

Sister Plot C

Circular Economy Statement

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Glossary

Term	Definition
CE	Circular Economy
EoL	End of Life
DfD	Design for Disassembly
LCA	Life-cycle Carbon Assessment
MCC	Manchester City Council
PfE	Places for Everyone
GLA	Greater London Authority

1 Executive Summary

This Environmental Standards Statement (ESS) has been prepared in support of the Application for Full Planning Permission and Listed Building Consent for works to the Hollaway Wall and Listed Building Consent for works to the Viaduct, for Sister – Plot C Development by ID Manchester Limited and University of Manchester.

The proposals comprise the demolition of Barnes-Wallis, Wright Robinson, Manchester Meeting Place, Morton, Moffat Buildings and the construction of two office buildings (Use Class E). At the base of the building the buildings will be connected via an open shared lobby space, which shall comprise a variety of uses including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment). The proposals will also include interventions to the Hollaway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis – drinking establishment). The proposals will also include the creation of a new public square, access and other associated works.

This Statement seeks to demonstrate how Manchester City Council's (MCC) circular economy policies within the Manchester's Core Strategy Development Plan Document (2012), Places for Everyone (2024); and the Addendum to the Manchester Core Strategy (2024), have informed the Proposed Development in embedding circular economy in the design. This Statement should be read in conjunction with the Environmental Standards Statement, Energy Strategy and BREEAM pre-assessment, and supporting relevant technical reports submitted as part of the planning application.

The topics covered in this report include circular economy principles, material strategies and waste management.

In summary, the Development is actively targeting and achieving the waste management and support to develop the employment areas in line with the planning policy. The current proposal aims to minimise non-hazardous demolition, excavation, construction and operational waste sent to landfill. Additionally, the design proposal will consider the addition of material specifications with recycled content, with the potential of recycled aggregates, during the procurement process.

2 Introduction

The current linear "take-make-use-discard" economic model is unsustainable and increasingly problematic in the UK. This system depletes natural resources, turning them into waste without replenishment. A shift to a circular economy is vital, requiring collective action to reduce resource exploitation, limit reliance on landfills and incinerators, and preserve the intrinsic value of existing materials.

2.1 Applicable policies

- Manchester's Local Development Framework – Core Strategy:
 - Policy EC2 – Existing Employment Space
 - Policy CC6 – City Centre High Density Development
 - Policy EN 4 – Reducing CO₂ Emissions by Enabling Low and Zero Carbon Development
 - Policy EN 19 – Waste - Submit a Waste Management Plan for Construction and Demolition Waste
 - Policy EN 20 – Minerals - Promote the use of secondary/recycled aggregates, wherever possible as an alternative to primary extraction.
- Greater Manchester Joint Waste Development Plan
- Places for Everyone (PfE) Joint Development Plan (2024):
 - JP-S1: Sustainable Development
 - JP-S6: Resource Efficiency
 - JP-P1: Sustainable Places.

2.2 Guidance documents

The Greater London Authority (GLA) guidance, a recognised methodology that enables comparison with similar projects across the UK, has been referenced across the document in support of the applicable policies.

2.3 Existing Site

The Site is in Manchester City Centre and is bound by the Manchester South Junction and Altrincham Railway (MSJ&AR) Viaduct to the north, London Road to the east, The Mill to the south and the Renold Building to the west.

The Site currently comprises the landscaped area known as the Bowling Green, the Barnes Wallis and Wright Robinson Building, Manchester Meeting Place and Morton Labs all associated with the former UMIST Campus of the University of Manchester. Although not listed these buildings are of heritage interest. The Site also contains the Grade II Holloway Wall and the MSJ&AR Viaduct. The Moffat Building is also contained within the Plot C boundary, this building is not considered to yield any heritage interest, however it is physically connected to the Holloway Wall.

The Site is located within the Whitworth Street Conservation Area, with the north aspect of the Plot C boundary (viaduct) forming the Conservation Area boundary. The Site therefore forms part of the designated area. The Site also includes a small parcel of land located to the north of the main site, accessed off Sackville Street. This parcel of land was previously used as a waste storage area and is enclosed by fencing and a gate.

The four existing buildings on the Site are unoccupied and in various states of disrepair. The lack of maintenance or repairs raised a series concern for the feasibility of their retention either in whole or in part. As a result, they are proposed for demolition. Please refer to Figure 1on following page.

