RIDGE

CIRCULAR ECONOMY STATEMENT
ROBERT STREET, MANCHESTER
30th March 2026



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CIRCULAR ECONOMY STATEMENT

RIDGE

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1. EXECUTIVE SUMMARY

Ridge & Partners LLP have been appointed to prepare a Circular Economy (CE) Statement for the Robert Street development in support of the detailed planning application to Manchester City Council, to align with the National Planning Policy Framework (NPPF), Manchester County Council (MCC) Core Strategy and Places for Everyone Joint Development Plan. The purpose of the CE Statement is to demonstrate that the proposed development has considered, and will incorporate, CE principles into all aspects of the design, construction, and operation process.

Overall, the Circular Economy statement ensures that development:

- Considers strategies to facilitate the transition towards a circular built environment.
- Reports against numerical targets that will facilitate monitoring of waste and recycling.
- Recognises opportunities to benefit from greater efficiencies that can help to save resources, materials, and money.

The report is prepared to support the planning application for the demolition of existing structures and the erection of a part 10, part 11, part 14 and part 20 storey residential building comprising 189 apartments (Use Class C3) with associated residents' amenity space, servicing and public realm.



Figure 1 - Location of the Robert Street Development

The project team undertook a CE workshop to discuss these and set out preliminary targets. This has helped define the strategy approach to the CE Statement and facilitate the implementation of CE principles most effectively. The following parties listed in Table 1 were part of these discussions and engaged in development, design, and delivery of the CE statement.

COMPANY	ASSOCIATED DISCIPLINE/ROLE(S)
Zerum	Planning Consultant / Project Manager
Ridge & Partners LLP	Mechanical and Electrical Engineering, Sustainability, Civil Engineering
Tim Groom Architects	Architecture

Table 1 - Contributing parties

In summary, this statement outlines how the Robert Street development aims to meet the following principles:

- How materials arising from demolition and remediation works will be re-used and/or recycled;
- How the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life;
- Opportunities for managing as much waste as possible on site;
- Adequate and easily accessible storage space and collection systems to support recycling and re-use;
- How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy;
- How performance will be monitored and reported.

To identify the appropriate design approach for the Proposed Development, the principles outlined in the Greater London Authority (GLA) Circular Economy Statement has been used, which includes a 'Decision Tree' approach to prioritising design considerations.

Retaining existing built structures totally or partially should be prioritised before considering substantial demolition, as this is typically the lowest-carbon option. Since the current buildings are coming to the end of their useful life and are deemed unsuitable to refurbishment for a residential development of this scale, most of the materials forming the existing structure will be recycled. Due to the incompatibility of the current structures, the approach that will be followed for the existing structures of the proposed development is 'Reuse off site'.

The building layer approach has been used to ensure that each of the principles outlined below have been explored fully for the new building associated with the proposed development.

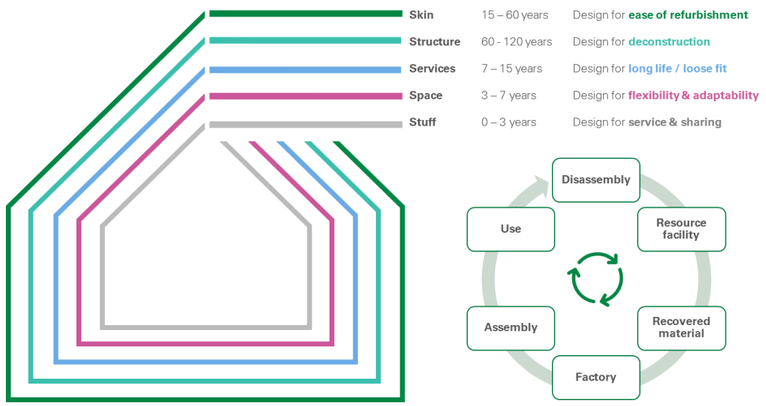


Figure 2 - Building in layers diagram, adapted from of Useful Projects & GLA, Circular Economy Statement Guidance

2. INTRODUCTION

2.1. Description of Development Site

The development site is located on Robert Street, Manchester and is bounded by Carnarvon Street to the north, Robert Street to the east, Dutton Street to the south and Cheviot Street to the west.

The development site lies on the corner of Robert Street and Dutton Street. The site is currently occupied by a warehouse and associated car parking. The warehouse is currently operated as a Padel venue. The surrounding area is largely commercial/industrial in usage, although there is a large residential project under construction over Dutton Street to the south named Waterhouse Gardens. To the north, the site is bounded by commercial properties in the form of wholesale distribution and offices, to the west, the site is bounded by a hire car company.

2.2. Project Description

The proposed development comprises the demolition of existing structures and the erection of a part 10, part 11 and part 20 storey residential building comprising 189 apartments (Use Class C3) with associated residents' amenity space, servicing and public realm.



Figure 1 – Location of the Robert Street Development

2.3. Policy Context

2.3.1. National Planning Policy Framework

A revised National Planning Policy Framework (NPPF) was published in December 2023 which sets out the government's planning policies for England and how they are expected to be applied. This framework confirms on page 5 that:

'*the purpose of the planning system is to contribute to the achievement of sustainable development.*'

This highlights sustainability as a critical issue that runs throughout all of the planning policies. The National Planning Policy Framework (NPPF) defines sustainable development in agreement with the U.N. definition of "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The NPPF outlines how three overarching objectives need to be pursued in mutually supportive ways in order to achieve sustainable development.



Figure 3 – Image of the proposed development

a. An **economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

b. A **social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.

c. An **environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

2.3.2. Manchester Local Plan

The Manchester Local Plan is the Adopted Development Plan for Manchester City Council. With respect to climate change and sustainability considerations, the following policies are included within the Manchester Local Plan Core Strategy (2012). Relevant extracts are provided below.

Policy EN4: Reducing CO2 Emissions by Enabling Low & Zero Carbon Development

This policy requires development to '*follow the principle of the Energy Hierarchy, being designed:*

- *to reduce the need for energy through design features that provide passive heating, natural lighting and cooling*
- *to reduce the need for energy through energy efficient features such as improved insulation and glazing*

- *to meet residual energy requirements through the use of low or zero carbon energy generating technologies'*
- *It also states that:*
- *'Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.*
- *Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.*
- *Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.*
- *The use of building materials with low embodied carbon in new development and refurbishment schemes.'*

Policy EN 19 Waste

This policy states that the Council will:

- *'Require all developers, including those of new waste management facilities within the District, to demonstrate the proposal's consistency with the principles of the waste hierarchy (prevention, reduction, re-use, recycling/composting, energy recovery, final disposal)*
- *Require all developers to submit a waste management plan to demonstrate how both construction and demolition waste will be minimised and recycled on site wherever possible and how the sustainable waste management needs of the end user will be met.*
- *Promote the development of innovation and technological advancement within the sustainable waste management industry, aiming to achieve a closed-loop waste management system.*
- *Require waste management practices to have full regard to the environmental, social and economic impacts of such development and encourage long-term benefits in improving the environment, the regeneration of areas in need of investment and co-location with other employment uses where appropriate.*
- *Encourage communities to take responsibility for the waste they create through the provision of accessible facilities.'*

