ELEMENT SUSTAINABILITY

FIRST STREET, MANCHESTER

CIRCULAR ECONOMY STATEMENT

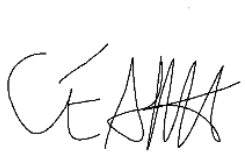
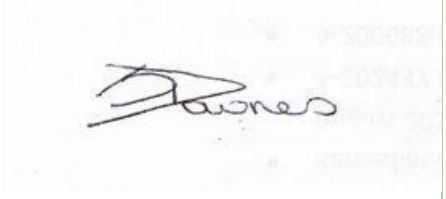
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1. INTRODUCTION

Element Sustainability have been commissioned by Vita Meadow Limited to prepare a Circular Economy Statement for the proposed First Street purpose-built student accommodation (PBSA) development, in Manchester.

The purpose of this statement is to outline the possible measures that will be integrated within the design proposals for both the PBSA and the public realm, to facilitate a circular economy approach. The Circular Economy Statement should be read in conjunction with the Environmental Standards Statement for the development.

This statement will demonstrate Vita Meadows commitment to a circular economy in practice, as well as highlight how the development seeks to reduce its carbon emissions and waste footprint through the principles of a circular economy, in line with local and national guidance.

2. PLANNING POLICY

2.1 Local Planning Policy

2.1.1 Manchester Core Strategy

Manchester's Core Strategy was adopted on 11th July 2012. The strategy sets out the long-term strategic policies for Manchester's future development and will form the framework that planning applications will be assessed against.

Although there is no specific policy relating specifically to Circular Economy principles within the Core Strategy, the following policies have been reviewed to ensure that the intent behind the principles of a circular economy, namely resource conservation and climate change mitigation, have been captured within the design of the development. The following policies are therefore relevant for the purpose of developing this statement:

- Policy EN4 – Reducing CO_2 Emissions by Enabling Low and Zero Carbon Development calls for the use of sustainable building materials with low embodied carbon.

- Policy EN19 – Waste calls for proposals to demonstrate their alignment with the Waste Hierarchy principles. In addition, the policy requires the provision of sustainable waste management measures that promote a close-loop system.

2.1.2 Greater Manchester Joint Waste Development Plan (2012)

The Plan's objective is for the movement of waste up the waste hierarchy in order to maximise the diversion of waste from landfills. In addition, the Plan recognises the need to adapt to climate change through measures that seek to improve energy efficiency and reduce carbon dioxide (CO_2) emissions.

2.1.3 Places for Everyone

Places for Everyone is the joint development plan of nine Greater Manchester local authorities (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, and Wigan) dealing with strategic planning issues including jobs, homes, transport, and the natural environment.

All nine authorities adopted the PfE Plan on 21st March 2024. Therefore, this is now part of the statutory development plan for each of the nine PfE authorities.

As a result, the following polices have been considered as part of the proposed development:

Policy JP-S1: Sustainable Development: Climate change is a key theme running throughout the plan, rather than being reduced to a single policy, and it is only through this combination of actions that it can be properly addressed. In particular we set out:

- Methods to de-carbonise the city region through new and existing development, effective land management and through the provision of infrastructure and new technologies Policy JP-S2 'Carbon and Energy'; and,

- Measures to help achieve a circular and zero-waste economy Policy JPS6 'Resource Efficiency'.

Policy JP-S6: Resource Efficiency: The achievement of a circular economy and a zero-waste economy will play a key role in meeting Greater Manchester's ambition of becoming a leading green city region by 2038. The following measures will help achieve this:

- Development and implementation of the Zero Waste Strategy for Greater Manchester which promotes overall reduction in the level of waste produced and supports resource efficiency within the Plan area in order to gain the maximum value from the things we produce; and,

- Using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof to the impact of climate change, reduce and recycle waste and minimise water use.