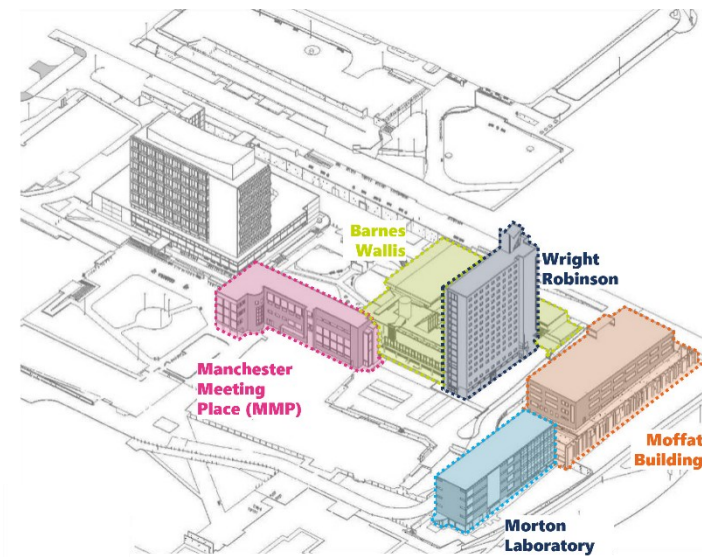


Figure 1 - Existing buildings.

Buildings under coordination for demolition:

1. Moffat Building (Lower Albion Street, M1 3AL), constructed in 1967 for the university. The building is constructed in red brick and is three stories in height.
2. Barnes Wallis (Lower Albion Street, M1 7JA), opened in 1966 as the Students Union Building.
3. Wright Robinson (Lower Albion Street, M1 7JA), opened in 1966 as a hall of residence for students. The building is 13 stories for student bedrooms, and the lower floors for the student union and conference facilities.
4. Manchester Meeting Place (Staff House, Sackville Street, M1 3AL), constructed between 1959 and 1961 for a recreational space for teaching staff. (Figure 2)
5. Morton Laboratory (Lower Albion Street, M1 3AL), opened in 1966 as the Chemical Engineering Pilot Plant. (Figure 3)



Figure 2: Second floor of Manchester Meeting Place



Figure 3: Morton Lab

3 Circular economy key objectives

The design development of this proposal, supporting Manchester's Circular Economy ambitions, prioritises minimising waste during demolition and construction, while also accounting for future waste generated by maintenance, replacements, refurbishments, and potential adaptation to new uses or office requirements. To achieve this, the design team adhered to the Greater London Authority (GLA) guidance, a recognised methodology that enables comparison with similar projects across London and the rest of the UK. The GLA guidance on the circular economy is based on six key principles:

1. **Building in layers** - to allow easy disassembly of materials, enabling replacement with minimum disruption and waste
2. **Design out waste** - at every stage of the building life-cycle
3. **Design for longevity** - supporting a good maintenance regime that minimises replacement
4. **Design for adaptability and flexibility** - supporting new uses, future practices and adaptation to climate change without the need of a full re-development or deep retrofit
5. **Design for disassembly** - to support flexibility and adaptability of the spaces while enabling future material reuse
6. **Using systems, elements or materials that can be reused and recycled** - supporting the local plan ambition for low carbon materials.

1.

This Circular Economy statement outlines the Proposed Development's intentions to support the local Council's transition towards a circular economy. The scheme considers the full life-cycle of the building and its components, with ambitions on adaptability, flexibility, and long-term value retention. It aims to use resources responsibly, minimise pollution, enhance structural longevity, reduce waste during construction and operation, and incorporate 'design for disassembly' (DfD) principles into its end-of-life strategy, while striving for regenerative systems, wherever practical and feasible.

The development has explored a series of retention scenarios for the existing buildings, in line with the circularity principles, but ultimately ruled them out due to the buildings' age and deterioration. A refurbishment scheme would not achieve Manchester City Council and ID Manchester Limited's ambitions for a high quality, energy efficient, dense employment area Innovation District. The new-built proposal aims to implement design for adaptability strategies and maximise its use including flexible spaces and disassembly principles to reduce the need of future deep retrofits or full re-developments. The change of use of the railway arches makes use of the existing structure and therefore follows the circular economy principles.

4 Circular economy principles

The following section provides a circular economy approach and narrative of the design process followed for the Site for the different building layers as defined by the GLA Circular economy guidance.