Policy DM1 Development Management

'All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

- *Appropriate siting, layout, scale, form, massing, materials and detail.*
- *Impact on the surrounding areas in terms of the design, scale and appearance of the proposed development. Development should have regard to the character of the surrounding area.*
- *Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.*
- *Accessibility: buildings and neighbourhoods fully accessible to disabled people, access to new development by sustainable transport modes. Community safety and crime prevention.*
- *Design for health.*
- *Adequacy of internal accommodation and external amenity space.*
- *Refuse storage and collection.'*

2.3.3. Guide to Development in Manchester Supplementary Planning Document

The Guide to Development in Manchester Supplementary Planning Document (SPD) was adopted in April 2017. The SPD is a material planning consideration for applications; however, it is not part of the development plan. While it references policies from the old Local Plan (UDP) which have been superseded it is still useful as a general guide to development. It includes a section on environmental standards, with sub sections on energy efficiency, renewable energy, environmental design, water management and weather resilience, waste management, construction management, biodiversity and waterways.

2.3.4. Net Zero Carbon and Climate Emergency

In June 2019, the UK Government committed the country to a legally binding target of net zero carbon emissions by 2050. Following this, a month later, Manchester City Council (MCC) adopted a motion to declare a climate emergency which commits the Council to action to combat climate change. The Council have set out their aim of making Manchester a zero-carbon city by 2038 or before.

The Manchester Climate Change Framework 2020–25 is MCC's high-level strategy for meeting their commitment on climate change that builds on the Draft Manchester Zero Carbon Framework 2020-38 and the declaration of a climate emergency in July 2019. This was endorsed by MCC at the Executive meeting in March 2020 and will develop over the next five years, in line with changes in policy, climate science, rate of progress and other factors.

2.3.5. Greater Manchester Joint Waste Development Plan Document

In 2006, the Association of Greater Manchester Authorities (AGMA) produced a Joint Waste Development Plan AGMA consists of all ten Greater Manchester local authorities. The Waste Plan forms part of each Authority's statutory development plan and runs from 2012 to 2027.

The Greater Manchester Municipal Waste Management Strategy outlined within this document sets out a framework for managing Local Authority collected waste arisings up to 2030. The key target of the Strategy includes achieving levels of recycling and composting of household waste:

- 33% by 2010
- a minimum of 50% by 2020 and through to 2030

2.3.6. Places For Everyone Joint Development Plan Document

Places for Everyone (PFE) is the joint development plan for nine boroughs in Greater Manchester including MCC. The plan was adopted in March 2024, and includes notable environmental policies which will help to achieve a circular economy and zero-waste economy as part of Greater Manchester's ambition of becoming a leading green city region by 2038. One notable policy pertaining to waste is listed below:

Policy JP-S 7 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:

1. Development and implementation of the Resource 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;
2. Ensuring the design of all new development incorporates storage space to facilitate efficient recycling and where appropriate, processing of waste on site;
3. Recognition of the role of existing infrastructure in managing our waste and protecting such facilities to ensure adequate waste management capacity is maintained; and

4. 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.'

2.4. Method Statement

The sustainability and CE strategy for the Robert Street proposal has been developed to support the Manchester Local Plan Core Strategy, specifically Policies EN19 and DM 1.

The core principles of CE are intrinsically linked to sustainability principles which are already important considerations for all development schemes amidst the climate change emergency. The Greater Manchester Combined Authority (GMCA) declared a climate emergency in July 2019 and launched a plan in March 2020 following 12 months collaboration and consultation with representatives from areas across the city region.

It is becoming increasingly recognised within the construction industry that successful incorporation of sustainability and CE principles into developments requires early consideration and ongoing review to ensure they can feed into the way buildings are designed, built, operated, and deconstructed. The GMCA acknowledges that tackling the climate and ecological emergency requires comprehensive action across of a range of issues including the circular economy, but the current challenge is the lack of knowledge surrounding the relationships between different environmental factors. Therefore, they have adopted a systemic, organisation-wide approach to begin to tackle such issues.

Figure 2 has been adapted from the UK Green Building Council (UKGBC) to highlight specific actions that design teams can take at each RIBA stage to incorporate the core CE principles into their developments.

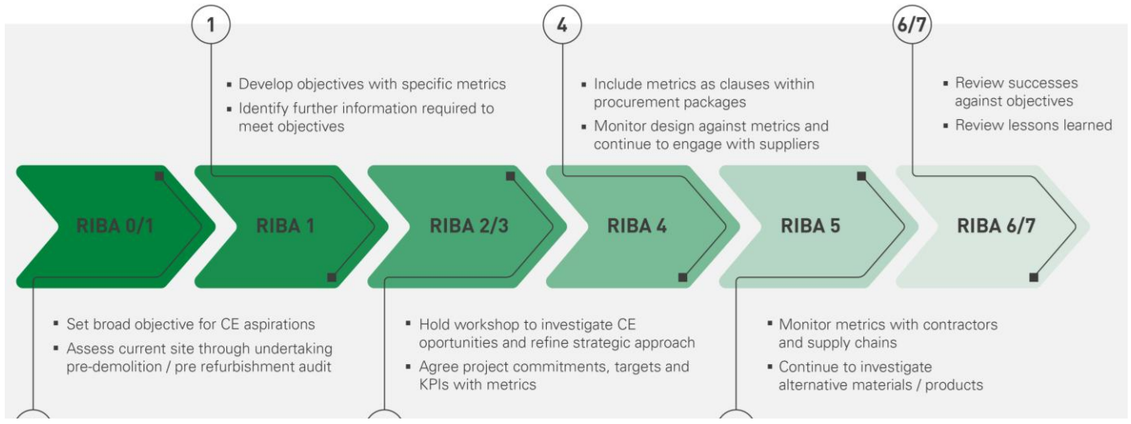


Figure 2 - Methods to incorporate CE principles into a development process using RIBA work stages (Source: adopted from UKGBC)

A workshop has been held during RIBA Stage 2 which meets the methods as noted in Figure 2 and detailed in Section 3.4. Due to the nature of the scheme, assessment of the current site through undertaking a comprehensive Pre-Demolition Audit is expected to occur during Stage 3. It is anticipated that the scheme will then follow the further steps as set out in Figure 2.

3. CIRCULAR ECONOMY ASPIRATIONS

The is circular economy is defined by the GLA London Plan as one "*where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste. The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible, requiring transformational change in the way that buildings are designed, built, operated and deconstructed*". The application of CE thinking for the Robert Street Development has also been based on core guiding principles as set out by the GLA's Circular Economy Statement Guidance[1] and the Waste Hierarchy to ensure design measures to prioritise avoiding or reducing waste.

