

Hotspur Press.
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SUSTAINABILITY
STAGE 2 REPORT – CIRCULAR ECONOMY STATEMENT
REVISION 03 – 08 NOVEMBER 2023



Audit sheet.

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Contents.

Audit sheet.	2
Executive summary.	4
Scope.	4
Towards a Circular Economy.	4
1. Introduction.	5
1.1 Description of development.	5
1.2 Method Statement.	6
1.3 Circular Economy Aspirations.	6
2. Circular economy design approach.	7
2.1 Proposed strategy for existing structures/ buildings.	7
2.2 Proposed strategy for new buildings and buildings layers over the lifetime of the development.	9
3. Opportunities for managing and reducing waste.	10
3.1 Operational waste management plan.	10
4. Conclusion.	10

Executive summary.

This Circular Economy Statement has been prepared by Hoare Lea on behalf of Manner, (hereafter referred to as 'the applicant') in support of the planning application for the Hotspur Press PBSA Development at Cambridge Street, Manchester City Centre (hereafter 'the Proposed Development') within Greater Manchester.

Scope.

This report sets out the strategic approach to Circular Economy implemented by the project. The Circular Economy Statement focuses on the work carried out to define a strategic approach to Circular Economy principles for the project and identify high level strategic opportunities early in the development process.

Current Practice.

Our economy has grown and thrived upon a linear model where we:

- Take finite resource out of the ground
- Manufacture goods from them; and then
- Dispose of them into landfill after an, often short, lifespan.

This model relies on large quantities of cheap, easily accessible materials and energy, and it is reaching its physical limits. Globally, we are using resources and ejecting waste at a rate which would require approximately 3 planet earths for it to be sustained.

The construction industry runs on a linear economy:

- Buildings designed for a 60-year life can be demolished after only 30 years
- They are often stripped out at the end of every lease, leaving waste that can only be 'downcycled' into lower grade products.
- Solid timber is chipped or burnt, structural concrete becomes non-structural aggregate and even modular units like bricks are crushed rather than reclaimed.

The built environment demands around 40% of the world's extracted materials and demolition waste represents the largest waste stream in many countries.

Towards a Circular Economy.

In contrast to a linear economy, a circular economy creates and maintains value of products, materials and buildings by using them for as long as possible and minimising both resource use and waste. The use of virgin materials is minimised whilst re-use, repurposing and recycling are maximised.

In a pure circular economy, resources are not lost from the system so nothing is landfilled.

Designing for longevity and adaptability and maximizing the use of recycled and renewable materials could reduce greenhouse gas emissions while increasing innovation opportunities and economic growth. Replacing finite and fossil-based materials with responsibly managed renewable materials can decrease carbon emissions whilst reducing dependency on finite resources.

Before considering future waste elimination and sustainable waste management practices though, opportunities for retaining and refurbishing /re-purposing existing buildings, materials and other resources on site have been assessed by the design team to maximise the residual value of existing structures and conserve resources by reducing the need for new materials.

The Proposed Development will follow best practice principles in design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility and adaptability.

Furthermore, advances in innovation and best practise over time combined with effective feedback loop mechanisms are expected to lead to continuous improvement as the design and construction develops. An initial assessment of material efficiency has identified the following key aspects for consideration within the design:

- Early-stage assessment of the existing building to determine the extent of reuse possible.
- Rationalising the structural grid to be as efficient as possible, minimising the quantity of material within the build structure and ensuring that the material composition is as low carbon as possible.
- Superstructure designed for longevity & maintenance.
- Façade options appraisal undertaken based on durability, disassembly, and embodied carbon to establish the optimal solution at this stage of the design.

A project-specific Waste Management Strategy has been developed for the Proposed Development. The Strategy outlines how the Proposed Development has been designed to be sustainable and forward-thinking in its approach to waste and recycling, whilst remaining workable during operation, including:

- Estimated volumes and types of waste produced by the development;
- Details of internal and external stores for both waste and recycling, including any plans and designs;
- Location of the proposed collection point and details of the route the collection vehicle will take;
- Details of how waste will be transferred between waste stores and the collection location; and
- Details of the number and capacity of bins proposed and collection frequency.