During the design development of the proposal the full design team has gone through a multi-disciplinary coordination supporting the circular economy principles. Circular economy workshops were held during November and December 2024, and February 2025, to ensure the project team understood circular economy concepts and to brainstorm strategic approaches for the project. The following parties were present at the workshop:

- ID Manchester Limited (Client and Project Managers)
- Buro Happold (circular economy, BREEAM, Whole Life-cycle Carbon and MEP)
- Allies & Morrisons (Architects)
- SLA (Landscape Architects)
- Civic (Structural Engineers)

4.1 Arcadis (Cost Consultant).Building in layers

The design will prioritise accessibility, maintenance, and replaceability of building components. During the detailed design stage, the team will develop strategies to enable the disassembly and recoverability of materials, ensuring alignment with this principle.

The services proposal is designed to allow easy replacement of major plant systems throughout the building's lifespan. For concealed elements, removable panels on floors and walls will be prioritised to provide access to frequently serviced equipment without impacting the structure.

Modular and demountable building services equipment will be emphasised, enabling straightforward, non-destructive replacement. Self-finished materials and dry connections will also be prioritised, minimising the use of adhesives, sealants, and silicon-based solutions. This approach supports layer independence and enhances the building's adaptability and sustainability.

4.2 Design out waste

This design principle has been identified as MCC's key objective for the local circular economy targets along with PfE's ambitions for supporting a circular and zero-waste economy. Hence this statement expands on the subject under Section 6 below.

4.3 Design for longevity

Sister Plot C has been thoughtfully designed to ensure longevity and ease of maintenance for all components, in line with the PfE's ambitions for durable developments. This is achieved through durable design strategies aimed at minimising replacements. Key measures include the incorporation of a precast façade and the use of hard-wearing materials in high-traffic areas.

The Proposed Development integrates the existing viaduct arches, an infrastructure of proven durability. This section is being maintained without alterations to its original building form to support its longevity.

The proposed precast façade aligns with the Site's architectural language, ensuring seamless integration with its surroundings while reducing façade maintenance requirements.

Additionally, the public realm incorporates a gravity drainage system, reducing maintenance risks and supporting a durable and sustainable surface water network. This comprehensive approach underscores the project's commitment to resilience, sustainability, and long-term functionality.

Hard-wearing materials will be prioritised at entrances to ensure durability, complemented by climate-resilient landscaping. Key pavements and high-traffic areas will also feature robust materials to withstand frequent use.

4.4 Design for adaptability or flexibility

To address flooding risks, the SuDS drainage system is meticulously designed for sewer surcharge protection to delay discharge offsite. The proposed system aims to mitigate flooding risks by reducing the peak surface run-off rates around the Site.

The new structure has been designed to adapt to potential future changes of use, occupancy densities and climate change, in line with PFE's ambitions for an adaptable development, by thorough considerations such as changes to wind, rainfall, drought, and flooding, in the structural and civil engineering design due to climate change.

To avoid over-dimensioning, and supported by the applicant's input about the unlikelihood of the area changing to different uses, higher load capacities for alternative uses were not considered, focusing instead on a lean design approach.

4.5 Design for disassembly

A disassembly guide will be developed during the detailed design stages to ensure layer independence and facilitate the future reuse of installed materials. It will focus on key elements that may require replacement during the multiple buildings' lifespan, such as façades and internal partitions, excluding load-bearing walls.

The guide's objective is to equip future building owners and tenants with the knowledge to efficiently deconstruct elements of the buildings at the end of its life, maximising material reuse and recycling. Coordination of these considerations is already underway as part of the operations and maintenance manual requirements.

This proactive approach reflects a commitment to sustainability and resource efficiency, supporting the long-term environmental goals of the project.

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

Once material demand has been minimised through the retention and integration of the existing viaduct arches, design, the procurement stage will prioritise specifications for materials that are reused or contain high recycled content wherever feasible or valuable. This strategy aims to reduce the Site's embodied carbon in alignment with MCC's ambitions for a low-carbon development.

The change of use of the railway arches makes use of the existing structure and therefore follows the circular economy principles.

A material efficiency assessment was created based on discussions during circular economy workshops, adhering to BREEAM Mat06 material optimisation requirements. This assessment will be further refined once material reuse strategies are established, ensuring a sustainable and efficient approach to resource use.