2.2 Sustainable Consumption & Production Plan 2022-2025

The table below sets out the target indicators used by the Greater Manchester Combined Authority (GMCA) to track and measure progress under the four priorities of the Sustainable Consumption Plan (SCP), which are as follows:

Table 2.2 - GMCA Priorities

SCP Priority	Target Indicator
Moving to a circular economy	• 38% reduction in industrial emissions by 2025 and a 50% - 77% reduction by 2038. • Reduction in raw material consumption
Managing waste as sustainably as possible	• 65% recycling rate for municipal solid waste and no more than 10% to landfill by 2035.
Reducing avoidable food waste	• Reduction in avoidable food waste working towards the Government's Resources and Waste Strategy ambition of eliminating avoidable waste of all kinds by 2050.
Moving to a sustainable lifestyle	• Reduction in residual waste sent to landfill and incineration.

3. CIRCULAR ECONOMY GUIDANCE

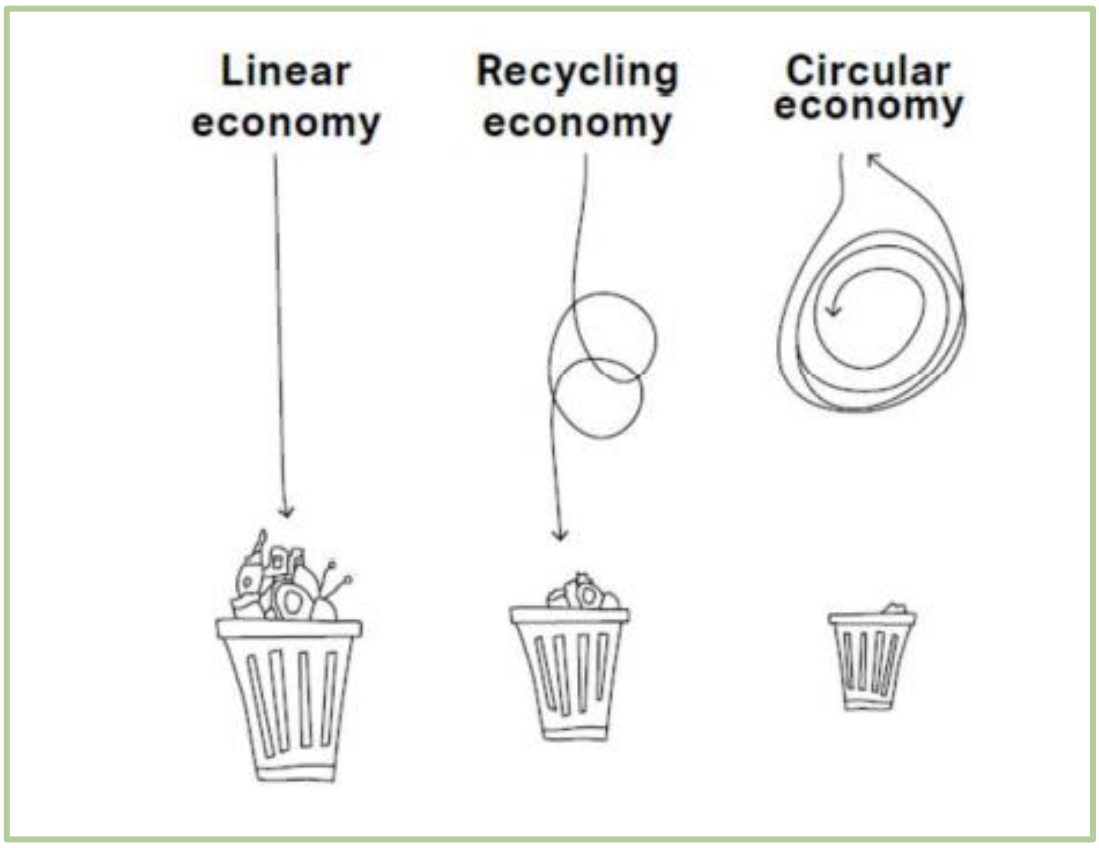
3.1 Circular Economy Principles

Circular Economy (CE) is typically defined as a closed-loop system where resources are retained for as long as possible and re-used and recycled continuously so that there is minimal or zero waste sent to landfill.