Designing for adaptability and disassembly is another key principle of the circular economy, and the design includes but is not limited to the following measures to reduce waste arisings at replacement or end of life:

- Allowance for all major plant to be dismantled and removed.
- All services infrastructure through the building to be designed within designated risers. All risers to be accessible.
- High quality, robust materials palette proposed

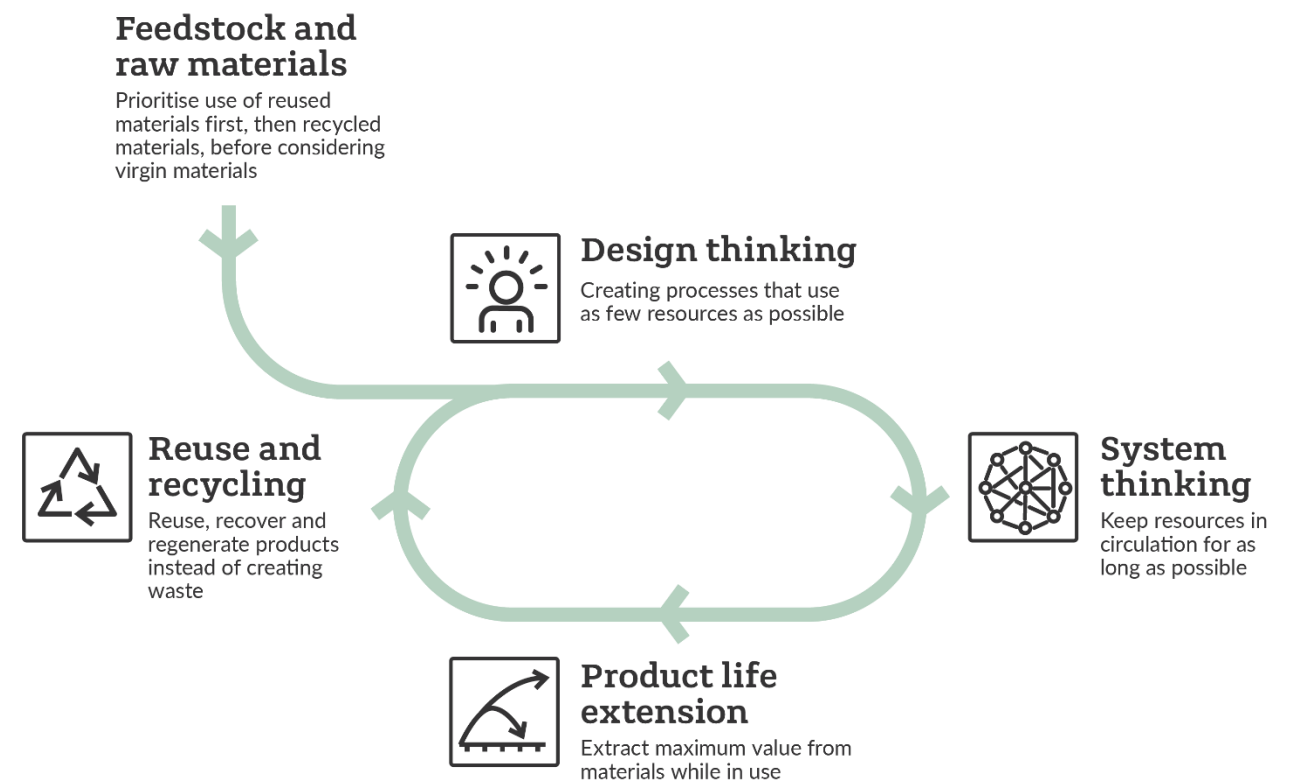


Figure 1: Circular Economy overarching principles.

