



Condition 3b: Construction Environmental Management Plan – Circular Economy Statement

Spear Street, Manchester, M1 1JU

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1. Overall Summary

A circular economy is one where materials are retained in use at their highest value for as long as possible and are then re-used or recycled, leaving a minimum of residual waste. A circular economy will save resources, increase the resource efficiency of businesses, and help to reduce carbon emissions.

The project at the small parcel of land located to the north of Spear Street in Manchester City Centre's Northern Quarters will contain a 5 storey apartment building for 6 new apartments with 1 commercial unit on the ground floor. It also includes ancillary indoor and outdoor amenity space, cycle parking and hard landscaping works. The total area for development is 0.013 hectares. The site is currently vacant, having been previously occupied by surface car parking. Prior to this a 3 storey building was present at the site, however this was demolished for health and safety in 2009. The site is bound by Spear Street to the south-east, the rear façade of a 3 storey building to the northeast, the single storey rear façade of a building to the north-west and vacant brownfield land to the west.

This circular economy statement has been prepared to support the discharge of Condition 3b of approved Planning Application 117280/FO/2017.

Approach

M4nchester One Ltd, supported by Northern Group, and the appointed contractor, Triple M Projects, have a proactive approach to sustainability with a range of corporate and project level commitments to reduce the amount of materials required, increase recycling rates and limit the amount of waste sent to landfill.

The approach to circular economy throughout the design has endeavoured to increase longevity of the building by specifying robust materials and using standard fabric sizes and modularisation for ease of replacement and maintenance.

As the brownfield site is currently empty and has no purpose, the development aims to highly segregate the waste from preparation for construction works to aim for a diversion from landfill rate of 95% or better.

The project team have investigated reuse of some of these waste streams during preparation. The team have also investigated the reduction of waste during construction through supplier engagement to reduce packaging waste.

Pre-fabrication off-site and use of precast concrete stairs will help to reduce waste production through over-specification of materials. Where materials cannot be re-used, they will be sent off-site for re-use and refurbishment elsewhere if possible, instead of being taken by waste carriers.

Where possible, at the end of life, the building and associated infrastructure will be disassembled with individual components directly used elsewhere or sent for recycling.

Commitments

This circular approach to development includes assessment of design and materials at key stages of the development in order to promote a flexible and adaptable design that also promotes longevity. Certain design decision of materials was

made with the whole life carbon in mind in order to reduce emissions associated with construction.

In this context some of the key circular economy commitments incorporated into the contract of the development include the following:

- Ongoing encouragement of specifications that maximises energy and resource efficiency (e.g. water efficiency) within the design.
- Ongoing investigation into the inclusion of modularisation into the design including bathroom pods and demountable cladding.
- Seek to specify the use of recycled materials wherever viable including steel content, aggregates, and building finishes such as carpets.
- Utilise off-site prefabrication and precast concrete where possible.
- Procurement of sustainable and robust/durable materials.
- Continue to investigate flexibility within the design to allow for changing and future needs of the development.
- Continue to work with suppliers to reduce packaging waste or investigate take-back schemes.
- Internal project targets and commitments will be reviewed by the Contractor, with the circular economy targets

added as agenda item within regular team meetings.

Implementation

At this later stage in design, the design team will continue to investigate opportunities to increase circularity of the design of the development.

While some of the principles have been or are in the process of being implemented, as part of the Contract, the primary contractor will aim to ensure that where appropriate and viable, the principles will be carried through the remaining design and eventual construction.

2. Introduction

2.1 Introduction

This circular economy statement has been prepared by Carbon Maze on behalf of M4nchester One Ltd ('the Applicant'). It supports the discharge of Condition 3 part (b) pursuant to planning permission ref. 1117280/FO/2017 at Land At Spear Street, Manchester.

Since the planning permission was issued, it was clarified with the local authority that they require a circular economy statement to act as a high-level strategy for the construction, operation and decommissioning stages of the building with respect to non-renewable material resources and reducing lifecycle impacts.

This statement builds on the principles relating to circular economy set out in the Planning Statement appendix 1 where the proposed development is considered to comprise sustainable development as the proposed high density development provides a density of 846 dwellings per hectare thus making efficient use of land.

2.2 Proposed Development

2.2.1 Application Site

The site is a small parcel of land located to the north of Spear Street in Manchester City Centre's Northern Quarters. The total area for development is 0.013 hectares. The site is bound by Spear Street to the south-east, the rear façade of a 3 storey building to the northeast, the single storey rear façade of a building to the north-west and vacant brownfield land to the west.

2.2.2 Description of Proposed Development

The proposed development is for a 5 storey apartment building for 6 new apartments with ground floor commercial space. The development also includes ancillary indoor and outdoor amenity space, cycle parking and hard landscaping works. The residential layout for the building has been planned with access off a communal stairway and is therefore an efficient use of space. All the residential units will be made available for private rent as part of a purpose built 'built to rent' residential development.

2.2.3 Method

The applicant and the project team attended a circular economy workshop to confirm the principles, commitments and targets of the scheme.

The team have worked together to ensure principles of circularity are incorporated into the project, where possible. This input has influenced the sustainability objectives for the project design and construction.

Following the CE workshop, the reporting requirements and processes that set out the principles and targets are summarised below in Section 4.

2.2.4 Circular Economy Aspirations

The CE goals for the project have been set below. The goals are for the project to align with the:

- Waste Hierarchy
- Circular Economy Hierarchy.

Incorporating the associated targets and commitments within materials and elements will help to ensure the principles of circularity are

incorporated into the design and construction of the project.