Material specifications with high recycled content have been considered and will be adopted subject to market availability, structural, programme and financial constraints. Optimisations under consideration include:

- Prioritise concrete with recycled aggregate
- Prioritise concrete with cement replacement
- Prioritise aluminium with recycled content, if possible with post-consumer recycled content
- Prioritise reused steel and/or new structural steel with high recycled content
- Prioritise low carbon steel reinforcement rebar with high rates of recycled content
- Aim to procure low carbon and/or reused raised access floor, subject to availability, warranty and fire risk
- All materials in the building should meet the highest sustainability criteria. Choices for material sourcing and procurement drive supply chain change. By requiring materials with good sustainability and ethical credentials, as well as targeting credits under BREEAM Mat03 'Responsible Sourcing', the project aims to drive supply chains towards materials which are less injurious to the environment and society.
- A Sustainable Procurement Plan (SPP) is under coordination. This sets out the requirements for sustainable and ethical sourcing, considering elements such:
 - All timber to be certified under the Programme for the Endorsement of Forest Certification (PEFC) or Forest Stewardship Council (FSC) unless it is reused
 - BES 6001 Very Good or Excellent for plasterboard, aggregates, concrete, cement, asphalt, blockwork and rebar
 - ISO 14001 certification for windows
 - Prioritise natural stone sourced within the EU
 - Prioritise paints, coatings, adhesives and sealants applied on site with low or zero Volatile Organic Compounds (VOCs)
 - Absorbent materials shall be transported, stored and protected in original packaging or sealed polyethylene sheeting until the time of installation, e.g. carpets, upholstery, furnishing, fabric, wall coverings or acoustic panels
 - Ensure wet materials, such as adhesives, wood preservatives and finishes, sealants, glazing compound, paints and joint fillers are installed and allowed to fully cure, prior to installation of adsorptive materials
 - Prefer material suppliers to provide verified Environmental Product Declarations (EPDs).

5 Design out waste approach

The materials circular economy strategic approach targets waste reduction in line with MCC's local plan ambitions. The design proposal envisions a concrete structural frame and precast façade with durability strategies at their core to minimise waste during the life-time of the building, and their potential reuse at project de-commissioning for a future development. The proposal targets the waste hierarchy through:

- **Prevention:**
 - Retention and integration of the existing railway arches
 - Design for durability strategies
 - Regular design reviews in all design stages to avoid over dimensioning, minimising the need of materials and construction waste
 - Target off-site pre-fabricated elements to minimise construction waste
 - Adopt design for disassembly and adaptability strategies on elements that are expected to require of replacement due to use patterns and improved performance along the lifespan of the project. This strategy aims to minimise future construction and demolition waste.
- **Reuse:**
 - Integration of reuse materials where technically, practically and financially feasible in an efficient manner to reduce the need of new materials and reduce demolition waste
 - Target reuse of excavation waste in the landscape if feasible to reduce excavation and construction waste along with minimising new materials brought to the Site.
- **Recycling:** careful segregation to minimise contamination of materials with potential for recycling.
- **Recovery:** those contaminated materials that cannot be recycled but are combustible will be sent to an incineration plant with energy recovery dedicated to district heating.
- **Disposal:** materials sent to landfill will be minimised. The pre-demolition audit estimates the possibility to divert from landfill 99% of estimated weight of demolition and excavation waste streams. This will be reviewed and confirmed by the relevant contractors during the design stages.

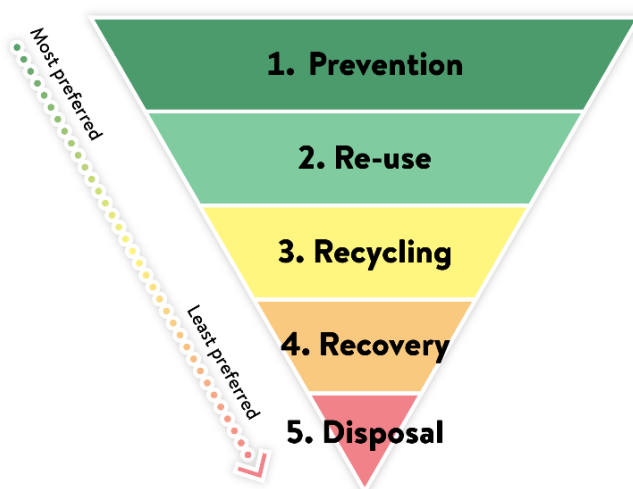


Figure 4: Waste hierarchy

5.1 Pre-demolition audit

An independent pre-demolition audit was undertaken by Reusefully, in line with BREEAM Wst01 requirements.