Key themes and objectives pertinent to this CE Statement is Key Theme 1 – Consumption, Resources and Waste and Key Theme 3 – Homes, Buildings, and the Built Environment. Manchester City Council have stated that the achievement of a circular economy and zero-waste economy will play a pivotal role in meeting Greater Manchester's ambition of becoming a leading green city by 2038 and therefore will support measures to help achieve a circular and zero-waste economy,

3.1. Introduction to CE principles

In contrast to our current linear system where users 'Take, Make, Dispose', the CE can be thought of as a 'living' system[2] whereby materials and products are optimally used and reused (Figure 3) which preserves the value of resources and operates within the boundaries of our planet. Ultimately, a shift to a CE is fundamental in delivering better outcomes for people and the environment.

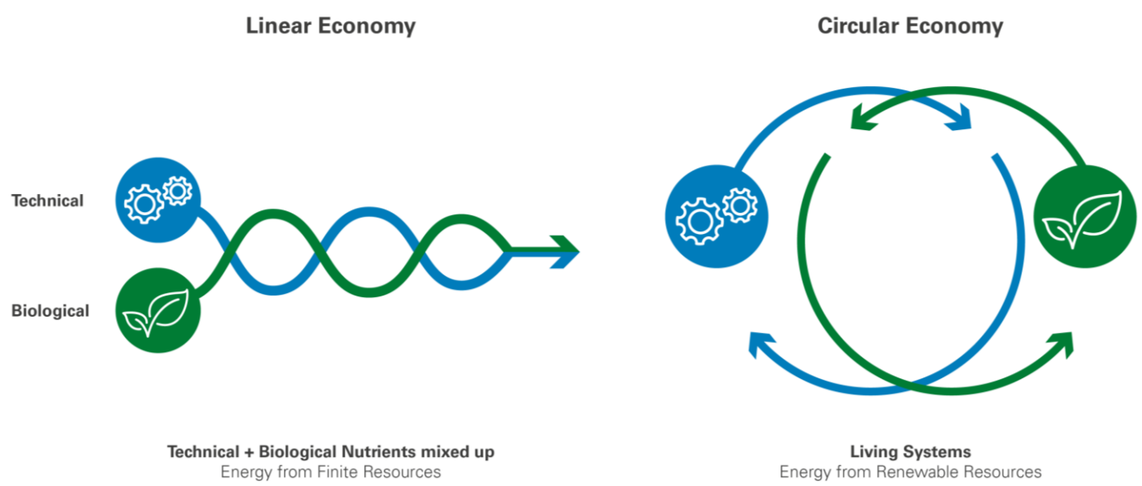


Figure 3 - Representation of Linear vs Circular Economy adapted from Ellen MacArthur Foundation, 2015 (Source: adapted from ARUP)

The UKGBC[3] identifies that the circular model revolves around three principles:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

[1] *Circular Economy Statement Guidance | GLA (london.gov.uk)*
[2] *Built Environment - Circle Economy (circle-economy.com)*
[3] *Circular-Economy-Report.pdf (ukgbc.s3.eu-west-2.amazonaws.com)*

These principles facilitate sustainability through gradually decoupling economic activity from the consumption of finite resources. The further distinction between technical and biological cycles allows for the biologically based materials and building components to be fed back and regenerate living systems while the technical cycles encompass recovery, restoration, reuse or (at last resort) recycling.

3.2. Application to the built environment

Applying CE principles to the built environment is complex, the following nine core guiding principles (Table 2) are similar to those from the UKGBC above but are more specific to support the CE and underpin the structure and content requirements of CE Statements. Commitments to these principles will be detailed in Section 4 with supporting strategic approaches in Section 3.

Table 2 - GLA Six Circular Economy Principles

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. DESIGN FOR LONGEVITY
Designing to avoid a premature end of life for all components through considering maintenance and durability.
4. DESIGN FOR ADAPTABILITY OR FLEXIBILITY
Adaptability - A building that has been designed with thought of how it might be easily altered to prolong its life, for instance by alteration, addition, or contraction, to suit new uses or patterns of use. Often used interchangeably with flexibility; however, it relates more to building structural changes.
Flexibility - A building that has been designed to allow easy rearrangement of its internal fit-out and arrangement to suit the changing needs of occupants. Often relates to floorplates rather than structural changes.
5. DESIGN FOR DISASSEMBLY
Designed to allow the building and its components to be taken apart with minimal damage to facilitate reuse or recycling. If designed well, it should be possible to replace any component.
6. USING SYSTEMS, ELEMENTS OR MATERIALS THAT CAN REUSED AND RECYCLED
The use of a product in its original form with minimal reprocessing. Preparation for reuse involves checking, cleaning or repairing materials so that they can be used again for their original purpose. Materials can be reused as a whole; redeployed as modules; or reused as kit of parts on one or more different sites.

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STRATEGIC APPROACH

3.3. Building in Layers

To accelerate the transition and embed CE principles within the proposed development, the 'building in layers' concept will form the foundations of the strategic approach. Each 'layer' has its own life cycle which requires a unique design approach to ensure material use and reuse is optimised and waste is designed out (Figure 4).

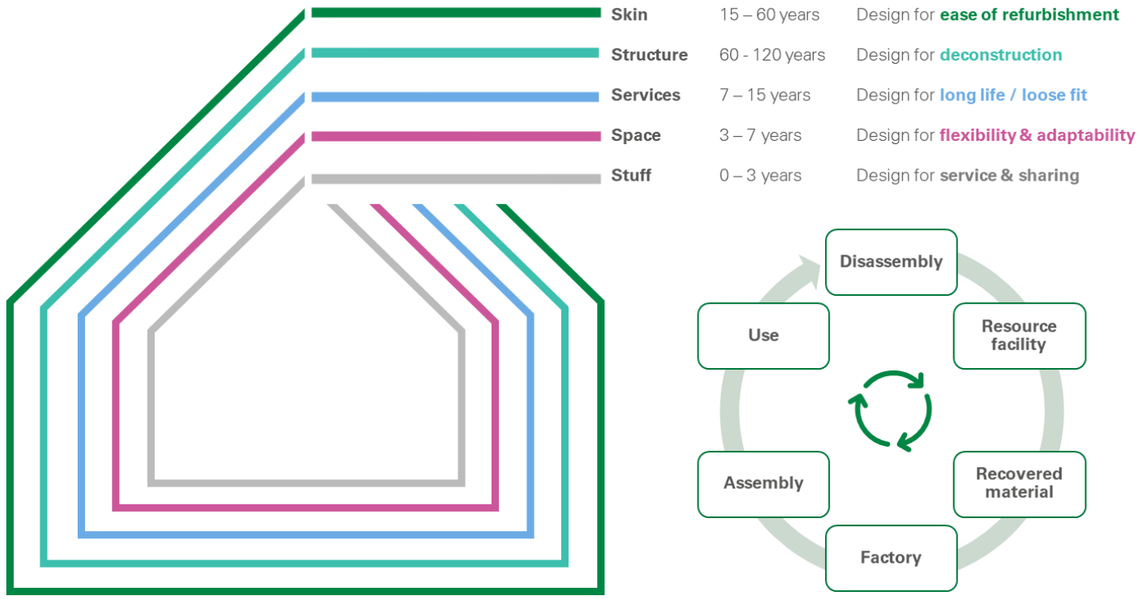


Figure 4 - Building in layers diagram, adapted from of Useful Projects & GLA, Circular Economy Statement Guidance