As part of the demonstration of commitments to sustainability and circular economy principles, the project aims to achieve at least 95% diversion from landfill rate and aiming to achieve less than 7.5m³ or 6.5 tonnes of waste produced per 100 m² of gross internal area.

2.3 Document Structure

The content of the CE Statement is as follows:

Chapter 1 and 2 set out the Executive Summary and Introduction.

Chapter 3 communicates the circular economy approach listing commitments, targets, metrics and timeframes.

Chapter 4 concludes the Statement.

Appendix A includes the proposed development site plan.

Reference should be read in conjunction with other documents submitted in support of the planning application, namely the Sustainability and Energy Standards Statement, Site Waste Management Strategy, Site Waste Management Plan and Whole Life Carbon chapter.

3. Circular Economy Principles & Commitments

This chapter has been prepared to set out how the development proposals promote circular economy principles and commitments.

3.1 Introduction

A circular economy is one where materials are retained in use at their highest value for as long as possible and are then re-used or recycled, leaving a minimum of residual waste. A circular economy will save resources, increase the resource efficiency of businesses and projects, and help to reduce carbon emissions.

For circular principles to be successful, a whole building lifecycle approach is required. Therefore, the goals of the circular economy statement are closely entwined with the approach of the Sustainability and Energy

Standards Statement and Site Waste Management Plan developed for the proposed development.

This will incorporate a number of commitments to manage quantities of materials, resources and waste. These principles underpin the structure and content requirements of this circular economy statement.

3.2 National Policy

Planning policy is set at the national level by the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG) as summarised below.

3.2.1 National Planning Policy Framework

Most recently updated in February 2019, the National Planning Policy Framework (NPPF) sets out the Government's planning policies for England.¹

The NPPF 7 states *"the purpose of the planning system is to contribute to the achievement of sustainable development"*.

Key requirements for the environmental objective of relevance to this statement include making efficient use of land, using resources prudently, minimising waste and pollution and mitigating climate change.

3.2.2 Planning Practice Guidance

Planning Practice Guidance (PPG)² underpins policies within the NPPF and provides guidance on their implementation. As such PPG is a material consideration in planning decisions and should generally be followed unless there are clear reasons not to. PPG includes a specific section on the implementation of waste planning policy. It explains how local planning authorities can help ensure waste is handled in a manner which protects human health and the environment.

Local planning authorities, to the extent appropriate to their responsibilities, should look to drive waste management up the 'waste hierarchy' (see **Figure 2**).

¹ <https://www.gov.uk/government/collections/revised-national-planning-policy-framework>

² <https://www.gov.uk/government/collections/planning-practice-guidance>

3.2.3 Our Waste, Our Resources: A Strategy for England

The Strategy for England (2018)³ sets out Government proposals to preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy (see **Figure 1**).

The Strategy aims to make England a world leader in using resources efficiently and reducing the amount of waste created. By prolonging the lives of materials and goods, society can move away from the inefficient ‘linear’ economic model of ‘take, make, use, throw’ towards a more circular economy through which resources will be in use as long as possible so that maximum value can be extracted from them.

The Strategy is framed by natural capital thinking and guided by two overarching objectives:

- To maximise the value of resource use; and
- To minimise waste and its impact on the environment.

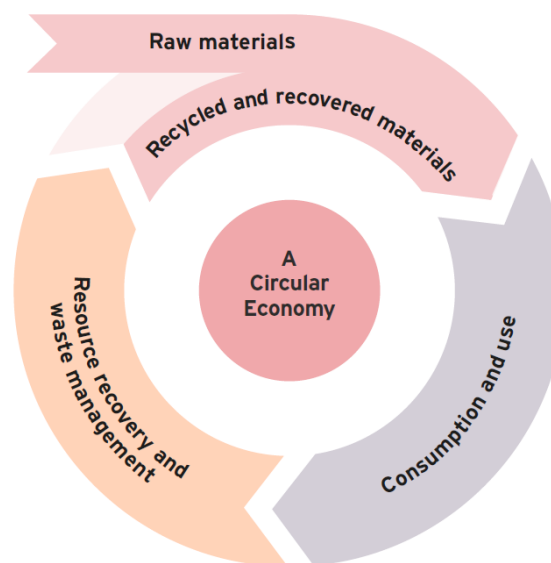


Figure 1: Circular Economy (Waste Strategy for England)

3.2.4 National Guidance: UKGBC Circular Economy Guidance

This UK Green Building Council guidance⁴ is designed to enable construction clients to include more ambitious circular design and construction principles for non-domestic built assets. In general, the principles are also transferrable to domestic and infrastructure scenarios.

This is achieved by addressing the common commercial obstacles that developers may encounter, and providing practical support and evidence to assist them in setting clear circular objectives for construction projects.

In contrast to a linear “take-make-dispose” economy, a circular economy builds overall system health by decoupling economic activity from the consumption of finite resources. This should be underpinned by a transition towards renewable energy sources.

The structure of the UKGBC Guidance follows the following Circular Principles:

- Reuse
- Design Buildings for Optimisation
- Standardisation or Modularisation
- Servitisation and Leasing; and,
- Design and Construct Responsibly.

The guidance also aims to ensure that the construction supply chain can effectively deliver circular economy goals and that budget, project management, and timescale risks are minimised and mitigated.

³https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

⁴<https://www.ukgbc.org/wp-content/uploads/2019/04/Circular-Economy-Report.pdf>

3.2.5 Manchester Core Strategy 2012 - 2027

The Core Strategy is the key Development Plan which was adopted in 2012 and sets out the following policies pertaining to waste:

Policy EN19 Waste – requires all developers to demonstrate the proposal's consistency with the principles of the waste hierarchy.