1. Introduction.

1.1 Description of development.

1.1.1 The Application.

This Circular Economy Statement has been prepared by Hoare Lea on behalf of Manner, (hereafter referred to as 'the applicant') in support of the planning application for the Hotspur Press PBSA Development in Manchester (hereafter 'the Proposed Development').

The main function of the Proposed Development is to redevelop and refurbish an existing old industrial textile mill known as Hotspur Press by retaining elements of the building and also provide a new purpose-built student residential block.

1.1.2 The Proposed Development

Partial demolition and redevelopment of the former Hotspur Press Complex (Medlock Mill) and redevelopment of the site to provide Purpose Built Student Accommodation (Sui Generis Use Class) within a part 4-storey (existing) and part 36-storey (new build) building with ground floor commercial or community uses (Use Classes F(e), F2(a)(b) and E(b)), associated ancillary internal and external amenity space, public realm (including a new public square), hard and soft landscaping and associated highway works.



Figure 2 Architectural render of proposed development .



Figure 3 Image of the existing building.

1.1.3 Site Context.

The site comprises the existing Hotspur Press textile mill and is located in Manchester City Centre, bound by Whitworth Street West, Cambridge Street and the River Medlock. The building is no longer in operation but has previously housed a cotton mill and printing press. The Proposed Development looks to partially retain and refurbish the existing building and construct a newbuild student residential tower. The main drivers for redevelopment are associated with retaining the existing warehouse and its heritage as well as the opportunity to create residential spaces in a prominent city centre location.

1.1.4 Project Team.

Table 1: Key Project Team Members.

Discipline	Organisation
Client / Developer	Manner
Architect	Hodder and Partners
Landscape Architect	Macgregor Smith
Building Services Consultant	Applied Energy
Sustainability Consultant	Hoare Lea
Structural Consultant	Civic Engineers
Ecologist	Estrada Ecology
Acoustic Consultant	AEC
Transport Consultant	Curtins
Cost Consultant	Gardiner & Theobald

1.2 Method Statement.

1.2.1 Sustainability Strategy.

A holistic, interdisciplinary approach has been adopted to define and communicate the sustainability strategy for the Proposed Development. The framework utilises systems thinking and spans the whole project lifecycle with the project legacy in mind from day one.

The design of the Proposed Developments is based on sustainable design and construction principles as informed by planning requirements and industry best practice. The project has utilised a sustainability framework based on five defined factors; the people, the building, the social network, the natural environment, and the economic aspects to capture the multi-faceted sustainability benefits and values that the development seeks to bring to the application site; local community; surrounding businesses and future building users.



Figure 4: Five Capitals.

Social Capital	Create a lasting positive social impact in our communities.
Human Capital	Put Health & Wellbeing front and centre.
Natural Capital	Design climate change resilient and adaptable spaces.
Physical Capital	Decarbonised development.
Economic Capital	Supporting local communities.

1.3 Circular Economy Aspirations.

Consumption of natural resources has historically followed a linear approach, heightened by the industrial revolution which, while lifting the living standards of millions, also dramatically increased pressure on environmental resources. Under the traditional 'take > make > use > dispose' model, raw materials are collected, then transformed into products that are used until they are finally discarded as waste. Apart from failing to capture value over the lifetime of products, this approach also produces a range of negative externalities that include resource scarcity, unsustainable levels of water extraction, rising carbon emissions, and widespread ecosystem pollution.

In a circular economy, built environment assets are designed so that whole buildings, and materials, components and parts can be continually and easily recycled.