Often the by-product of one material becomes the raw material for another activity, so that there is a reduced demand for additional resource inputs, and as a result a smaller carbon footprint. A Circular Economy differs significantly from a linear one, where resources are used inefficiently and are sent to landfill, or when resources are recycled but eventually still end up in landfill.

Figure 3.1 below shows the three types of economies and highlights the transformational change that need to be considered in the design of new developments.

Figure 3.1: A Comparison of Linear, Recycling, and Circular Economy Models



Source: Mayor of London Circular Economy Guidance, 2021

3.2 Best Practice Guidance

3.2.1 Circular Economy Principles for Building Design

The European Commission issued the Circular Economy – Principles for Building Design guidance in 2020 to present a set of principles for stakeholders within the built environment sector. The objective of these principles

was to help design sustainable buildings with the aim to create less waste during the lifecycle of the development and facilitate the reuse and recycling of materials.

The core principles relate to:

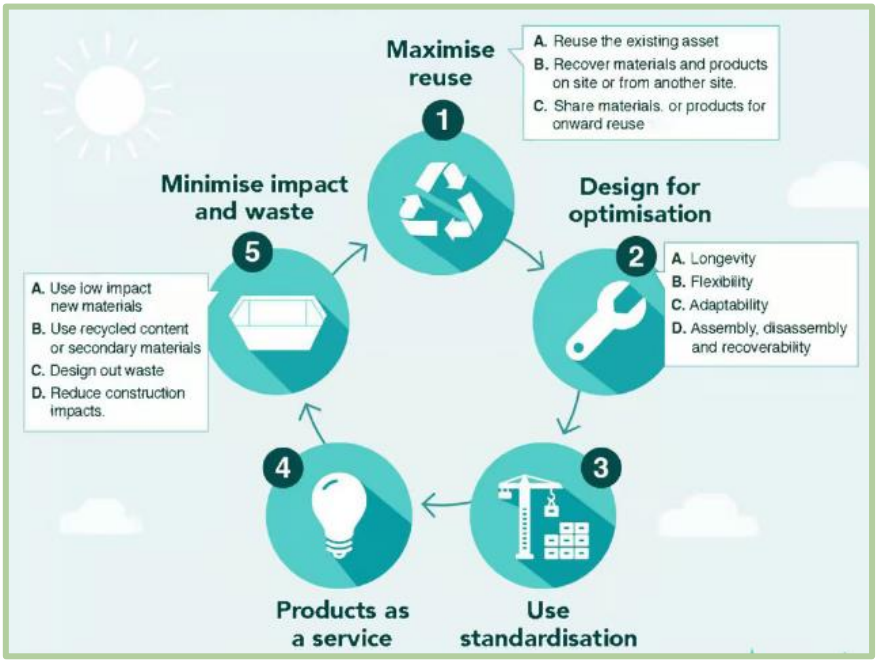
- **Durability:** buildings to be better designed and improved construction systems that can extend the longevity of the materials;
- **Adaptability**: buildings to be adaptable for future transformations where the buildings and their components can be re-used and recycled; and
- **Management of Waste**: buildings to encourage occupants to be able to reuse, reduce, recycle, and recover products where possible and using recycled products in construction.

3.2.2 UKGBC Circular Economy Principles and Metrics for Construction

First laid out in the UKGBC 2019 Circular economy guidance for construction clients, the following Circular Economy principles for buildings demonstrate how to build circularity in at each lifecycle stage:

- Maximise reuse (including refurbish and repurpose),
- Design buildings for optimisation,
- Use standardisation,
- Products as a service, and,
- Minimise impact and waste.