The pre-demolition audit recommends that a target of 99% diversion of non-hazardous demolition waste (by weight) from landfill should be set (as a proportion of total demolition/ deconstruction arisings). The reuse and recycle material strategy are subject to the quality of materials being removed and assessed, and the availability of waste contractors in the North West. During the following design stages, a clear 'reuse and recycle' material strategy will be prepared based on the outcomes of required surveys and feasibility studies in collaboration with the appropriate contractors.

Table 1 Expected waste arising (Source: Reusefully)

Material group	Weight (tonnes)	Volume (m ³)
Concrete	19,839.6	8,676.2
Brick	2,713.4	1,596.1
Metals	826.2	107.3
Ceramic	290.9	121.2
Stone	112.7	57.5
Bitumen	106.2	62.0
Glass	37.1	15.1
WEEE	7.7	5.1
Timber	5.9	11.7
Insulation	3.5	29.4
Plastics	0.5	1.1
Total	23,943.6	10,682.7

A total of 23,944 tonnes of material is predicted to arise as a result of the proposed demolition and refurbishment works, with an estimated actual volume of 10,683m³.

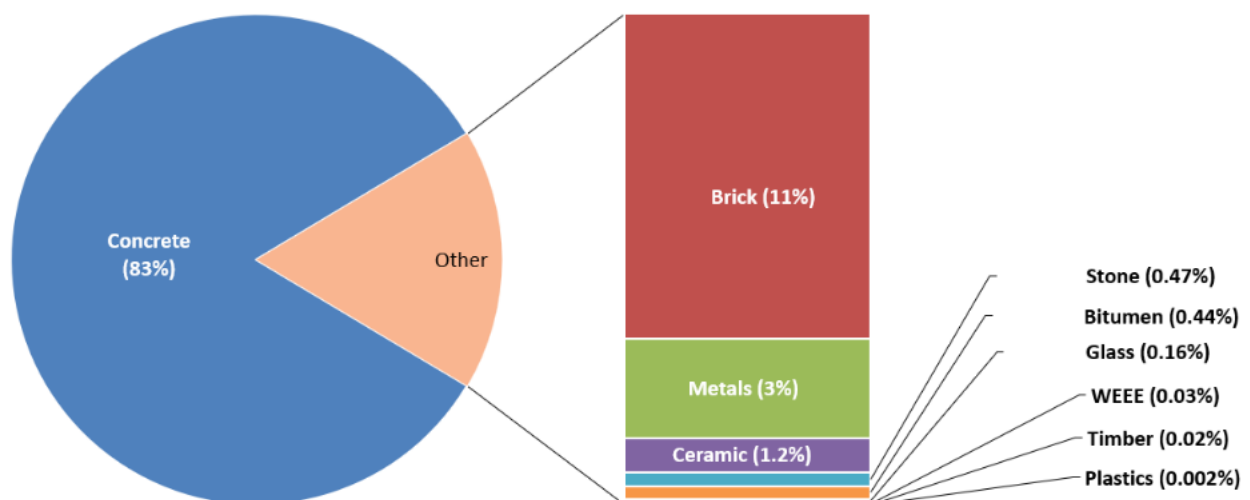


Figure 5: Estimated material arisings, split by material type (% by mass) (Source: Reusefully)

5.2 Demolition waste

The existing building were analysed to evaluate the extent of retention that was practical and feasible while providing a flexible and adaptable sustainable development. The existing railway arches and basement have been proposed for retention and integration, removing the demolition waste associated with the removal of these heavy infrastructure components. A careful waste management strategy will be developed with the soft-strip out and demolition contractors and potential manufacturers. This approach aims to ensure proper material segregation, minimise contamination, and support recycling initiatives that preserve the value of existing materials. Partnerships with manufacturers specialising in repurposing demolition materials will be explored during the next design stages as more information becomes available. The project will aim to divert 90% of demolition waste by tonnage from landfill, emphasising sustainability and resource efficiency.

5.2.1 Reuse of existing materials

Several reuse opportunities have been identified at Sister Manchester. All options are subject to technical, practical, and financial feasibility, requiring surveys and collaboration with appropriate contractors for confirmation and implementation.