The built environment sector is a major consumer of natural resources. There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

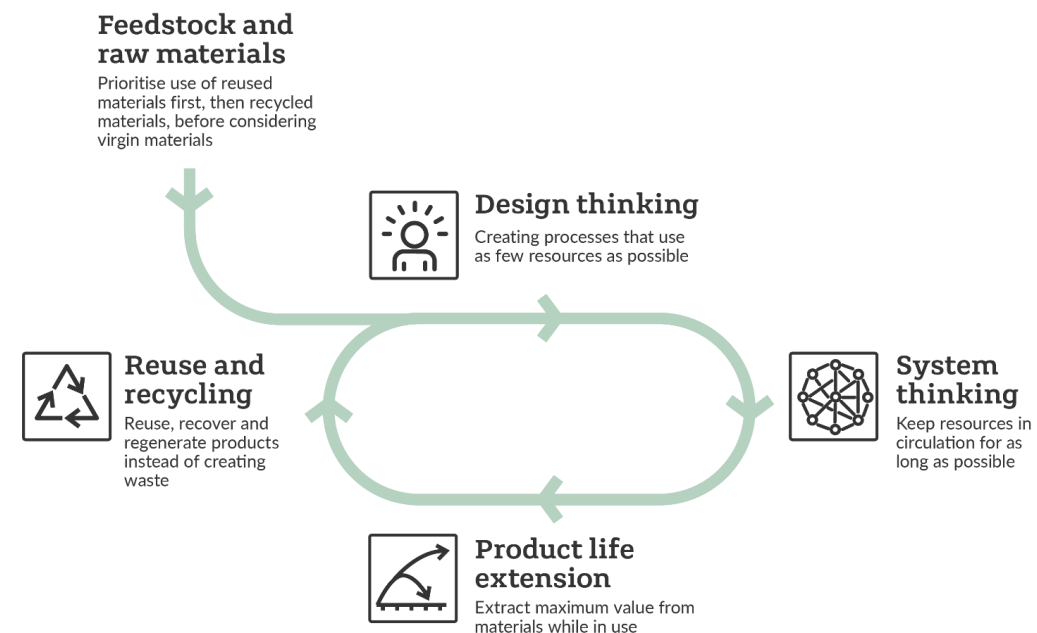


Figure 5: Circular economy approach.

Circular Economy considerations have formed a key part of the project sustainability strategy, given the scale of the Proposed Development, and the client's wider sustainability aspirations. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore strategic opportunities as early in the Proposed Development process as possible.

Considerations around resource efficiency, material circularity and ethical sourcing have been considered within the overarching sustainability strategy from the early stages.

It is acknowledged that the approach to Circular Economy will evolve as the design evolves, or in response to wider considerations and feedback from key stakeholders.

An effective incorporation of circular economy principles represents an opportunity for the site and the UK as a whole. With its system-wide perspective, the circular economy has the potential to help us make better decisions about resource use, design out waste, provide added value for business and society, and proceed along a secure route to society-wide prosperity and environmental sustainability for future generations.

While specific values and levels of ambition / benchmarks have been defined for some of the metrics, it is recognised that these are preliminary targets and commitments which will be reviewed and may be adjusted as appropriate during the detailed design to respond to the specific requirements of each element and ensure that current best practice is being followed and opportunities to innovate are maximised.

The design team will have to engage and collaborate extensively with the supply chain to foster knowledge sharing and fast track innovative ideas and techniques spanning the design, construction and operation stages thus enabling synergies.

2. Circular economy design approach.

Circular Economy considerations have formed a key part of the project sustainability strategy. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore high level strategic opportunities as early in the development process as possible.

A sustainability-focused workshop was held in collaboration with the project team to help craft a holistic and consistent sustainability approach for the development. Considerations around resource efficiency, material circularity and ethical sourcing have been a critical element of the overarching sustainability strategy.

The following pages detail the design strategies and elaboration on the proposed design approaches.



Figure 6: Facade Retention Plan, Civic Engineers.

2.1 Proposed strategy for existing structures/ buildings.

The preferred strategy for the existing structures/buildings is partial retention and refurbishment. The design response to circular economy design approaches is further detailed in the following sections.



Figure 7 Existing front façade.



Figure 8 Existing side façade.



Figure 9 Existing rear façade.