Policy DM1 Development Management – all development should have regard for refuse storage and collection in the design.

3.2.6 Greater Manchester Spatial Framework 2020 - 2037

The production of the Greater Manchester Spatial Framework, an update to the Core Strategy, is no longer being progressed in its current form however the draft plan sets out the ambition for Greater Manchester to achieve a circular economy and a zero-waste economy, by implementing the following policy:

Policy GM-S 7 – Resource Efficiency - the following measures will help achieve a circular economy: using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof the impact of climate change, reduce and recycle waste and

minimise water use; and, designs should incorporate storage space to facilitate recycling.

3.3 Goals

The national principles and guidance and Policy EN19 and DM1 of the adopted Manchester Core Strategy, along with the development of the Greater Manchester Spatial Framework, demonstrates the ambition to move to a circular economy. The proposed development wants to demonstrate the clear commitment to designing and building a development which considers the impacts of circularity in relation to materials and waste.

The following goals have therefore been set.

Goal 1. Waste and Resource Management through adoption of principles of Waste Hierarchy

Follow the principles set out in the Waste Hierarchy with the goal to conserve resources; design to eliminate waste to landfill; and increase recycling rates. In accordance with their sustainability commitments, the Contractor aims to utilise optimum level of resources and minimise waste output and achieve high levels of recycling and reuse.

The Applicant also commit to minimising waste output and work with property managers and suppliers to improve sustainability

performance in our portfolio and in products, and integrate sustainability considerations into all asset planning and decision-making.

As this is a self delivered project, the future occupier will also have a large role to play in designing out waste and ensuring construction practises on site minimise waste production in the first instance as well as limit the amount of waste to landfill.



Figure 2: Waste Hierarchy

Goal 2. Adopt principles of Circular Economy Hierarchy

Deeper analysis of the Waste Hierarchy enables the circular economy hierarchy and avoidance of the linear “take-make-dispose” economy.

The goal is therefore to manage waste sustainably and at the highest value. In this way, a circular economy will help to build overall system health by decoupling economic activity from the consumption of finite resources.

In order to achieve these goals, a number of principles and commitments have been developed for the project.

These are discussed in the next section.

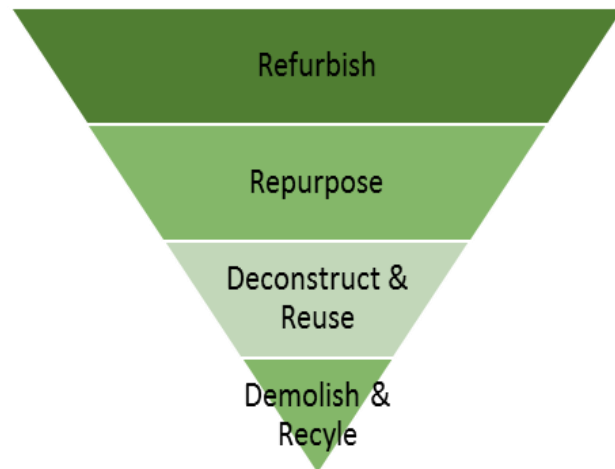


Figure 3: Circular Economy Hierarchy

3.4 Circular Economy Targets and Commitments

This section provides a more detailed description of how the targets and commitments will be achieved where possible.

The structure provides a response to each of the following principles of Circular Economy.

For each principle, the narrative includes a short summary of the proposed approach, along with itemised metric(s) and target(s). Commitments and measures that will be adopted where possible, are also listed along with key information about how each measure will be implemented and at what stage. Anticipated challenges and counter-actions is also included where relevant.

Principle 1: Conserve resources, increase efficiency and source sustainably

Commitment 1.1: Minimise the quantities of materials used

Responsibility	Primary: Client. Secondary: Architect, Structural Engineer.
Timeframes	Commenced at RIBA Stage 4.
Proposed Approach	The form of the building at Spear Street is simple and efficient, thereby using less materials within the design. Furthermore, the design and procurement process will aim to specify robust materials for elements that historically required regular replacement. During the design, the Client, Architect and Contractor have investigated the standardisation or modularisation of key components such as windows, lighting and cladding that will simplify maintenance, part repair and replacement for the operations, asset management and maintenance team. Furthermore, the standardised or modular elements may be able to be demounted or dis-assembled, relocated and refurbished thereby extending the lifespan of these building elements and reducing the demand for new raw materials. The project team will endeavour to: • Investigate the use of demountable aluminium cladding elements. • Set out building elements based on standard fabric sizes. • Investigating the off-site manufacture to encourage modularisation in the development. During construction, the project team will also aim to ensure where possible, efficient materials procurement and reduced construction waste by designing for less material use and less construction waste produced by: • Off-site prefabrication has been promoted and maximised where possible to minimise the potential for both on-site and off-site construction waste. • Reinforced steel is pre-cut off-site to minimise off-cuts and therefore waste. • Pre-cast concrete is used throughout the development, including pre cast columns will be used where practicable. This is a more efficient use of concrete as components are made in factory where exact quantities can be used to reduce waste.
Metrics	Number of high cost elements agreed.
Targets	The project will aim to target use of pre cast concrete stairs, steelwork transfer decks and traditional brickwork.

Commitments & Measures	Standardisation and modularisation requirements relating to wall makeup will be investigated by the team members. Traditional brickwork will be being investigated to minimise maintenance and repair. Offsite prefabrication of building elements will be utilised where possible.
Implementation	Designers will consider standardisation and modularity in design and identify 'specials' on design drawings. Procurement models for standardised components should be reviewed with the main contractor. Transportation and construction details of modular components should be reviewed by the contractor and supply chain as early as possible to determine if low carbon solutions are available.
Challenges / Counter-actions	Some modular elements may have higher embodied carbon than regular construction due to transportation and lifting dictating the limiting structural state of the unit. / Solutions to reduce the embodied carbon, such as localised reinforcement for lifting, can be realised through early engagement with the supply chain. Production capacity for modular / standardised components within the UK supply chain can fluctuate. / Early commitment to a fabricator is encouraged to secure the fabrication slot and maintain programme.