Figure 2.2 – Circular Economy Principles for Construction



Source – UK Green Building Council

In addition to these principles, the UKGBC Circular Economy Forum has also developed the following seven circular economy metrics for buildings:

- Dematerialisation (Upfront), kg/m^2 GIA,
- Dematerialisation (Life Cycle), kg/m^2 GIA,
- Design for Disassembly & Re-use, % (tonnes),

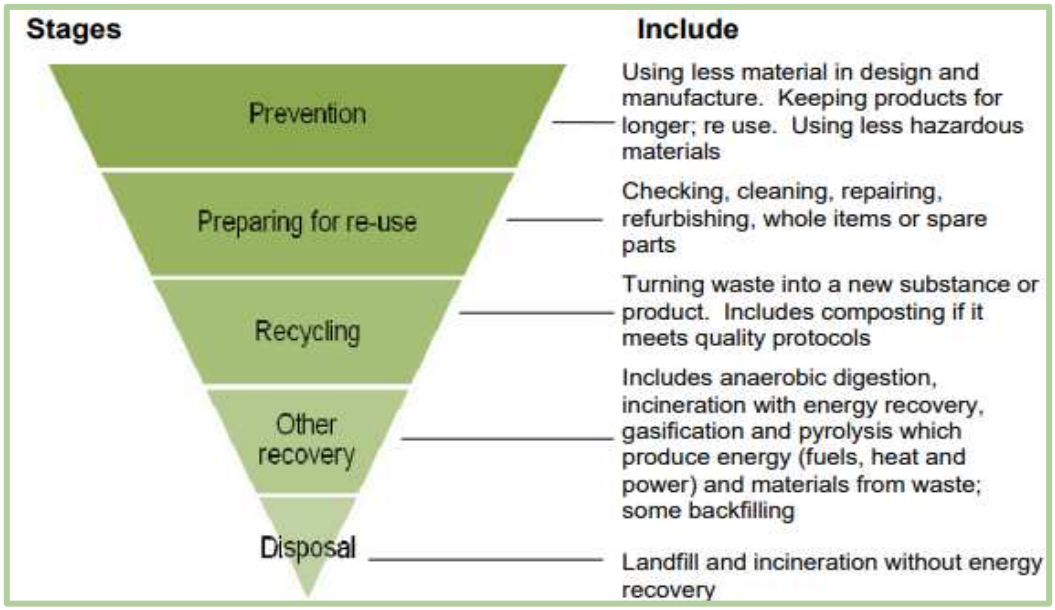
- Material:
    - Re-used % (tonnes),
    - Remanufactured % (tonnes), and,
    - Recycled % (tonnes).

- Material Database and Passport % (tonnes),
- Design for adaptability % (Area), and,
- Embodied Carbon ($kgCO_2e/m^2$ GIA).

3.2.3 The Waste Hierarchy

The Waste Hierarchy is a tool that ranks waste management options (top to bottom) from what is the best option for the environment (prevention) to the least preferred option (landfill disposal).

Figure 2.1 - DEFRA Waste Hierarchy Model



Source: www.defra.gov.uk

3.2.4 Mayor of London Circular Economy Guidance

Whilst the proposed First Street development is not located within the Greater London area, the guidance set out within this document is aligned with the requirements of adopted policies relating to circular economy, and as such will also be used to inform the circular economy commitments for this development.

The London Plan 2021, through its policy S1 17 Reducing Waste and Supporting the Circular Economy, requires all new major developments to submit a Circular Economy Statement in their planning applications on a bid to transition to zero carbon city by 2030. To support this requirement, a guidance document has been developed to help developers outline their circular economy commitments as well as structure their circular economy statements for planning approval.

3.2.5 London Plan Circular Economy Principles

The following six principles are listed within the London Plan Guidance and have therefore also been considered as a fundamental part of the building design process:

1. Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary;
2. Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials;
3. Designing for longevity;
4. Designing for adaptability or flexibility;
5. Designing for disassembly; and,
6. Using systems, elements or materials that can be reused and recycled.

These principles align with the UK Green Building Council (UKGBC) principles and support the application of the waste hierarchy, in that measures to avoid or reduce waste is prioritised.

4. FIRST STREET CIRCULAR ECONOMY PRINCIPLES

This statement has been prepared in line with national and current industry best practice, which aims to reflect the following key principles of circular economy (CE), which have been considered as part of the design of the development.