Refurbish.

The existing building was constructed in the 1801 and consists of 4-storeys, including a basement floor. The building has formerly been used as a cotton mill and printing press but has not been in operation since 1996. The Proposed Development is for a new residential apartment building with a tower block rising above the current roof level and new retail and amenity spaces on the ground level.

The existing external envelope is constructed of red brick with timber framed windows. The Proposed Development seeks to retain and refurbish the façade where possible. Along the western elevation of the river facing façade, the single storey river wall will be retained. The remaining river side elevation, spanning the Southeast to the Southwest of the building, will look to retain the existing 4-storey façade. The 4-storey façade on the street side will also be retained. Where retention is not possible the exterior building components will be deconstructed and replaced with a new façade; opportunities for reuse of materials will be considered.

Repurpose.

Where the existing building is being retained, these spaces will be converted into public leisure spaces, such as a gallery, shop, and café on the ground floor as well as amenity spaces for the residents, such as study spaces and lounge areas. The redevelopment will retain the character and external experience of an industrial textile mill complex to keep the architectural quality of the area however windows and thermal envelope will be upgraded to current efficiency standards.

Disassemble/ Deconstruct and reuse.

Where retention of the existing structure is not possible the exterior building components will be deconstructed and replaced with a new façade/roof.

Reuse opportunities will be explored and prioritised before resorting to downcycling of the existing materials on site, which can be considered a waste of embodied carbon and money.

High value (in terms of both cost and carbon) elements will be reviewed in detail with reuse opportunities explored. One example of this is the existing brickwork which may be removable in panelised form. This would allow its reuse in another building façade, potentially being sold on for this purpose. One example of this is highlighted below.



Figure 10 Reuse of existing brickwork in a modular panellised format at the Resource Rows project by Lendager.

Demolish/ Deconstruct and Recycle.

Although direct re-use of building elements after deconstruction may not be feasible, it was suggested in the sustainability workshop that some of the demolition waste will be able to be repurposed as part of the landscaping to increase circularity and reduce waste generated. This will be further investigated in the next design stages when quantities become more refined.

2.2 Proposed strategy for new buildings and buildings layers over the lifetime of the development.

The circular economy strategy for the new building and building layers addresses the following design approaches:

Component or material reuse.

The client intends to retain and reuse the original equipment from within the mill where possible such as some of the architectural fittings and furnishings.

The concrete structural frame will incorporate lean design principles, aiming to minimise the amount of raw virgin materials needed by adopting an efficient solution. The structural concrete frame will incorporate cement replacement, such as using GGBS, and recycled aggregate where possible. High amounts of recycled steel will also be used to form the reinforcement bars.

The Proposed Development has undergone a façade options appraisal to establish the optimal solution at this stage of the design based on a number of circular criteria. Among these criteria is the ability of the shell to be disassembled and reused or recycled easily.

Design for adaptability.

Due to the significant increase in structural loading, the proposed structural frame is unlikely to be able to adapt to a major change in use, however, both the superstructure and substructure can accommodate a small change in use, such as to a different type of residential building.

The design incorporates flat floors and standard even floor-to-floor heights across the floorplate. The structural grid of the development minimises internal columns by arranging them along the perimeter, to allow for long open spans. Shear walls have also been minimised to allow for internal spaces to be reconfigured and maximum adaptability for future uses. Figure 11 below shows a typical structural floor plan.

The Proposed Development's building services solution has been designed to allow for adaptability. The adoption of a wet system and a central energy plant allows for easy replacement and ensures technology can be updated and changed in the future.

The services design has been tested to TM59 criteria for compliance with Approved Document Part O to ensure risk against overheating is limited and the design is able to adapt to higher temperatures.