As part of the Circular Economy coordination, Allies & Morrison developed a 'Hierarchy of Reuse.' This framework evaluates existing materials, their potential integration into the proposal, and the associated carbon savings, as illustrated in Figure 6. This strategic approach supports sustainability while maximising the value of available materials.

Hierarchy of reuse

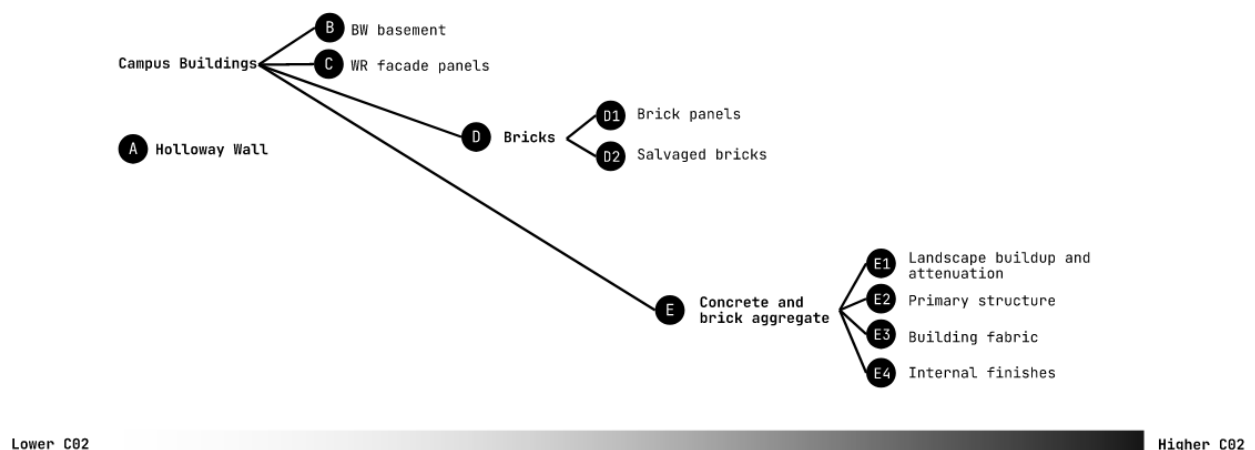


Figure 6: Hierarchy of reuse (source: Allies & Morrison)

Key materials for potential reuse:

- Structural steel
- Bricks
- Façade panels from Wright Robinson building
- Cobble pavers
- Glass blocks
- Paving slabs.

Opportunities will be explored to use elements of the Butterfly Stairs within the public realm.

Given its high carbon intensity, the team explored the potential for repurposing structural steel. Civic Engineers, the project's structural engineers, developed a high-level evaluation process (Figure 7) that will be refined in subsequent design stages. To assess the feasibility of reuse and disassembly, a Risk Assessment and a Condition and Strength Survey are required. This process will need to be reviewed and coordinated with prospective demolition contractors.

If the reuse of steel within the Proposed Development results in utilisation below 70% of the sections' structural capacity, they will be designated for off-site reuse, allowing other developments to integrate them efficiently. Any sections, connections, nodes, or off-cuts deemed unsuitable for reuse will be recycled within the structural steel industry.

This approach balances sustainability and practicality, ensuring optimal resource efficiency and reduced environmental impact.