Looking at this approach in further detail, the structure of the building will be designed to have a long-life cycle (more than 25 years) so longevity, adaptability and flexibility will be prioritised. Whereas for features that will need to be replaced over the lifetime of the building and elements with a shorter life expectancy (less than 25 years) they will be designed for ease of maintenance, reuse, and recoverability.

Adopting this design approach that recognises these distinctions will ensure the structure and façade of a development will be built to be long lasting and adaptable, whilst individual components like the services, interior space and furnishings are designed in a way that supports reuse or recycling.

The specific 'layers' that are commonly referred to across industry are defined below in Table 3, with reference to the RICS New Rules of Measurement (NRM) classification system.

Table 3 - Building in Layers approach (Source: GLA)

LAYER (RICS REFERENCE)	CONSITUENTS	OVERARCHNG STRATEGY
Site (8)	The geographical setting, urban location, and external works	▪ Maximise residual value - strategy as defined by the GLA's 'Decision Tree'.
Substructure (1)	Excavations, foundations, basements, and ground floors	▪ Longevity- focus on long terms needs while being durable and resilient with little modification and no replacement. ▪ Adaptability- designed to meet present needs, but also future change with consideration of how those needs might evolve. Modifications are likely to involve planning, building control and 'wet trades'. ▪ Flexibility- designed for change through frequent reconfiguring including reconfiguration of non-structural parts. configurations are likely to be pre-agreed with planning and building control and not involve 'wet trades' or any waste.
Superstructure (2.1, 2.2, 2.4)	Load-bearing elements above plinth including roof supporting structure	
Shell / Skin (2.3, 2.5, 2.6)	The layer keeping out water, wind, heat, cold, direct sunlight, and noise	
Services (5)	Installations to ensure comfort, practicality, accessibility, and safety	▪ Reusability- Designed to be redeployed as modules or reused as a kit of parts on one or more different sites while minimising any servicing and maximising the size of the future market by using high-demand, standard dimensions and specifications. ▪ Recoverability- Designed to be deconstructed and reused or recycled on a part-by-part basis due to neither modules nor a kit of parts being desirable, feasible or viable and/or a limited future market as a result of unusual parts, dimensions or specifications.
Space (2.7, 2.8, 3)	The layout, internal walls, ceilings, floors, finishes, doors, fitted furniture	▪ Functional adaptability – Feasibility, Accessibility, Versatility, Convertibility, Expandability, Refurbishment potential.
Stuff	Anything that could fall if the building was turned upside down	▪ Service and sharing ▪ Resource optimisation
Construction stuff	Any temporary installations/works/materials, packaging and equipment	▪ Off-site construction ▪ Standardisation ▪ Reuse of materials

When selecting and designing the layers, the following hierarchy will also be applied as detailed in Figure 5 below.



	1. Design out	2. Reclamation, remanufacture	3. Product Selection
What?	Design out the need for the component or material in the first intance	Use materials that have been previously used which could be altered, re-sized, refinished or adapted.	Actively selecting products and materials which can be easily remanufactured or reused at the end of their first life.
How?	Integrate passive design and/or freecooling measures to reduce the total heating, cooling, mechanical ventilation, and lighting loads.	Example include bricks, doors, window frames, glass panels, metal fixtures, and steel sections. Remanufactured components over new components ensures no loss in material quality, unlike recycling.	Use products which are Cradle to Cradle Certified® Product Standard and natureplus Eco-label. Materials with recycled content can also be considered and even leasing of short-lived components.

Figure 5 - Designing layers hierarchy

All of these layers above will be designed with consideration for disassembly, with inclusion of the following principles:

- Accessibility
- Durability
- Exposed and reversible connection
- Layer independence
- Avoidance of unnecessary toxic treatment and finishes
- Standardisation

3.4. Defining the approach

High level strategic opportunities were explored during a workshop with the project team on 16.4.2024 which has fed into the development of this CE statement. The following aims and objectives for the workshop had been achieved:

Aims:

1. Understand circular economy principles.
2. Explore how circular thinking can be incorporated into the scheme.
3. Develop the first draft of a circular economy statement.

Objectives:

- Recognise the difference between linear and circular economies.
- Understand the circular economy statement requirements.
- Apply the 'Decision Tree' guidance to maximise residual value.
- Incorporate the 'Building in Layers' approach.
- Agree on key circular economy commitments and outputs.

- Establish next steps to progress the circular economy statement.

3.5. Decision tree for design approach

To identify the appropriate approach, the 'Decision Tree' provided by the by the GLA's Circular Economy Statement Guidance was used (Figure 8 - overleaf):

As there are existing buildings on site, a comprehensive Pre-Demolition Audit will be conducted during Stage 3, however it can be determined that the 'Demolish & Recycle' approach is most appropriate.

High level strategic opportunities were explored during a workshop with the project team on 16.4.2024 which has fed into the development of this CE statement. The following aims and objectives for the workshop had been achieved:

Existing buildings

Retaining existing built structures totally or partially should be prioritised before considering substantial demolition, as this is typically the lowest-carbon option. Since the current buildings are coming to the end of their useful life and are deemed unsuitable to refurbishment for a residential development of this scale, most of the materials forming the existing structure will be recycled.

Due to the incompatibility of the current structures, in line with Figure 6 the approach that will be followed for the proposed development is 'Reuse off site'.

New developments

All developments should be designed so that buildings can be adapted to extend their life. They should also be designed so they can be deconstructed and reconstructed to allow components and materials to be salvaged for reuse or recycling, whilst maintaining their economic and environmental value.

The appropriate design approach for new buildings and infrastructure, or new additions to existing buildings, should be informed by the decision tree in Figure 8. In line with this approach the circular economy principles have been applied to each building layer, as detailed in Section 6 below.

4. KEY CIRCULAR ECONOMY COMMITMENTS

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 key commitments to CE are summarised in Table, which consider how the Robert Street development can apply the nine circular economy principles (see Table 3) to each building 'layer' (See Section 3.3) considering all life-cycle stages. The contents of Table will evolve and be refined and updated as the design progresses.