Principle 1: Conserve resources, increase efficiency and source sustainably

Commitment 1.2. Minimise the quantities of other resources used

Responsibility	Primary: Client. Secondary: Architect, MEP and Structural Engineers.
Timeframes	Commenced at Stage 2, refined at Stage 3 & 4, discussed during construction meetings.
Proposed Approach	The Applicant aims to mitigate the potential impact of the development by addressing key sustainability issues and incorporate a range of procedures to maximise resource efficiency and minimise waste during all stages of the development. Spear Street takes a fabric first approach in reduction of operational energy (heating/cooling/ventilation) by having a low U-Value façade, low Y-value thermal bridging, improved air tightness, use of mechanical vent heat recovery (MVHR), and a very efficient form factor and optimised glazing ratio. A fabric-first and all-electric energy strategy will be adopted, resulting in a reduction of energy demand by approximately 22%. The development will benefit from the ongoing decarbonisation of the UK electricity grid. The Applicant will assess the environmental impact associated with all the phases of the life cycle of the new building, from the manufacture of the building materials through to the operation of the building and how it will be demolished and replaced, focusing on a range of sustainability metrics. Each design and specification decision is to be measured against the impact it will have on the net of the whole life carbon of the project. The apartments will be designed to reduce water consumption and will include water efficient devices and equipment, including 'A' rated appliances. The Energy and Environmental Standards Statement concluded a daily consumption rate of 125 litres / person / day. There will be a maximum dead leg of 1 litre of hot water pipework. 'Green' Euro Water Label to be used for hot water outlets (e.g. certified 6l/min shower head). During the construction, the team will also investigate further measures to reduce use of other resources, such as packaging, as discussed below in Commitment 3.3. The use of water, electricity and fuel will be monitored to track performance throughout construction, with decisions being taken considering these KPIs.
Metrics	t/co2 (embodied carbon)

	Water – l/p/d
Targets	Water – 125 l/p/d Energy as per policy requirements: 1. Residential elements to achieve 5% reduction in dwelling emission rate over Part L 2013 2. Non-domestic units to achieve 6% reduction in dwelling emissions rate over Part L 2013.
Commitments & Measures	Water Resources: the project aims to 1. minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 125 litres or less per head per day, and will investigate betterment of this. 2. Incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing. Sustainability and Energy Strategy: an energy strategy has been produced to meet the requirements of the local Plan. Supply Chain: To reduce packaging waste on site and promote closed-loop recycling of key construction products, through pro-active engagement with the supply chain.
Implementation	Sustainability & Energy Standards Statement has been completed and submitted as part of the Planning Application. Contractors are required to explore reusable packaging solutions with key product manufacturers at the earliest opportunity.
Challenges / Counter-actions	Solutions with key supply chain partners can lead to a significant reduction of site waste management and disposal costs. However, the supply chain is only likely to invest in reusable packaging solutions for large product orders. / Scale may be helped through the implementation of a standardisation strategy including off-site/modular components. Suppliers need time to respond to requests for re-usable packaging and develop suitable solutions. / Discussions should start during the earliest phase.

Principle 1: Conserve resources, increase efficiency and source sustainably

Commitment 1.3. Specify and source materials and other resources responsibly and sustainably

Responsibility	Primary: Architect, Structural Engineer. Secondary: Main Contractor.
Timeframes	Commenced at Stage 4, discussed at contractor meetings
Proposed Approach	The Applicant endeavours to reduce the reliance on raw virgin materials and procure from sustainable sources. The Applicant will also aim to ensure a construction specification that maximises energy and resource efficiency. To reduce the reliance on virgin materials in the construction material, the Contractor seeks to specify the use of recycled materials wherever viable including steel content, aggregates, blockwork and building finishes and furnishes. The procurement team will ensure use of products from certified sustainable sources, and ensure the availability of supply for the needs of the development e.g. FSC/PEFC certified timber.
Metrics	Recycled content by total material mass or cost
Targets	The Contractor will endeavour to implement targets of increasing the recycled content of materials such as concrete, blockworks, insulation, carpet tiles etc. They will be cross checked by the team in line with commercial viability. Recycled materials with low embodied carbon will be preferred. Materials suppliers that have an established Environmental Management System will be preferred.
Commitments & Measures	Design team and contractor participated in CE Workshop Procure sustainable material, certified where possible e.g. FSC/PEFC timber.
Implementation	Implement monitoring and reporting procedures to ensure opportunities are realised by contractors and their supply chain partners.
Challenges / Counter-actions	Possible issue with recycled content not explicitly communicated to sub-contractors. / Requirements to be incorporated into specifications for subcontractors. Lead in times / availability. / Increased recycled content is often available in mainstream products by large suppliers and does not incur a cost premium, but it does require project team awareness to ensure the correct products are selected.

The design team & contractor may not be aware of products with increased recycled content, nor be familiar with including requirements in specifications. / Additional sustainability workshops may be needed to engage the design team / add circular economy and Waste to agenda.