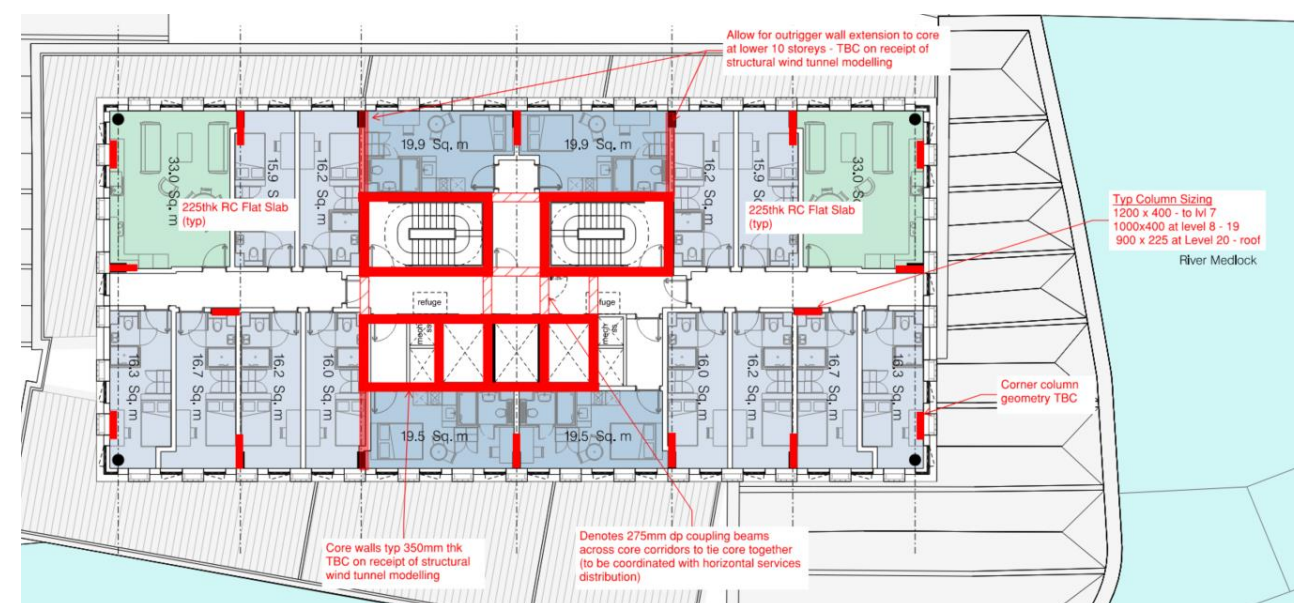


Figure 11: Typical Upper Floor Structural Proposal, Civil Engineers.

Design for flexibility.

The Proposed Development uses a structural grid where there are limited internal columns to allow for flexibility of the interior uses of the building.

The façade has undergone a façade options appraisal to establish the optimal solution based on a number of criteria, among which the ability of the shell to be disassembled and replaced has been considered. This ensures that flexibility is incorporated into the final design solution for the exterior elements of the building.

Further, the building services strategy for the Proposed Development will comprise of localised ventilation systems which allows for easy redistribution if there is a change in use.

The current architectural design incorporates moveable partitions within the amenity spaces on the lower floors, to allow these spaces to be able to respond to differing needs of the building occupants.

Design for replaceability.

The flexibility that will be built into the chosen façade solution due to the options appraisal for the proposed development heavily overlaps with the principle of replaceability and therefore this design principle will be well integrated into the proposed scheme. A maintenance and replacement strategy will also be put in place to ensure these intended design strategies are implemented throughout operation.

The main building services plant is located on either the roof or basement levels and therefore will be easily accessible for maintenance and repair. An access and replacement strategy for the MEP plant and equipment will be developed specifically for the Proposed Development to aid any future replacement works, such as ensuring that sufficient lift sizes and door opening widths will be specified.

Design for disassembly.

A maintenance and replacement strategy will be put in place for the superstructure, exterior elements and building services of the building, to ensure easy disassembly with minimal damage to the building components.