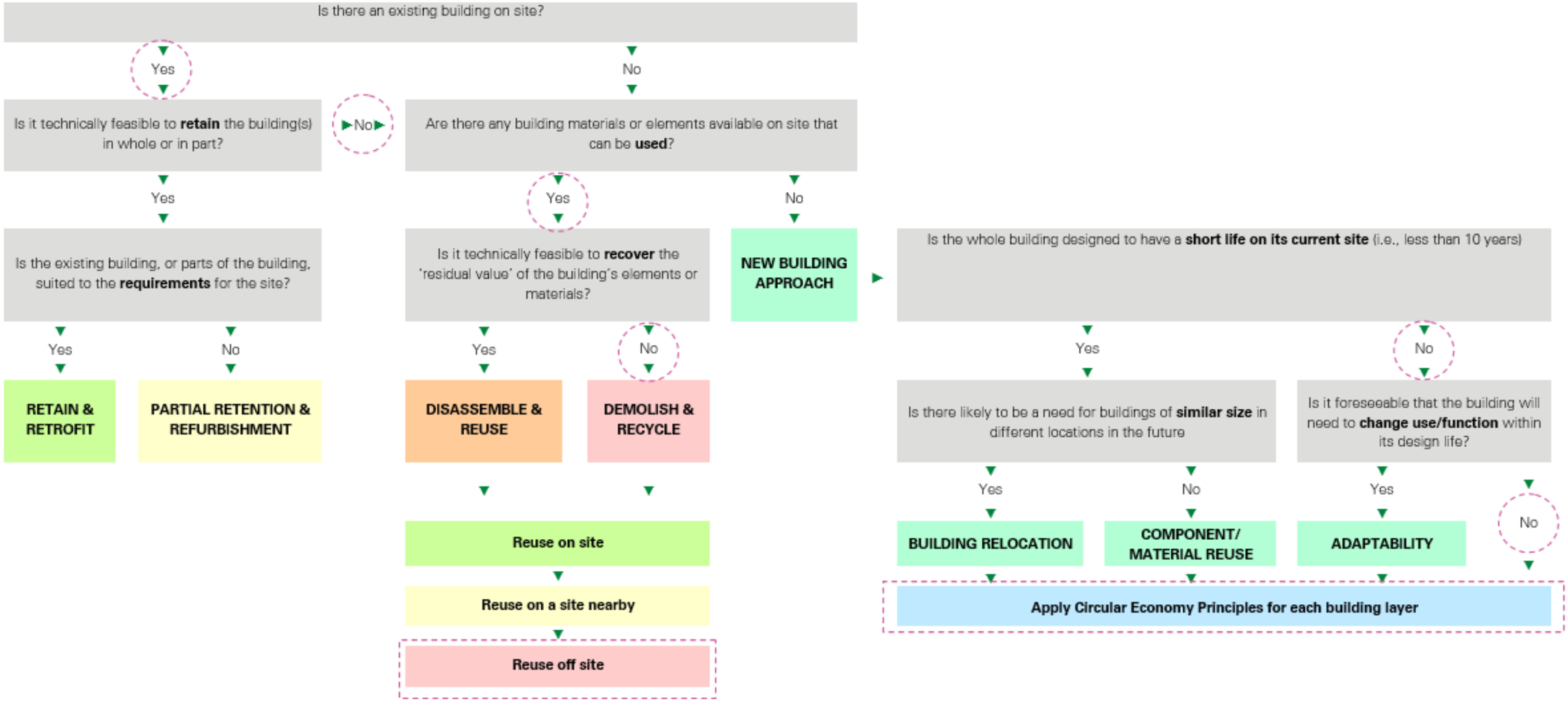


Figure 6 - Decision Tree (Figure 3.1: Illustration 3 of the GLA's Circular Economy Statement Guidance, from GLA's CE Guidance online)

Table 4- Summary of key CE commitments in line with Appendix B of the GLA's Circular Economy Statement Guidance

	SITE	SUBSTRUCTURE	SUPERSTRUCTURE	SHELL/SKIN	SERVICES	SPACE & STUFF	CONSTRUCTION STUFF	SUMMARY	CHALLENGES	COUNTERACTIONS + WHO + WHEN
SECTION A: CONSERVE RESOURCES - guides designers to focus on conserving materials and resources, and to source materials responsibly.										
1. Minimising the quantities of materials used	Accurate measurements of the quantities required is being undertaken. Methods of construction to be employed to use materials in the most efficient way. Operatives to be suitably qualified for the proposed methods of work.	Select materials which maximise span-to-weight ratio, and therefore minimise the quantity of structural material used. A quantity survey of structural material will be conducted using structural modelling software. Piled foundations have been prioritised over pad foundations as they typically use less material. The size and number of piles optimised to reduce material usage.	A consistent architectural layout aids in the uniformity of the column grid creating an efficient overall structure. An efficient structure reduces the required slab thickness and overall building height thus minimising the material quantities required. Select materials which maximise span-to-weight ratio, and therefore minimise the quantity of structural material used.	Design of the structural frame is to be undertaken independently of the façade allowing for the façade to be easily replaced with any reuse of existing material also enabled. Optimising façade to reduce overall weight as well as consideration of lightweight materials.	Individual systems should be designed and rationalised to minimise distribution, incorporating the most efficient route where possible. Repetitive layouts for stacked Units to minimise pipework runs.	Materials will be utilised to their intended tolerances with research provided into suitability of selection and application. Minimise internal columns and use light weight partitions where practical including demountable suspended ceilings and minimise internal columns and use light weight partitions where practical. Any internal walls will provide options for adaptability and refurbishment beyond the design life of the development. Repetitive layouts are used across the different floors which will provide standardization in the 189 Units in total. All units are likely to have the same finishes.	Resource efficiency targets to be set, controlling material use per 100 m^2 Practices are to be reviewed with contractor during pre-construction supply chain engagement.	Overall, the design is to be optimised at every opportunity to reduce material consumption. This also means designing out waste at source.	Potential for unforeseen challenges as the design progresses, for instance, prioritising different requirements and needs of the design itself. Supply chain disruption could cause procurement problems. This can be difficult to monitor. Other factors may take precedence through Value Engineering.	Ensure all aspects of the design are considered optimised, particularly structurally and architecturally. Pre-construction supply chain engagement from the contractor when appointed. Opportunities for MMC and offsite fabrication will be considered where possible such as bathroom pods, steel fabrication, door sets, windows, staircases.