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

Commitment 2.1. Design for longevity, adaptability or flexibility and reusability or recoverability

Responsibility	Primary: Client Secondary: Architect and Structural Engineer
Timeframes	Commenced at Stage 4, discussed by the team
Proposed Approach	In order to ensure that circular economy principles are embedded within the construction process, the development aims to meet long term needs while being durable and resilient. It should be able to cope with change from, for example, climate change or different ways of living. The lightweight partitions and riser arrangements mean the internal arrangements can be adapted at a later date with little impact. The clear orthogonal organisation, structural strategy and adaptable floor plates allow for future flexibility so that walls between units and internal partitions can be moved without significant structural alteration. The materials have been specified to be robust and long lasting and based on standard fabric sizes. Material specifications and procurement will aim to achieve durability standards. Materials are to be demountable and recyclable where practicable. Off-site prefabrication and design for modularisation / standardisation will be promoted and maximised where possible to ensure ease of maintenance and repair/replacement during operation.
Metrics	Various – see targets
Targets	Achieve durability standards (such as BS 7543:2015) All materials will also be sourced in accordance with a sustainable procurement strategy which includes the following measures: - all timber will be sourced from sustainable sources; - recycled materials with low embodied carbon will be preferred; and, - Materials suppliers that have an established Environmental Management System. - where appropriate, modular designs
Commitments & Measures	The Applicant is committed to designing out waste, recognising that the Design and Build process has an important role in reducing waste and associated environmental impact of the materials in accordance with the waste and circular economy hierarchies. The Applicant seeks to integrate longevity into the design, by procurement robust materials and implementing modularisation where possible.

Implementation	Adaptability and flexibility is a key component of the design brief for the team. The design and build has and as it evolves will continue to take into account the needs of the present with consideration of how those needs might change in the future.
Challenges / Counter-actions	Designers may need to re-examine certain elements or material to reduce waste and incorporate circular economy principles. For example, consider cutting patterns for elements such as plasterboard when locating windows and doors.

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

Commitment 2.2. Design out construction, demolition, excavation and municipal waste arising

Responsibility	Primary: Architect, Structural Engineer. Secondary: Main Contractor, Waste Contractor.
Timeframes	Stage 4, discussed during contractor meetings
Proposed Approach	During construction, the team will work together to maximise the value and quantity of materials recovered for potential reuse and recycling. This will include encourage efficient use of materials by applying lean design principles, using reclaimed materials, and components, and substituting high replacement cycle materials with more robust materials, including the use of pre-fabrication and modularisation, as described above in Principle 1. The contractor, Midgard will continue review the reuse and recovery of materials & components, such as offering roller shutters on the existing building to local companies to be reused.
Metrics	weight / mass
Targets	Aim to divert 95% of waste from landfill. Aim for a waste generation target of less than 7.5 m ³ or 6.5 tonnes of waste produced per 100 m ² of gross internal area.
Commitments & Measures	The construction of the development will aim to re-use as many suitable materials on site as possible. Where materials cannot be re-used, they will be sent off-site for re-use and refurbishment elsewhere if possible, instead of being taken by waste carriers. Recovery of materials and products onsite could include: - Concrete: crushed and recycled to be used as sub-base below hard landscaping - Tarmac: Tarmac is melted and re-used as asphalt on site. Recovery of materials and products off-site could include: - Roller shutters being offered to local companies for reuse - Flooring: carpet tiles can be re-furbished and re-used, providing low-cost flooring to households and charities. Examples of used carpet suppliers include 'Carpet Tile Wholesale'. - Electrical items such as white goods, in good condition can be donated to charities or sold on sites such as 'Globechain' (a broker service for unwanted resources).

	- Furniture: As per electrical items, unwanted furniture can be donated to local charities or community uses. Demolition contractor should endeavour to salvage natural stone, bricks, and good quality items of furniture, timber and top soil. Plasterboard, carpets, vinyl flooring, concrete, asphalt and mixed masonry should all be carefully segregated to maximise recycling potential (see commitment 3.1). Salvaged materials can be donated to local businesses, construction colleges and community groups where appropriate.
Implementation	During Stage 4 the team will aim to ensure: - design proposals responding to the existing site topography to minimise cut and fill; - Review the existing site to identify potential materials that may be salvaged and incorporated into the design; and Identify potential sites for safe storage and on-site reprocessing.
Challenges / Counter-actions	Identification, specification and reuse of salvaged materials. Deconstructing buildings rather than demolishing requires more time, space (for an increased number of segregated skips) and commitment from the demolition contractor, possibly increasing the cost of demolition (although subsequent savings may be realised in construction phases). Safe storage space for salvaged materials, particularly where materials are intended for use in future construction phases.

Principle 3. Manage waste sustainably and at the highest value

Commitment 3.1. Manage demolition waste

Responsibility	Primary: Architect, Structural Engineer. Secondary: Main Contractor, Waste Contractor.
Timeframes	Commenced at Stage 4, metrics and progress monitored and reported on regularly as part of monthly construction meetings.
Proposed Approach	The scheme proposes to maximise the value and quantity of materials recovered for potential reuse and recycling during demolition. The materials generated from the soft strip of the existing building will be segregated for recycling where possible: • Joinery, doors, architraves, skirtings, etc. will have nails, screws and ironmongery removed and sent to the Particle Board Industry. • Glass, where suitable, will be sent for Cullet Merchants. • Plasterboard will be sent for recycling by British Gypsum. • Ferrous and non-ferrous materials will be sent to scrap metal merchants for recycling. During the M&E strip, plant will then be cut out in large sections and will then be reprocessed by a larger machine with a scrap shear before being placed in bins for recycling. All waste is further segregated and sorted off site prior to recycling in order to achieve the minimum amount of material sent to landfill. Mixed waste collected from site will be segregated off site at a local transfer station, where all materials will be processed through a material recycling facility. The project team will agree a benchmark for waste reclamation which will include reuse on site, reuse on other sites, salvaged for reuse & collected from site by an approved waste management contractor. During the demolition there are waste streams that are considered non-recyclable and they include asbestos waste and bitumen roofing. This is anticipated to be minimal, approximately 26 tonnes. Monthly environmental inspections will take place and KPIs will be monitored. The KPIs will include waste generation, segregation and diversion from landfill.
Metrics	weight / mass
Targets	Aiming to divert 95% of waste from landfill.