In order to accurately identify the key circular economy principles that will be implemented as part of the proposed design, a workshop was held with key members of the design team to discuss all of the potential circularity measures. The items highlighted throughout Section 4 of this report were provided and committed to by the design team which comprised of:

Renaker Build Limited
Vita Meadows Limited
ROC Consulting Limited
Tim Groom Architects Limited
Element Sustainability Limited

Table 3.2 –First Street Circular Economy Principles

Principles	Explanation
Maximise reuse (including refurbish and repurpose)	• Reuse the existing asset • Recover materials and products on site or from another site • Share materials or products for onward reuse
Design buildings for optimisation	• Design for longevity • Design for flexibility • Design for adaptability • Design for assembly, disassembly and recoverability
Use standardisation	• Standardised, modular elements in buildings are created with less waste and are easier to reuse.
Products as a service	• Creating payment systems whereby materials are treated as a service – the contractor pays for the service of using materials not for the materials themselves.
Minimise impact and waste	• Use low impact new materials • Use recycled content or secondary material • Design out waste • Reduce construction impacts

4.1 Maximise Reuse

The application site is currently a vacant brownfield plot of land, therefore there is no existing asset to reuse. The ground has also been previously cleared and levelled before the client, VITA Meadows, acquired the development plot.

4.2 Design for Optimisation

4.2.1 Designing for Longevity

A life cycle assessment (LCA) has been conducted to assess the environmental impact of the proposed scheme over its entire lifecycle. In accordance with the BREEAM MAT01 credit. The methodology for the LCA assume a life span of sixty years, however, it is likely that the building will be designed to be functioning well beyond this. Measures that will assist in increasing the longevity of the design include:

- The brick façade is a hard-wearing solution that is built with longevity in mind. This will be able to withstand extreme weather events and requires minimal maintenance during operation;
- The proposed framework is also designed to last indefinitely with the correct maintenance;
- Robust materials such as York stone flags, granite blend setts, granite edging and concrete blocks will be utilised within the hard landscaping design. Thus minimising the frequency of replacement or repairs, maximising material optimisation, and extending replacement intervals; and,
- The building will be properly maintained and managed, in order to increase the longevity of the development.

4.2.2 Designing for Adaptability/ Flexibility

To reduce the risk of the development becoming redundant in the future and as a result, being demolished because it no longer meets the needs of prospective occupants, it is important that the design is able to adapt and be flexible to potential future uses. Therefore, the proposed development benefits from the following:

- The proposed column design has been minimised to provide maximum flexibility of the floorplates;
- The external brickwork shell of the building is able to be removed and have the building remain watertight and structurally sound, enabling alterations or refurbishments to be made to the façade;
- The floor to ceiling heights of the proposed development is suitable for a variety of residential uses, allowing the building to be adapted, if required;
- Due to the lower loading levels of the proposed design, future uses of the site would be restricted to other residential uses only; and,
- Major plant services within the residential part of the building support a change in use to residential apartments with a slight adaptation of the M&E strategy for future apartments.

4.3 Designing for Disassembly & Recoverability

Designing for disassembly allows sections of the building to be reused (ideally onsite) or, where this is not possible, offsite (with nearby sites preferred). This approach also includes careful and selective deconstruction of the building and material types, and then reusing those elements and materials. If reuse is not possible, materials may be carefully and selectively separated for processing and recycling into new elements, materials and objects. Therefore, the proposed scheme benefits from:

- If removed carefully, at their end of life, the bricks used within the façade can be repurposed and used within other projects. Thereby extending their lifespan and reducing the number of materials sent to landfill; and,

- The windows can also be carefully removed and repurposed within a similar sized scheme. Conversely these can also be easily recycled.

4.4 Low Impact Materials

Where new materials are being specified, those with little or no adverse effect on either the environment or on human health throughout a project's lifecycle should be prioritised. The following will therefore be incorporated throughout the development process where feasible:

- Recycled concrete;

- Incorporate cement replacement products, including or similar to ground granulated blast furnace slag (GGBS) within concrete components;

- Concrete will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level "very good" or equivalent

- The proposed scheme will also target to achieve the responsibly sourcing BREEAM credit.