Re-Using Existing Steelwork

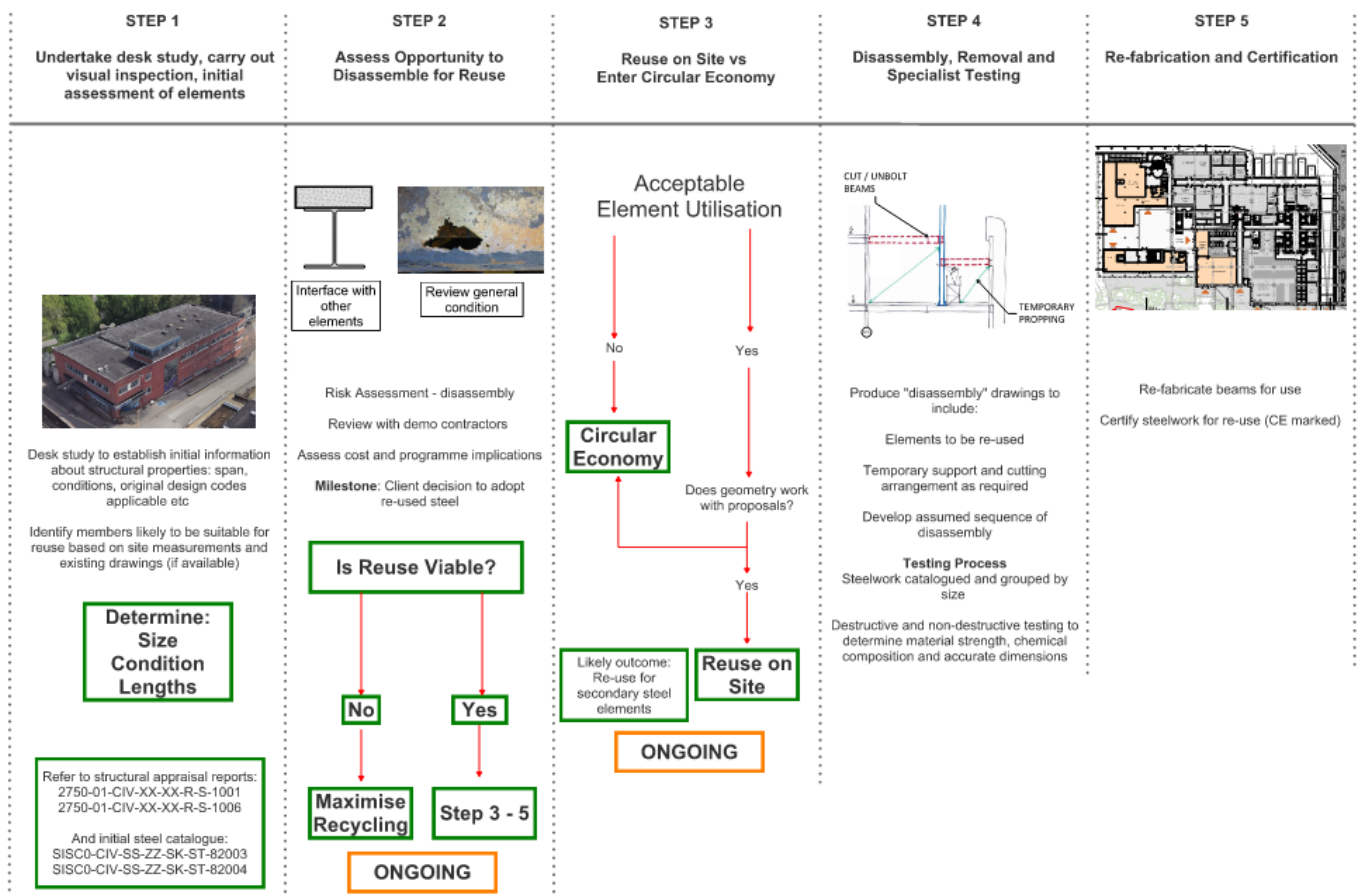


Figure 7: Indicative approach for a potential reuse of the existing steelwork framework (source: Civic Engineers)

5.2.2 Recycled aggregates

The pre-demolition audit reveals that a significant proportion of the waste generated during the deconstruction process will consist of concrete and clay bricks, estimated at 83% and 11% respectively of the total demolition waste by weight. While reuse options for these materials are being investigated, some of the waste is expected to be downcycled.

To address this, potential collaborations with local concrete and façade manufacturers will be explored to support the Council's objectives of promoting recycled aggregates as an alternative to primary extraction. The feasibility of implementing this strategy, including considerations around storage, processing, and transfer sites, will be further evaluated during the upcoming design stages.

This approach seeks to align with sustainability goals while optimising waste management practices to reduce the environmental impact of demolition activities.