	No biodegradable or recyclable waste sent to landfill where possible.
Commitments & Measures	Additional resources required to brief contractors and monitor demolition works. • Quantity of materials recovered may differ significantly from pre-demolition estimates. • On-site reprocessing of concrete and other inert materials requires a crushing license and technical expertise. On-site reprocessing may create a dust nuisance if not carefully managed. Regular / monthly reports from demolition contractors stating progress against the suggested targets.
Implementation	A Site Waste Management Plan has been completed for the scheme to set out the above waste segregation streams and soft strip management to contractors. A Demolition Management Plan has been completed for the scheme. A full demolition audit will be carried once access has been granted to accurately quantify waste streams and prepare a deconstruction statement which details how the buildings will be deconstructed to maximise the value of waste material resources. The deconstruction statement should detail the onward reuse, recycling or disposal routes for all waste streams, with the associated tonnage.
Challenges / Counter-actions	Safe storage space for salvaged materials, particularly where materials are intended for use in future construction phases. / Additional resources and space required to brief contractors and monitor demolition works. Quantity of materials recovered may differ significantly from pre-demolition estimates. / Updates to SWMP to monitor totals. On-site reprocessing may create a dust nuisance if not carefully managed. / Site manager to ensure careful management and mitigate any issues.

Principle 3. Manage waste sustainably and at the highest value

Commitment 3.2. Manage excavation waste

Responsibility	Primary: Main Contractor & Waste Contractor Secondary: Site Manager
Timeframes	Commenced at Stage 4, metrics and progress monitored and reported on regularly as part of monthly construction meetings.
Proposed Approach	The proposed development will encourage on-site reuse and recycling of excavation waste where possible. Excavated materials will also follow the waste hierarchy. Only if excavated material is not required or is unsuitable / considered hazardous for the construction of the Proposed Scheme would it be considered waste
Metrics	Weight (t)
Targets	95% of waste will be diverted from landfill. Waste generation target of less than 7.5 m ³ or 6.5 tonnes of waste produced per 100 m ² of gross internal area.
Commitments & Measures	Waste forecast using SMARTwaste, contained within the Site Waste Management Plan predicts minimal excavation waste will be produced. In the event of a change in this circumstance, an integrated design approach will be adapted to use excavated material to satisfy the fill material requirements wherever reasonably practicable. This includes reuse of all topsoil / subsoil as practicable. Therefore, it is not anticipated that any excavated material i.e. soils and stones, clay, will be removed from site. For the excavated material which could not be beneficially reused for the earthworks of the proposed development, the waste contractor would seek timely opportunities for such material to be used in other local construction projects or the restoration of mineral sites, provided that the transportation of that material does not result in significant environmental effects. The Contractor should ensure that contaminated material (if present and requiring removal from the site) would be collected by suitable waste carriers and sent for disposal at appropriately licensed hazardous waste facilities. Monthly environmental inspections will take place and KPIs will be monitored. The KPIs will include waste generation, segregation and diversion from landfill.
Implementation	Incorporate excavation requirements into contractor specification to help assign ownership of waste within the supply chain and minimise excavation waste. Establish excavation requirements within the SWMP which excavation waste totals will need to be updated by the contractor at regular intervals.

	Ensure the site induction to staff and sub-contractors includes awareness of good waste management and the specific measures used at the site. Use regular tool box talks to make sure that everyone who comes to site knows how to reduce, re-use and recycle at the site. Implement good housekeeping throughout the site to promote good waste segregation and re-use opportunities.
Challenges / Counter-actions	Safe storage space for excavated materials required. / Site manager to dedicate space as needed or ensure logistics allow for swift removal as necessary. Additional resources and space required to brief contractors and monitor demolition works. Quantity of materials recovered may differ significantly from pre-excavation estimates. / Updates to SWMP to monitor totals excavated.

Principle 3. Manage waste sustainably and at the highest value

Commitment 3.3. Manage construction waste

Responsibility	Primary: Main Contractor. Secondary: Project Managers.
Timeframes	Commenced at Stage 4, metrics and progress monitored and reported on regularly as part of monthly construction meetings
Proposed Approach	The proposed approach to management of construction waste is to follow the waste hierarchy and circular economy hierarchy. The proposed development will aim to minimise the total amount of construction waste produced on-site through best practice material handling procedures. Appropriate materials storage and handling onsite will help to reduce the amount of waste produced at source. Careful segregation of waste will occur where space allows on site, which enables higher quality recycled materials and encourages local reprocessing. This will help to improve the transparency of waste processing and confidence in the end use of waste materials. The contractor will be tasked with maximising site segregation of construction waste to enable local reuse of waste materials and increase the quality of recyclable materials. Where this is not practicable, the waste will be handled by a Material Recovery Facilities, where the onsite team will also need to work together to improve the transparency of the waste management supply chain. This procedure is set out in the Site Waste Management Plan with the aim of meeting the 95% diversion from landfill target. Construction materials arriving to site on pallets will be carefully unloaded and neatly stored to enable their reuse on other sites and depots. The pallets are given back to the delivery lorry upon next delivery. During construction, the team will work with suppliers to further investigate packaging reduction measures. There is currently 365 tonnes of timber waste anticipated to be produced as part of the construction of the proposed scheme. The timber shuttering off-cuts which will be used in the superstructure will be stockpiled and re-used on site. During construction, the team will work with suppliers to further investigate the recovery or reuse of remaining timber. Monthly environmental inspections will take place and KPIs will be monitored. The KPIs will include waste generation, segregation and diversion from landfill.
Metrics	Waste generation target of less than 7.5 m ³ or 6.5 tonnes of waste produced per 100 m ² of gross internal area. This is the equivalent of two credits within the BREEAM accreditation.
Targets	95% waste diverted from landfill

