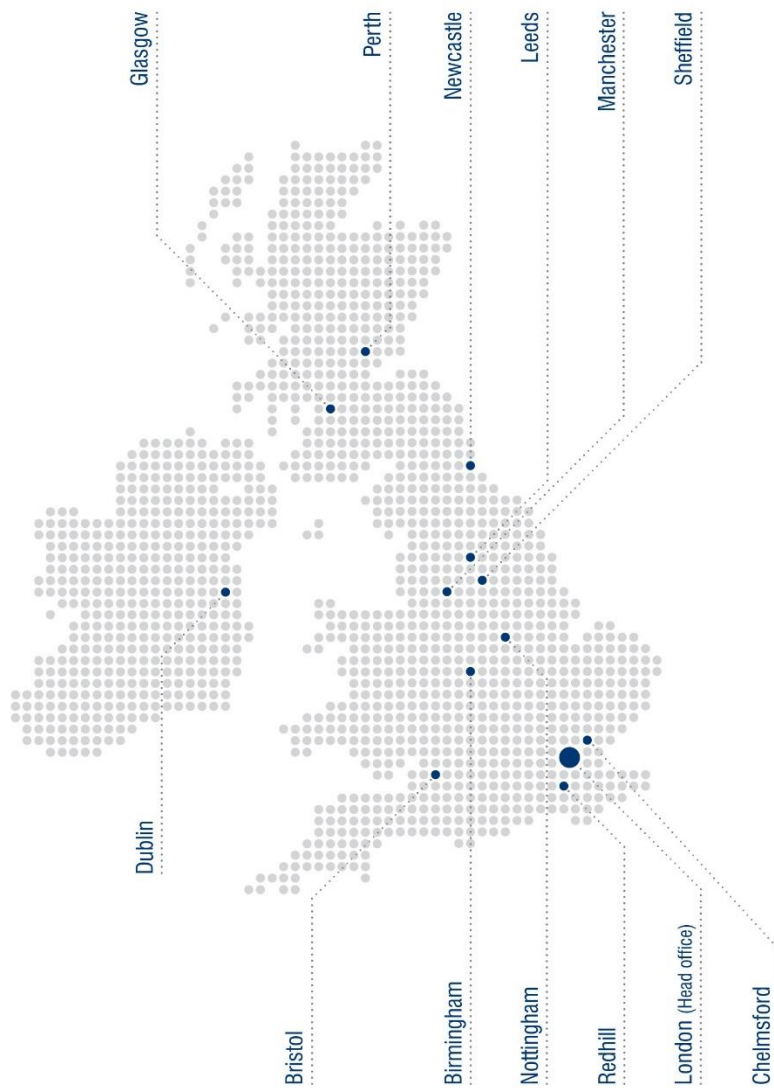
B. Residential Waste Storage Capacity Calculations

Residential waste storage capacity calculations – detailed component only

Plot / building	Property type	No. units	Weekly waste storage capacity requirements based on LBH guidance			
			Residual waste	MDR waste	Food waste	Total
Plot A						
A	Houses	8	8	8	8	24
Plot B						
B	Houses	18	18	18	18	54
Plot C						
C1	Flats	38	7	4	1	12
C2	Flats	34	6	4	1	11
C3	Flats	34	6	4	1	11
Plot D						
D1	Flats	34	6	4	1	11
D2	Flats	22	4	3	1	8
D3	Flats	51	9	6	2	17
Total		239	64	51	33	148

Appendices

UK and Ireland Office Locations



Appendix E

Updated Refuse Calculations

Refuse Schedule

mail@karakusevic-carson.com

633-KCA-XX-XX-SA-A-0301-GEN

22/11/2023

E	No. Units	Bins (240 l)	Bins (23 l)
Residual waste (240 l/1 units)	14	14.0	-
Dry Recycling (240 l/1 units)		14.0	-
Food waste (23 l/1 units)		-	14.0
Totals		28.0	14.0

F1	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	45	8	-
Dry Recycling (1100 l/ 10 units)		5	-
Food waste (140 l/20 units)		-	3
Totals		13	3

F2	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	40	7	-
Dry Recycling (1100 l/ 10 units)		4	-
Food waste (140 l/20 units)		-	2
Totals		11	2

F3	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	28	5	-
Dry Recycling (1100 l/ 10 units)		3	-
Food waste (140 l/20 units)		-	2
Totals		8	2

G1	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	25	5	-
Dry Recycling (1100 l/ 10 units)		3	-
Food waste (140 l/20 units)		-	2
Totals		8	2

G2	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	42	7	-
Dry Recycling (1100 l/ 10 units)		5	-
Food waste (140 l/20 units)		-	3
Totals		12	3

H1	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	23	4	-
Dry Recycling (1100 l/ 10 units)		3	-
Food waste (140 l/20 units)		-	2
Totals		7	2

Refuse Schedule

633-KCA-XX-XX-SA-A-0301-GEN 22/11/2023

H2	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	57	10	-
Dry Recycling (1100 l/ 10 units)		6	-
Food waste (140 l/20 units)		-	3
Totals		16	3

H3	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	33	6	-
Dry Recycling (1100 l/ 10 units)		4	-
Food waste (140 l/20 units)		-	2
Totals		10	2

H4	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	43	8	-
Dry Recycling (1100 l/ 10 units)		5	-
Food waste (140 l/20 units)		-	3
Totals		13	3

J1	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	43	8	-
Dry Recycling (1100 l/ 10 units)		5	-
Food waste (140 l/20 units)		-	3
Totals		13	3

J2	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	38	7	-
Dry Recycling (1100 l/ 10 units)		4	-
Food waste (140 l/20 units)		-	2
Totals		11	2

J3	No. Units	Bins (1100 l)	Bins (140 l)
Residual waste (1100 l/6 units)	33	6	-
Dry Recycling (1100 l/ 10 units)		4	-
Food waste (140 l/20 units)		-	2
Totals		10	2