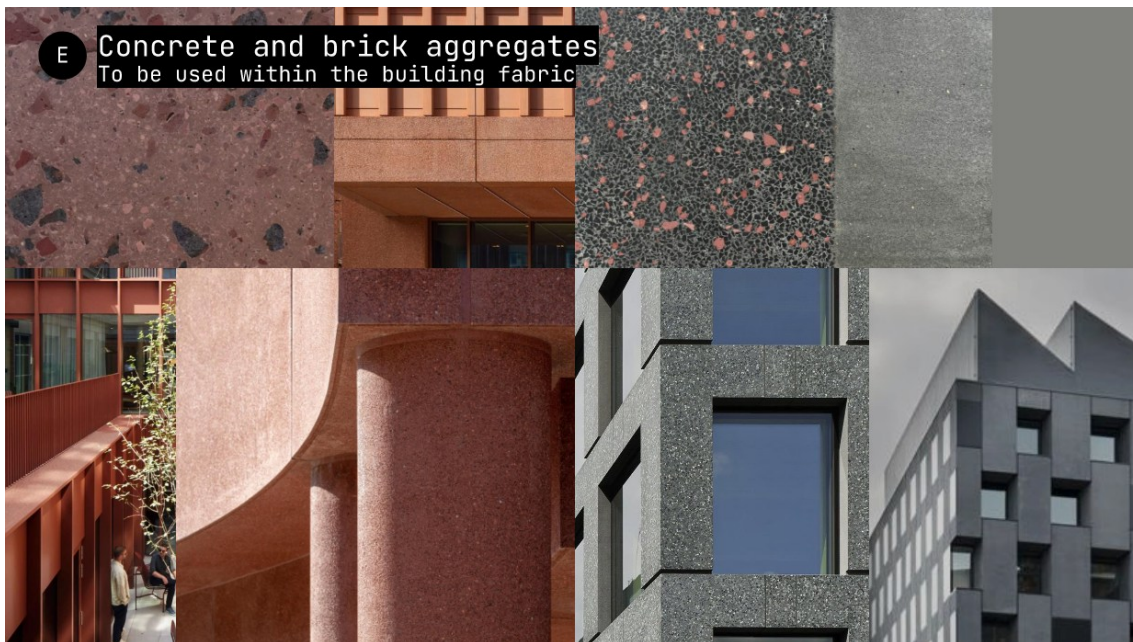


Figure 8: Potential brick and aggregate reuse in the building's façade (source: Allies & Morrison).

5.3 Excavation waste reduction

Excavated material (e.g. soil and building aggregates) from demolition works will be utilised, where practical, for beneficial uses, such as landscaping, pending chemical testing of the existing substrates, or within the public realm. The use of new coarse aggregates for infills etc will be minimised through careful cut and fill calculations.

5.4 Construction waste

Construction waste will be minimised through a lean design strategy that reduces material demand and avoids oversizing wherever feasible. The design team will refine designs at each stage to ensure efficient material use while maintaining adaptability and flexibility. Material reuse will also be prioritised to further reduce the demand for new resources and support waste reduction during demolition.

As the design evolves, strategies such as standardisation, preconstruction methods, and building in layers will be explored. Prefabrication is currently considered for the façade elements. However, further options will be explored in collaboration with the main contractor and relevant subcontractors.

A Whole Life-cycle Carbon Assessment (WLCA) will be conducted throughout the design stages to evaluate the carbon impact of the proposed design. An optioneering study of structural frame typologies informed efficient construction decisions aligned with local plans for Low and Zero Carbon developments. Further details are available in the Environmental Standards Statement submitted with this planning application.

To manage waste efficiently throughout the building's lifecycle, a Resource Management Plan (RMP) will be developed by the building contractors. This plan will outline best practices to minimise waste and divert materials from landfill, promoting sustainability and environmental responsibility.

The Proposed Development is targeting a construction waste resource efficiency benchmark of ≤ 11.1 tonnes of waste generated per 100m² (GIA), in line with BREEAM requirements. The RMP will provide detail on the following;

- Targets for resource efficiency
- Commitments to minimise waste
- Procedures to estimate, monitor, measures and report waste
- Procedures to sort, reuse and recycle construction waste.

On-site waste management will adhere to the established waste hierarchy (Figure 4: Waste hierarchy of reuse), aligning with local policies. Where feasible, off-site prefabricated elements will be prioritised to minimise waste generation. Additionally, proper material storage will be implemented to prevent damage and deterioration that could result in unnecessary waste.

The Proposed Development aims to divert 80% of non-demolition waste from landfill, demonstrating a commitment to sustainable and efficient resource management.

5.5 Operational waste

To maximise recycling of operational waste, the Proposed Development has dedicated storage spaces and facilities for each of the towers (Figure 9). Further details are available in the Environmental Standards Statement submitted with this planning application.



Figure 9: Operational waste storage spaces

An Operational Waste Management Strategy by Civic Engineers ensures compliance with local and national policies, estimating waste streams and quantities for efficient storage and high recycling rates. Key proposals include waste segregation at source and systematic collection processes.

Appendix A BREEAM Mat06 Material optimisation

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