Commitments & Measures	Training staff in waste reduction techniques and proper segregation in order to ensure a cultural shift in attitudes towards waste. Multiple skips for segregated streams will be provided where space allows. A dedicated area for reusable material may also be provided (this is likely to have a greater initial outlay and will require more space on site). A dedicated waste manager would be appointed if appropriate in order to manage the waste compound and ensure appropriate segregation of waste.
Implementation	The project managers will identify potential space for storage of reusable materials and allocate appropriate space to allow extensive segregation of waste materials. The main contractor will implement the accompanying Site Waste Management Plan (SWMP) and Demolition Management Plan. The SWMP details actions and initiatives to reduce construction waste and ensure the legal disposal of waste. The SWMP will detail the implementation of: How quality management procedures will be used to accurately order materials and minimise rework; Identification of key supply chain partners that could be approached to develop re-usable packaging solutions and supplier takeback and recycle schemes; How key sub-contracts will be managed to incentivise waste reduction and segregation; Detail how site waste will be managed to maximise segregation at site; Identify how reusable materials will be stored and distributed; Detail off-site waste recycling, disposal routes and how legal waste disposal will be verified; Detail frequency of waste-related site team meetings, toolbox talks and progress reviews; Set project waste targets and KPIs; and State the method of reporting and monitoring, including responsibilities and frequency of reporting.
Challenges / Counter-actions	Many contractors do not evaluate waste disposal further than the first-tier waste handler, the subsequent journey and final disposal or recycling site of waste is often unknown. A majority of plastic waste is shipped overseas, where it may not be recycled, even though it was segregated for recycling at the material handling facility and would have been recorded as diverted from landfill. / Research required into local waste handling facilities and their onward disposal routes to understand opportunities for legal, transparent waste disposal.

Principle 3. Manage waste sustainably and at the highest value

Commitment 3.4. Manage municipal waste

Responsibility	Primary: Client and Architect. Secondary: Property Manager / Retail Tenant(s) and Residents.
Timeframes	Design elements commenced at Stage 2. Ongoing waste requirements commence at Stage 7, tenant guidelines to be produced and will establish timeframes.
Proposed Approach	A Waste Management Strategy has been developed by Curtins, ensuring that adequately sized bin storage areas are provided, access for collection personnel and vehicles has been established and other aspects of waste management is designed into the development at an early stage of the design. The estimated volumes can be found within the Site Waste Management Strategy. The dwellings will be provided with four bins. One for general waste, one for pulvable waste, one for mixed recyclables and one for food waste, stored internally in each apartment before decanted into the communal bins in the ground floor bin store. This allows for appropriate waste management facilities in accordance with the Waste Hierarchy to enable segregation and recycling. It is anticipated that 50% of the bins in the residential waste store would be dedicated for recycling, including organic waste. This meets the Greater Manchester Municipal Waste Management Strategy, which aims to achieve 50% recycling and composting of households rates by 2020. This recycling rate will be reviewed upon occupation. The commercial units will have colour coded bins to facilitate identification of waste streams to encourage recycling. Waste collection frequency will be dependent upon the volume of waste generated, the storage method (i.e. whether balers and waste compactors are used) and the schedule of the appointed waste contractor. It is anticipated that commercial waste will be collected twice a week. The management company would be responsible for the monitoring of recycling rates and promote actively high recycling rates in the building, e.g. by providing information on segregation. Commercial tenants will be served by private waste contractors.
Metrics	Weight (t)
Targets	Meet or exceed the municipal waste recycling target of 50%, updated upon review of actual rates.
Commitments & Measures	The design team will ensure that appropriate recycling and waste facilities are provided within the building to facilitate and maximise recycling opportunities.

	Tenant Guidelines will be produced to explain the current waste and recycling requirements of the local authority.
Implementation	At Stage 4 the design team will design the appropriate spaces required for management of waste and recycling.
Challenges / Counter-actions	Levels of recycling may be compromised by cross contamination. / Building manager to provide information on recycling and waste requirements within the common spaces and provide information as necessary.
Timeframes	Stage 4 – finalise design principles

4.2 End of Life

In order to promote use of materials and elements at the end the buildings' life, D&B team will investigate the following and where possible:

- Select products and materials that can be remanufactured or reused at end of first life, largely brick, concrete and steel;
- Use materials with recycled content;
- Select products that are designed for disassembly, such as demountable cladding;
- Select materials that can be recycled or composted at end of life;
- Consider leasing short-lived components;
- Avoid permanent fixing of products, such as by glue and cement mortar, to enable end of life deconstruction and salvage of building elements; and
- Ensure fixings are easy to access to enable disassembly.

When the asset is approaching obsolescence, The Applicant will aim to investigate the feasibility of options to extend end of life. If extending is not feasible, The Applicant may be in a position to consider replacement scenarios where appropriate.

4. Conclusions

M4anchester One has a proactive approach to sustainable development and takes a holistic view to delivering a building that embraces the principles of the circular economy.