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2. Minimising the quantities of other resources used (energy, water, land)	The development will be built on the building footprint of an existing commercial site which minimises the use of virgin land resources.	An Embodied Carbon Assessment is being undertaken for the Proposal. Identification of carbon hotspots across the proposed development will facilitate design optimisation. This information will prompt consideration of alternative materials to reduce embodied emissions.		Highly efficient building fabric (in accordance with latest building regulations) and a low heat loss form factor where possible across the design to minimise the peak heating and cooling loads of the building. A passive design analysis will also be undertaken	Low water consuming outlets should be specified on WCs, urinals, taps, showers, baths, dishwashers, and washing machines. Leak detection systems are to be installed to identify water leaks quicker and avoid wasted resources. Electric based central plant strategies such as 'air source heat pumps' is to be implemented to ensure the systems are 'fit for purpose' to adapt to the Government's Net Zero Carbon targets in the future i.e. as the electricity grid decarbonises over time the installed system will have a reduced carbon/ energy impact.	The layouts ensure optimisation of drainage runs and other service requirements are cost effectively achieved minimising resource consumption. Simple clear programmable user controls to avoid wasting resources unnecessarily will be integrated. Latest systems and technologies are to be used to maximise system efficiencies.	Energy, water, and transportation movements on site will be monitored by the contractor	Efficient building design ensures energy and water consumption has been driven down where possible. Particular attention to services has been given which presents the most opportunities.		Energy Strategy to be developed and updated in to reflect energy efficiency considerations. Mechanical and Electrical Engineers to also reflect low water consuming sanitaryware, and other strategies. Embodied Carbon Assessment to be undertaken by Sustainability Consultant.

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3. Specifying and sourcing materials responsibly and sustainably	Priority will be given to major building elements which will result in the greatest impact. Where possible, these will be covered by responsible sourcing certifications (e.g. BES 6001, ISO14001). Other schemes for specific materials should also be considered, including CARES Sustainable Constructional Steel Scheme, Aluminium Stewardship Initiative (ASI), and Concrete Sustainability Council (CSC). Material suppliers themselves are also to be approached for accreditation to sustainability standards and company sustainability policies. Consideration of Environmental Product Declarations (EPDs) will allow specifiers to compare products' sustainability performance and make more informed choices.	Opportunities to use recycled aggregates and GGBS in concrete at detailed design stage will be considered. Reinforcing Steel with a high recycled content will be specified. Use of local concrete plants to be investigated.		Opportunities to source bricks locally will be considered.	Opportunities to specify ducting/pipework with a high recycled content will be reviewed at detailed design stage.	All timber will be FSC certified.	N/A	Material suppliers are to provide valid responsible sourcing certification and/or EPDs with local suppliers to be prioritised.	Supply chain limitations and restrictions could cause difficulties when providing responsible sourcing certification and/or EPDs	Endeavour to reduce the reliance on raw virgin materials and procure from sustainable sources. The client will 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 will specify the use of recycled materials wherever viable including steel content, aggregates, blockwork and building finishes and furnishes. The appointed Contractor may also possess a company-wide Sustainable Procurement Policy which will also be followed. The procurement team will ensure use of products from certified sustainable sources and ensure the availability of supply for the needs of the development.

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SECTION B: DESIGN TO ELIMINATE WASTE (AND FOR EASE OF MAINTENANCE) - encourages designers to design out waste through measures such as designing to facilitate maintenance (therefore retaining materials and products in service for as long as possible), and through careful selection of construction techniques or procurement strategies.										
4. Designing for reusability / recoverability / longevity / adaptability / flexibility	The Civils design can be modified to accommodate any impact imposed upon the external works in terms of adaptability & flexibility. External (Civils) works designed to current climate specification/building regulations, which includes climate change factor.	The foundations will remain the same if use changes and loading is not affected. To maximise durability, a higher grade of structural concrete could be used at foundation level. To all steel reinforcement, larger dimension of cover concrete could be chosen to minimise degradation of reinforcing steel; stainless steel reinforcement could also be considered. All concrete elements of the frame are to be designed to withstand the elements they are exposed to. This will aid the durability of the frame and the substructure. This can be enhanced by increasing the required concrete cover and concrete grade to reduce the likelihood of reinforcement corrosion.	Providing an architectural layout with structural grid regularity and optimisation of column-free spaces could allow convertibility in building use. The use of internal structural walls has been minimised where possible to facilitate any future redesigns of the internal spaces. The construction approach for the facade will allow for refurbishment if ever needed. Either through modular / precast or more traditional measures. If the use of the building remains the same, refurbishment is possible. The consideration of removable partitions within the design will allow for ease of refurbishment. The durability of the brick and stone materials specified,	Should the internal space be reconfigured, there should be potential to change the external shell, i.e., the solid (external cladding) and glazed elements (curtain walling) to suit any new internal arrangement. Use standard units and sizes where possible for cladding panels. External walls to are to be brick. Bricks are solid, durable and have minimal maintenance requirements.	Concrete/masonry stair and lift construction will be capable of providing fire rated stair lift enclosures. All strategies have been considered for end user safety, maintenance and functionality, including flexible service access. Accessibility has also been considered when designing the mechanical and natural ventilation systems. The services are centred on the ground floor to allow for ease of maintenance and replacement and to facilitate recommissioning/ balancing of building system(s). Duct and M&E risers are provided to all floors. The building services systems would have to be modified to accommodate any changes. In theory,	Submetering, will be provided throughout the building(s) for electricity, water and heating to facilitate successful monitoring and billing of the key spaces throughout the buildings. This will ensure that energy and water consumption can be accurately monitored and billed. The internal flat layouts across the site are designed to be also suitable for general use. All internal finishes are suitable for the conversion to general needs. Across the site, consideration will be given to minimise internal columns and use light weight partitions where practical with demountable suspended ceilings.	N/A	The design has been developed with longevity and durability in mind, including how it could be adapted in the future.	Practical restrictions due to the residential build use. Potential for unforeseen challenges as the design progresses, for instance, prioritising different requirements and needs of the design itself. Other factors may take precedence through Value Engineering.	All design team disciplines to ensure factors are considered to eliminate waste and promote ease of maintenance at each RIBA stage.

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		In terms of the expandability potential for the design, lean design has been adopted so strengthening will be required for additional vertical loads. For horizontal extension, this is possible subject to structural assessment.	in addition to the low maintenance requirements associated, means these materials can be reused at the end of building's lifetime.		the systems could be redesigned/ adapted to capture potential changes, however, this would be subject to the extent and specific nature of the changes.					
5.	**Designing out construction, demolition, excavation, industrial and municipal waste arising**	A Pre-Demolition Audit will be undertaken on the current site to review existing materials on site which will ensure demolition waste has been designed out accordingly. Aim for a target of 95% demolition waste diverted from landfill and 95% excavation waste diverted from landfill.	Effort to minimise quantities as noted in Section 1 and 2 to design out construction waste. Success of this will be reviewed through the completion the construction management plan. Lean design adopted minimising material usage. Standardised element sizes designed so reduced formwork can be used in construction. Consideration for just-in-time delivery, reducing packaging, and supplier take-back schemes should also be demonstrated across building elements.			Appropriateness of detailing and maintenance will be considered through the RIBA stages and therefore elements as described would need to meet and exceed building control, fire, waterproofing, acoustics, and air quality requirements. These could result in waste during operation so design should reflect this appropriately.	Resource efficiency targets to be set, controlling material use per 100m^2 Practices are to be reviewed with contractor during pre-construction supply chain engagement.	Minimal excavation to site and maximising Design efficiency to effectively design to waste through careful coordination of services.	Availability of supplier take-back schemes are limited. Just-in-time delivery may not also be practically feasible when on site due to strict programme and timings.	Demolition contractor to undertake compliant audit. Contractor to follow Construction Management Plan, ensuring diversion from landfill has been achieved.