4.5 Use of Standardisation

Incorporating standardised, modular elements in buildings assist with limiting waste and are easier to reuse. The proposed scheme will therefore utilise:

- A standardised façade system;

- Prefabricated panels to minimise waste arising;

- The scheme has been optimally designed to accommodate standard brickwork dimensions and avoid waste; and,

- Common door types and dimensions have been prioritised.

4.6 Reducing Construction Impacts

Construction impacts can be reduced by returning packaging back to the supplier for reuse or recycling, and by ensuring onsite waste management is set up to enable reuse, with recycling as the final option. Therefore, the scheme will benefit from the following:

- Steel cladding and balustrading can be returned to the provider to be recycled or re-used;

- Brick work and insulation pallets will be returned to the provider to be reused or recycled; and,

- A transfer station will be setup to collect various sources of waste where it can be consolidated before being further transported to an end point of disposal.

4.7 Designing Out Waste

Waste is a misuse of resources and can have a detrimental impact on the environment. Therefore, the design team has considered ways to reduce the amount waste generated as part of the construction and operation phases throughout the design process.

The following measures have been taken to maximise resource efficiency and limit the amount of waste generated as a direct result of the proposed development:

Pre-Construction

Prior to commencement of the construction phase, the site waste management plan (SWMP) will be referred to in order to limit and manage the on and off-site waste produced through development construction. The SWMP will detail:

- Recycled and secondary materials;
- Waste reduction;
- Waste segregation;
- Waste recovery; and,
- Waste disposal.

The site waste management plan will also identify opportunities to divert any unusable construction waste away from landfill to a waste transfer station, where it will be segregated into:

- Recyclable materials;
- Metals;
- General waste and debris; and,
- Hazardous waste.

Construction

- Utilising standardised materials and optimising their application throughout the scheme will help to reduce the amount of waste generated;
- The building design has been designed to accommodate brick dimensions, to also reduce the need for cutting;
- The structural design has been optimised to reduce the quantity of concrete used on site. Precast concrete products are manufactured offsite under factory-controlled conditions, ensuring only the exact amount of concrete is used to create the required product. Thereby reducing the risk of spills of concrete when being poured onsite;
- The façade intentionally benefits from a repeating pattern that can be mass produced. Thereby limiting the number of variables and the need to cut materials to different sizes;
- In line with the BREEAM Wst 01 criteria, the proposed scheme is targeting to achieve the following:
    - The amount of construction waste generated per 100m^2 (GIA) to be less than or equal to 6.5 tonnes; and,
    - Diversion from landfill benchmarks:
        - Non-Demolition – 70%
        - Demolition – 80%

Operation

The operational waste strategy for the scheme focuses on the segregation of waste at source, to maximise the potential for residents and visitors to recycle in accordance with Manchester City Council Core Strategy Policy EN19.

The proposed strategy has been developed in compliance with the above policy:

- Waste will be segregated at source with the help of segregated bins. It is expected that there will be multiple streams of waste – general, recyclables and compost / green waste;
- The number of bins and subsequently the size of the refuse store is based on projected waste generation figures for the building;
- Signage will be posted across the development to show the location of the bins and information on recycling will be provided to all building users; and,
- The proposed development will seek to target 65% recycling rate for municipal solid waste and no more than 10% to landfill by 2035 in line with the GMCA targets.

4.8 Using Locally Sourced Materials

Sourcing materials locally is encouraged to further reduce the environmental impact associated with transport emissions. This also helps to reduce the risk of materials being damaged during transportation, as these don't need to be transferred between multiple modes of transport. Thereby reducing the amount of waste created. The design team have therefore specified local materials throughout the design where possible, including:

- All concrete for the scheme will be sourced from batching plant facility located on Great Jackson Steet.