This circular economy statement has been prepared to demonstrate how the proposed development at Spear Street has and will deliver the principles of circularity to discharge condition 3b made on the decision notice for full planning permission.

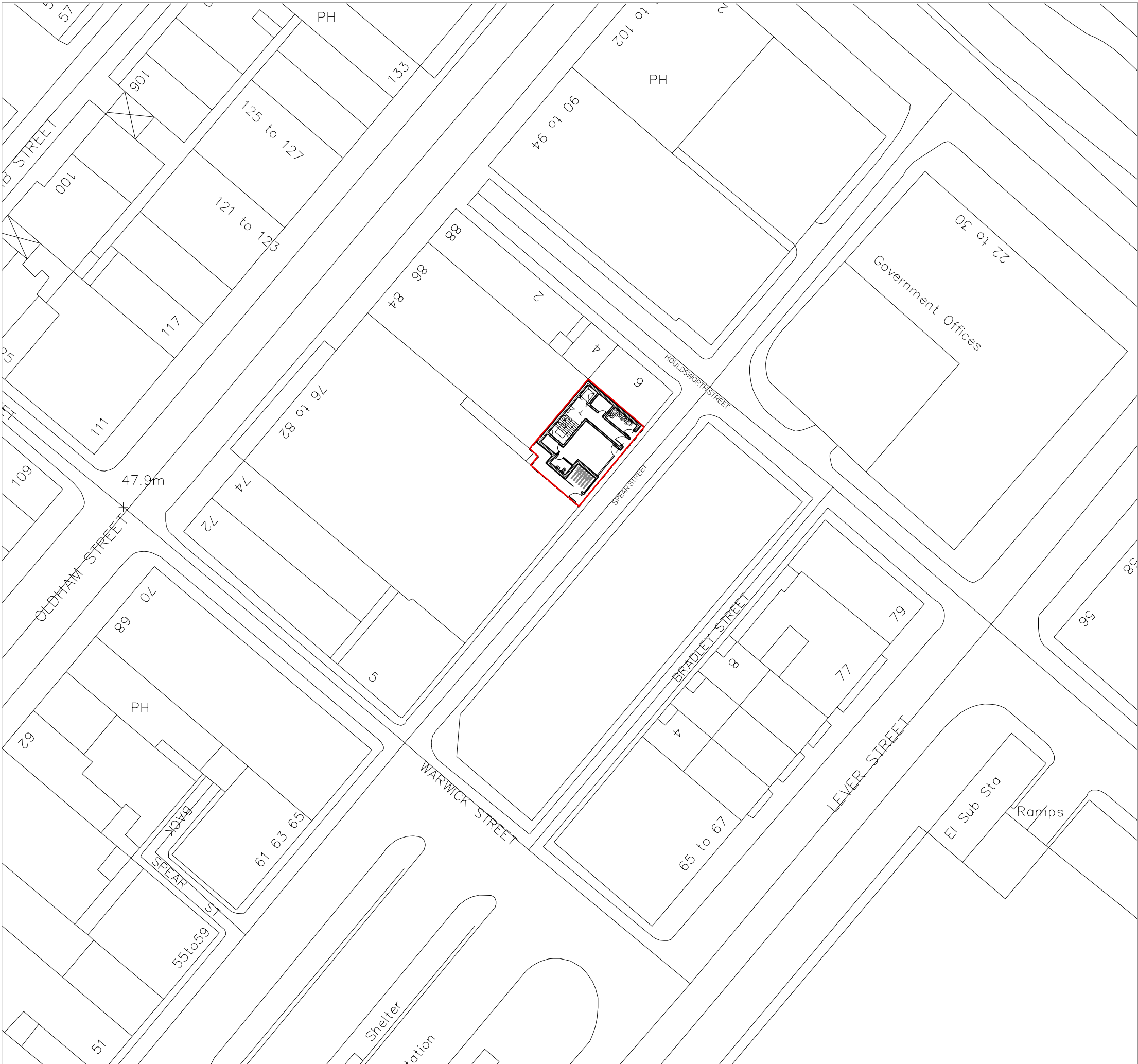
M4nchetser One and Triple M have a proactive approach to sustainability with a range of corporate goals to reduce the amount of materials required, increase recycling and limit the amount of waste sent to landfill.

This circular approach to development includes assessment of design and materials at key

stages of the development in order to promote a flexible and adaptable design that also promotes longevity.

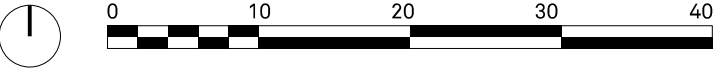
In this context the key circular economy commitments incorporated into the proposed development include the following.

- Ongoing encouragement of specifications that maximises energy and resource efficiency (e.g. water efficiency) within the design.
- Ongoing investigation into the inclusion of modularisation into the design including bathroom pods and demountable cladding.
- Seek to specify the use of recycled materials wherever viable including steel content, aggregates, and building finishes such as carpets.
- Utilise off-site prefabrication and precast concrete where possible.
- Procurement of sustainable and robust/durable materials.
- Continue to investigate flexibility within the design to allow for changing and future needs of the development.
- Reuse of site-won material within the on-site construction, or where possible investigate options for recovery and reuse of material to increase diversion from landfill.
- Continue to work with suppliers to reduce packaging waste or investigate take-back schemes.
- The demolition and construction waste targets and commitments will be monitored. As this is a D&B Contract, the primary contractor will include the circular economy as an agenda item within regular meetings.



Notes

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All drawing measurements shall not be obtained by scaling. Any discrepancies on this document to be immediately reported to the Architect. Verify all dimensions and levels prior to construction. This Document shall be read in conjunction with related documents, specifications and associated models.



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