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SECTION C: MANAGE WASTE - where designers should consider measures that can be taken to manage any waste that is generated, by increase reuse and recycling rates.										
6. Demolition waste (how waste from demolition of the layers will be managed)	Drainage systems utilise standardised components (industry wide standard). Proposed roads utilise standard components, i.e., kerbs, block/flag paving, material specifications.	To maximise reuse of structural material, at demolition reversible connections can be prioritised, while minimising cast-in concrete design where possible. Utilising prefabricated components will be investigated along with GGBS and recycled aggregates if feasible to compensate. The design of the structural frame is to be undertaken independently of the façade allowing for the façade layer to be dismantled without affecting the structural integrity of the frame.		Mechanical fixings to be used where possible and curtain walling prefabricated units which can be dismantled as whole units. Use of standard units and sizes where possible for elements such as the aluminium window systems.	The majority of plant will be small enough or be able to be dismantled to a size that can utilise 'standard' access routes through the building. Nevertheless, larger items of plant and components will require more specialised strategies in case of full plant failure and total replacement and/or demolition is necessary.	Review of building methodology can be undertaken to review options. Opportunities for minor and major refurbishment opportunities are to be considered of the selection of materials at stage 3 which will ensure demolition waste is minimised. The design currently seeks to implement robust and longevity via material selection, detailing and appropriate workmanship insulation.	When demolition is to be undertaken, a comprehensive - Pre-Demolition audit is to be undertaken to ensure waste from demolition of layers is optimised.	Demolition should be the worst-case scenario for the building, with replacement strategies and layer independence prioritised as noted in the approach.	Practical restrictions due to the purpose of the build. Other factors may take precedence through Value Engineering.	The contractor will continue review the reuse and recovery of materials & components. During RIBA Stage 4 the team will aim to 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.
7. Excavation waste (how waste from excavation will be managed)	Opportunities to maximise re-use of excavation waste are to be investigated fully.	Recycled crushed concrete could be considered as more sustainable option than conventional fill.	N/A	N/A	N/A	N/A	N/A	Excavated waste requires further investigation with a strategy confirmed.	Site constraints could mean applicable uses for excavated waste is limited.	Contractor to evaluate and confirm.
8. Construction waste (how waste arising from construction of the layers will be reused or recycled)	Resource efficiency targets to be set, controlling material use per 100m^2 Aim to divert 95% of waste from landfill.	Effort to minimise quantities as noted in Section 1 and 2 to design out construction waste. Success of this will be reviewed through the construction management plan. Material quantities to be well planned to minimise over-ordering. Consideration for just-in-time delivery, reducing packaging, and supplier take-back schemes should also be demonstrated across building elements. Local waste processors are to be identified that send minimum quantities of material to landfill, with emphasis on reuse and recycling of construction waste.					Contractor to review possibilities. Contractor will segregate and monitor waste generated during construction.	Waste arising is to be reduced as far as possible with practices detailed in the construction management plan to ensure benchmarks are met.	Site constraints could cause logistics of waste segregation and storage issues. Availability of supplier take-back schemes are limited.	Contractor to follow Construction Management Plan and ensure that diversion from landfill has been achieved and waste management actions implemented.

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9. Municipal and industrial waste (how the design will support operational waste management)	A dedicated segregated and labelled bin store provided as an accessible refuse area at Ground Floor. At least 50% of the bins within the waste storage are 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 2030.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	An initial municipal waste management strategy has been developed within the Design & Access Statement and will be reviewed and updated as the design progresses. Appropriately sized, labelled and segregated communal waste storage are to be provided.	Waste forecasts have informed appropriately sized waste storage. Recycling rates will be reviewed upon occupation.	Design Team to ensure incorporated into the design. Facilities management to ensure appropriate collections and logistics.

CATEGORY	TOTAL TONNAGE	T/ANNUM	% REUSED ON OR OFF SITE	% RECYCLED OR COMPOSTED, ON OR OFF SITE	% NOT REUSED OR RECYCLED	% TO LANDFILL	% TO OTHER (E.G. INCINERATION)	SOURCE OF INFORMATION
	0.1m^3 per week per house/flat (2 people)[1] 189No. Units total, 8 Units x 1 person, 56 Units x 2 person, 68 Units x 3 person, 57 Units x 4 person. Therefore assume 0.1m^3, 0.15m^3 & 0.2m^3 per week per flat type. (0.05 x 8) + (0.1 x 59) + (0.15 x 68) + (0.2 x 57) = 27.9m^3 per week.	1,451 m^3 per year 0.27 conversion factor (Tonnes per cubic metre)[2] = **392 tonnes**	0%	England's average recycling rate for households is circa 45%[3]	Max 50% and no recyclable or compostable waste in line with Manchester Municipal Waste targets	50%	0%	[1]CIBSE Guide G (2014) & BS 5906:2005 Waste management in buildings. Code of practice [2]Draft 16 UK Waste Classification Scheme DETR (DEFRA) [3]UK statistics on waste - GOV.UK (www.gov.uk)

5. CIRCULAR ECONOMY NARRATIVE

5.1. Conserve resources, increase efficiency and source sustainably

5.1.1. Minimise the quantities of materials used

During the circular economy workshop a detailed analysis of the design was undertaken to identify opportunities to increase materials' efficiency and develop an efficient, lean design. The efficiency of the structural frame will be scrutinised to avoid over specification. Building weight will be minimised through the application of the following:

- Piled foundations have been prioritised over pad foundations as they typically use less material;
- The size and number of piles have been optimised to reduce material usage;
- Lightweight internal partitions;
- Lightweight finishes and limited screed use will assist in keeping the building weight down.

Virgin materials will be conserved, and materials will be selected with lower carbon intensities through the use of cement replacement products and sustainably sourced timber on site.

Materials selected will be reused or will contain a high recycled content. Reinforced steel (rebar) with a high recycled content will be sourced, where possible. The use of reclaimed bricks for the façade design will be investigated, as reclaimed bricks provide lower carbon intensities when compared to primary sourced bricks.

5.1.2. Minimise the quantities of materials used

The proposed development will be built upon a previously developed brownfield site which will minimise disruption to the existing landscape and optimise use of the Manchester's limited resources.