In terms of the internal spaces, a majority of the partition walls will comprise of stud partition walls which can also be easily dissembled and allows each component to be separated for recycling. Composite materials generally have been avoided where possible to aid disassembly and potential for reuse and recycling.

Design for longevity.

The structural concrete frame will be heavily durable and significantly outlast the 60-year design life by using high quality concrete mixes and steel specification. The structural design will consider increasing concrete cover and incorporating a longer wind return period in order to further increase the lifespan of the building at a minimum cost. These design measures will not impact the development visually and therefore appear to be a viable design option. However, potential increases to the upfront embodied carbon must be considered.

The longevity of the materials proposed for the façade and external components have been considered within the options appraisal to ensure a sufficient lifespan and durability. Further, the Proposed Development's building services will be distributed using either copper or stainless-steel pipework which are more durable alternatives to other options.

Due to the nature of the building use (student accommodation), the internal building materials and finishes will be robust to ensure longevity.

3. Opportunities for managing and reducing waste.

3.1 Operational waste management plan.

The Waste Management Strategy provided by the waste consultant outlines the Proposed Development’s operational waste management plan. It is expected that the 513 student bedroom units will generate a range of municipal waste types, shown in figure 12 below.

- It is estimated the Proposed Development could generate around 31,000 litres of waste per week, consisting of 16,225 litres of general waste, 12,980 litres of waste for recycling and 1,475 litres of food waste.
- The Proposed Development will be designed to allow sufficient space for waste separation both internally and externally, and collection of the appropriate waste streams.
- Each student room will be provided with three waste bins, one for general waste, one for paper / card, and one for plastics/ metals/ glass, to encourage recycling and correct waste management at the source.
- The building occupants will be responsible for transferring waste to refuse storage areas. A lift directly outside the waste storage area has been proposed to ensure good accessibility.
- A 80.4m² internal bin store is proposed in the bottom floor of the scheme, able to accommodate 28 x 1,100 litre euro bins which would provide 22,000 litres of waste storage capacity.

The sustainable management of operational waste has been given a high priority within the design of the development, allowing for easy segregations of materials to enable a high rate of recycling.

Waste Type	EWG Code
Paper and cardboard	20 01 01
Glass	20 01 02
Biodegradable kitchen and canteen waste	20 01 08
Clothes	20 01 10
Textiles	20 01 11
Solvents	20 01 13* (hazardous)
Fluorescent tubes and other mercury containing waste	20 01 21* (hazardous)
Discarded equipment containing chlorofluorocarbons	20 01 23* (hazardous)
Edible oil and fat	20 01 25
Detergents other than those mentioned in 20 01 29	20 01 30
Medicines other than those mentioned in 20 01 31	20 01 32
Batteries and accumulators other than those mentioned in 20 01 33	20 01 34
Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	20 01 35* (hazardous)
Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	20 01 36
Plastics	20 01 39
Metals	20 01 40
Biodegradable waste	20 02 01
Mixed municipal waste	20 03 01

Figure 12: Predicted Operational Waste Types, Tetra Tech.

4. Conclusion.

The proposed development has adopted circular economy principles within its core design, by prioritising a retain and refurbish strategy where possible. The scheme intends to partially retain and refurbish the existing Hotspur Press warehouse to retain the character of the area and give the existing structure a second life.

The new-build high-rise student residential complex, which will extend out of the existing building, has incorporated circular design strategies throughout all aspects of the development, such as designing in longevity in the building structure and shell and designing for adaptability, flexibility, replaceability, disassembly for the building services, internal spaces and features.

The Waste Management Plan highlights the consideration given to the operational waste from the building occupants and has designed in measures for easy segregation of anticipated waste streams to allow a high rate of recycling to be achieved.



LIZZIE RUTHERFORD
SUSTAINABILITY CONSULTANT

+44 113 380 1934
lizzierutherford@hoarelea.com

HOARELEA.COM

3 Sovereign Square
Sovereign Street
Leeds
LS1 4ER
England