Materials which are supported by Environmental Product Declarations (EPDs) will also be specified in order to identify their associated environmental impacts early on. Additionally, EPDs which include whole life cycle Module D[1] will be beneficial to assess any benefits or burdens occurring from the repurposing of elements discarded from the built asset, or any energy recovered from them beyond the project's life cycle.

[1] Lifecycle Analysis Module [D] is intended to provide a broader picture of the environmental impacts of a project by accounting for the future potential of its components when these are repurposed i.e., recovered, and reused and/ or recycled.

5. CIRCULAR ECONOMY MONITORING FRAMEWORK

A scheme specific monitoring framework has been developed which outlines the commitments that this Circular Economy Statement has established. A number of key activities have been proposed which will be benchmarked against each objective. The person(s) responsible for delivering the evidence supporting the activities and the project's lifecycle stage in which these activities will be carried out has also been assigned in the table below.

Table 5 – Monitoring Framework

Objective	Activity	Lead / Responsibility	Timeline
Reduce demand for materials and minimise quantities used.	Issue a Pre-Qualification Questionnaire (PQQ) to check compliance of suppliers with the Developer's Circular Economy commitments. Bill of Materials to benchmark quantity of recycled content and re-used building materials.	Developer / Construction Contractor	Pre-Construction to Post-Completion
Source materials responsibly and sustainably.	Request for Environmental Product Declarations (EPD) for recycled products, and products with low embodied carbon.	Developer / Construction Contractor	Pre-construction to Construction Phase
Reduce the amount of construction waste.	Construction Environmental Management Plan, with a Construction Waste Management Strategy to maximise diversion of construction waste from landfills.	Construction Contractor	Construction Phase
Reduce the amount of operational waste.	Operational Waste Management Plan. Recycling facilities.	Operator	During occupancy

6. CONCLUSION

The design proposed for the First Street PBSA has been assessed against the UK Green Building Council (UKGBC) key principles of the Circular Economy, which have been influenced by national, regional, and local planning policy frameworks.

These principles are based around the following criteria:

- Recover materials and products on site,
- Design for longevity,
- Design for flexibility,
- Design for adaptability,
- Design for assembly, disassembly and recoverability,
- Use low impact new materials,
- Use recycled content or secondary materials,
- Design out waste, and,
- Reduce construction impacts.

In order to accurately identify the key circular economy principles that will be implemented as part of the proposed design, a workshop was held with key members of the design team to discuss all of the potential circularity measures. The items highlighted throughout Section 4 of this report were provided and committed to by the design team, and from this the following conclusions can be made:

The development will meet the above criteria through the following measures:

- Waste arising during construction and the excavation phase will be minimised through the implementation of a Site Waste Management Plan (SWMP). The SWMP will be used to ensure that there is adequate management and storage of construction waste takes place. Opportunities for the possible recycling of construction from excavation works will also be considered in line with best practice.

- Construction impacts will be limited by the brick work and insulation pallets being returned to the provider to be reused or recycled, and a transfer station will be setup to collect various sources of waste where it can be consolidated before being further transported to an end point of disposal, usually landfill or waste-to-energy facilities.

- The building has been designed in a way that limits the amount of waste produced during construction. This has been achieved by utilising standardised products and precast concrete items, in order to reduce the need for cutting products to size and pouring concrete onsite.

- The implementation of the operational waste strategy has been designed to encourage the occupants to segregate their waste at source and maximise the potential for recycling.

- The development has been designed for longevity through use of durable materials. Including robust materials such as York stone flags, granite Blend setts, granite edging and concrete blocks within the hard landscape design. A brick façade has been specified as this is a hard wearing and long-lasting material, that can withstand extreme weather events.

- The scheme could be adapted for alternative residential uses if required, due to the proposed loading levels and floor to ceiling heights being suitable for a variety of residential uses.

- All concrete for the scheme will be sourced from a batching plant facility located on Great Jackson Steet.

In conclusion, the proposed development has embedded Circular Economy principles within the design proposals, and accords with national best practice, and supports the vision for Manchester City to become a zero-waste city in the near future.