The Energy Statement issued for planning identifies the most suitable passive and energy efficient design approach for the scheme. Specification of a highly efficient building fabric, efficient heating and ventilation systems and the use of renewable technology on the site (ASHPs) have reduced operational energy consumption. The proposed system of heat pumps works at a greater efficiency than gas boilers and can take advantage of the projected decarbonisation of the grid.

5.1.3. Specify / source materials and other resources responsibly and sustainably

The specification of sustainable construction products will be in line with the Rani Investments' sustainable procurement policies. These policies aim to support local procurements of construction products and prioritise products under a recognised responsible certification scheme.

5.1.4. Design for longevity, adaptability or flexibility and reusability or recoverability

The strategic approach for the proposed development is design for longevity. It is unlikely that the building will be used for non-residential use, however, lightweight internal walls and efficient column design will allow flexible internal configuration. Key exposed building elements have been designed to limit degradation from environmental factors such as solar radiation, wind and temperature variations.

Materials selected will possess high levels of durability and low through-life maintenance, for example through selecting façades and fixing components which last as long as the building frame. One key example is the use of brick as the material for façade design.

Aluminium specified for window systems have corrosion resistance which mean that carbon-intensive coatings, such as paint, can be avoided throughout the life of the product. Metals such as aluminium and steel have a long lifetime, are durable and can easily be recovered for recycling at the end of the building's life.

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

5.2.1. Design out construction, demolition, excavation and municipal waste arising

Excavation on site will be minimised as far as possible. There are existing buildings on site which are unsuitable for re-use and, therefore, will have to be demolished. Prior to site clearance, a Pre-Demolition Audit will be undertaken to identify material re-use and recycling opportunities at a more detailed stage of design. For all aspects of the development the waste hierarchy will be followed.

A Construction Resource Management Plan is being developed prior to the start of construction works on site. It will outline the strategy to reduce construction waste and monthly monitoring will ensure that subcontractors are engaged in the process.

The operational waste management strategy for the proposed development will be further developed at detailed design to further outline how waste arising within the development will be managed and disposed of in a manner which ensures optimum levels of waste recycling.

5.2.2. Manage demolition, excavation and construction waste

The Pre-Demolition Audit will outline opportunities for material disassembly and diversion from landfill at a later stage of design. The proposed site will aim for a demolition waste 95% diversion from landfill target.

There is excavation on site mainly due to foundation construction and landscape related activities. Where possible this waste will be reused on site. The site will aim for 95% diversion of excavation waste from landfill, estimate quantities of excavation waste for the proposed development will be provided at a later design stage by a Pre-Demolition Audit.

As previously referenced, once the construction stage starts the contractor will be required to have a comprehensive Construction Management Plan in place. This will summarise the benefits of waste minimisation and management and will forecast the types and amounts of waste that might arise for the scheme, providing methodologies for managing and minimisation. Construction waste generation will be monitored by the contractor and reported to the design team periodically. Final demolition and construction waste figures will be recorded and monitored throughout the construction process and reported to the design team and contractor for evaluation.

A waste hierarchy approach will be followed with the intention first to minimise waste generation, followed by reuse, and then recycling on-site. Where materials cannot be reused or recycled on-site, the contractor will identify opportunities for potential reuse off-site. Materials and other arisings will be stored safely and efficiently, prior either for reuse on site or removal, and onsite waste storage areas will be segregated and clearly labelled to assist with recycling. Closed loop recycling will be utilised where possible for materials such as unused plasterboard, carpet tiles and insulation.

Resource efficiency targets are to be developed and set for the waste generated during construction, using a benchmark based on tonnes per 100m^2.

5.2.3. Manage municipal waste

As well as construction waste, the waste management strategy for the development when it is operational is also critical as this is where the majority of waste will be generated over the lifetime of the scheme. Therefore, the Robert Street design team will further develop the operational waste management plan as the design progresses. This will demonstrate the opportunities for managing waste and the implementation of adequate and easily accessible storage space, and collection systems to support recycling and re-use, aligning with Policy JP-S7 'Resource Efficiency' of the Joint Development Management Plan (JDMP). The development will have its own dedicated refuse and recyclable storage zone on the ground floor which will be clearly labelled and accessible to allow for the segregation of various waste streams.

Sufficient space has been provided to accommodate one weeks' worth of residual waste and recyclable waste. Dedicated waste storage areas will be accessible to all building users and will allow for the segregation of at least three waste streams. The waste storage areas are present on the ground floor and have sufficient space for residents' waste, and a separate bulky waste disposal area will be provided. These measures will support the proposed development in achieving the target recycling rate for the municipal waste, which is 50% in accordance with the Greater Manchester Municipal Waste Management Strategy.

Measures to minimise operational waste such as consolidated, smart logistics and community-led waste minimisation schemes will be explored at a later stage. This shall also extend to investigating the adoption of schemes which specifically target the recycling of unwanted clothing and furniture and collection schemes to encourage the re-use of these items, available for future occupants of the proposed development. A non-technical building user guide will be provided to residents which will outline the waste strategy for the development and promote recycling.

Monitoring and evaluation of the operational waste strategy will be an ongoing process. Options for monitoring waste could include a regular visual assessment of the fill levels by the building manager or waste audits to provide a snapshot of waste and recycling streams. To promote residents' participation, the outcomes of the monitoring could be communicated to the residents via a newsletter or on a noticeboard.

6. PLANS FOR IMPLEMENTATION

The Client will ensure the sustainability requirements have been captured within the material specification and the procurement team will ensure use of products from certified sustainable sources and ensure the availability of supply for the needs of the development. Within the inclusion of any performance requirements developed by the team at detailed design, any deviation from the design that will impact material quantities will need to be approved by the relevant design consultant.

7. END-OF-LIFE STRATEGY

In line with CE principles, the main priority is to extend the lifetime of the building through careful design and specification and to ensure that if the building is to be deconstructed at a later date, there is a clear process to follow. The design team will review the whole of the proposed development at detailed design to encompass the following considerations;

- Feasibility of the buildings to contain multiple or alternative building uses, measures that could be implemented to facilitate convertibility in the future.
- Accessibility – use of products or systems which allow easy replacements along with inclusion of facilities management requirements and feedback for future needs.
- Versatility of building internally to adapt to change in working practices / use with routes including methods for major plant replacement.
- Potential of the buildings to expand horizontally or vertically and refurbishment potential with efficient use of space to allow for any increase in occupancy.
- Durability of materials proposed based on warranties and risk of being broken during disassembly.
- Potential to incorporate exposed or reversible connections which facilitate disassembly whereas poured and welded connections are likely to harm components and prevent this.
- Layer independence – following the 'Building in Layers' approach to ensure layers stand independently.
- Avoidance of unnecessary toxic treatments / finishes
- Standardisation - standard-size materials can accommodate multiple uses, reuse and upgrading. Modularity will allow elements to be slotted together or taken apart to facilitate disassembly and flexibility.

An implementation plan will be compiled which outlines the recommendations that the scheme will keep under review as the design progresses at the next stages.

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