

4 HARDMAN SQUARE, MANCHESTER

PRE-APPLICATION

CIRCULAR ECONOMY STATEMENT

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Version Control

Issue	Document Name	Revision No.	Date of Issue	Description	Reviewed By
1	4 Hardman Square, Manchester – Pre- application Circular Economy Statement	v1.01	23 rd of September 2022	Pre-application Circular Economy Statement	

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Executive Summary

4 Hardman Square is situated in the city of Manchester's financial centre, Spinningfields. It is an existing five storey office building with retail units to the ground floor. It was built in 2006 and is a steel frame, clad largely in glazed curtain walling. There is plant on the ground floor and roof area. The proposal is to refurbish the existing building and extend. This will include a new canopy and feature cladding to the main entrance on Hardman Square, activation of the blank facade to the left of the main entrance, recoating of existing finishes, lightweight rooftop extension with exposed steel frame and a new communal roof terrace. There will also be reconfiguration of existing plant and new PV panels. The spaces internally are likely to be soft stripped and upgraded to CAT A.

This Pre -application Circular Economy Statement (CES) has been prepared based on this proposed scheme at 4 Hardman Square, Manchester (hereafter referred to as the 'scheme'). This statement presents the strategic approaches and commitments through which the scheme will retain its constituent materials at their highest value (throughout the design, build, operation, and disassembly), and how the materials will be reused and recycled to adhere to the principles of a circular economy.

The developer, Orchard Street is committed to net zero and responsible investment and has a roadmap to net zero carbon with key commitments including:

- 1) achieving net zero carbon for landlord emissions, refurbishment emissions and our corporate emissions by 2030.
- 2) include occupier emissions from energy and fit outs in 2040.

A target is included of 300 kgCO₂e/m² embodied carbon on major refurbishments by 2025, reducing to 210 kgCO₂e/m² by 2030. Key actions for achieving this are:

- Consider the environmental impact of materials in selection and prioritise products with environmental product declarations
- Review and assess circular design principles to design out waste

As such the project team are committed to delivering circular economy outcomes for this scheme. This includes the following commitments and aspirations:

- The retention of the structure
- Design for flexibility, adaptability and longevity in the new elements
- Investigation of the disassembly potential and end of life scenarios for the major new elements/components
- Development of a material passport with end of life scenarios for key materials encompassed within end of life plan
- Responsible sourcing of materials
- Proportion of materials with a reused or recycled content to be a minimum of 20%
- To divert 95% of waste away from landfill and incineration
- To maximise opportunities for reuse for existing materials to be removed from the building

The scheme plans to accommodate a layered perspective of a building for a circular economy: site, structure, shell/skin, services, space and stuff.

1 Introduction

This Pre-application Circular Economy Statement (CES) has been prepared on the proposed scheme at 4 Hardman Square, Manchester (hereafter referred to as the 'scheme' by ADW Developments). This pre-application Statement presents the approaches and strategies through which the scheme will retain its constituent materials at their highest value (throughout design, build, operation, and disassembly), and how the materials can be reused and recycled to adhere to the principles of a circular economy.

The intended aim/outcome of this statement is to identify potential strategies and approaches that enable the development to be 'circular', and which can provide a focus for further iterations of the Statement. Also identified are relevant targets for the project.

This CES supports the pre planning application phase.

1.1 Description of the Development

4 Hardman Square is situated in the city of Manchester's financial centre, Spinningfields. It is an existing five storey office building with retail units to the ground floor. The structure is a steel frame and is predominately clad in a glazed curtain walling. A plant area is located on the ground floor adjacent to the reception. There is additional rooftop plant. The proposed development including the following proposals:

- A new canopy and feature cladding to main entrance on Hardman Square
- Activation of blank facade to left of main entrance
- Existing finishes re-coated throughout building to tie through with proposals including grey sprayed louvres to upper floors
- Lightweight rooftop extension with exposed steel frame (CAT A fit out)
- New lightweight timber pergola on roof
- Extension of façade to rooftop extension
- Existing plant reconfigured to suit layout and louvred screens replaced on roof
- New communal roof terrace and private roof terrace for office space
- PV Panels

This is shown in Figure 1-1.



Figure 1-1: Proposed building refurbishment

There are also notable changes internally including:

- Reconfiguration of the Reception
- New spiral staircase, business lounge, exercise studio, changing rooms and showers, WCs at the mezzanine level
- CAT A fit out for the office space and new WCs.

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Figure 1-2 shows an aerial view of the existing building and Figure 1-3 a typical office floor plan (note the cores are remaining).



Figure 1-2: Existing building

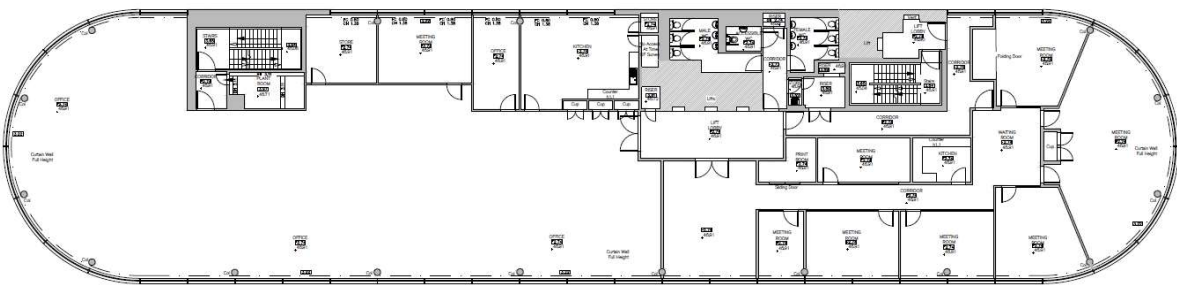


Figure 9. Existing Third Floor Plan

Figure 1-3 Example of existing floor plan (3rd floor)

1.2 Policy

Relevant Policy underlying the requirement for a CES, includes the following:

Manchester Core Strategy Development Plan Document (July 2012)

Policy EN4 (Reducing CO2 Emissions by Enabling Low and Zero Carbon Development)

- The use of building materials with low embodied carbon in new development and refurbishment schemes.

And associated text '*It is beginning to be recognised that carbon is embedded within all activities and goods. It is important that the total carbon footprint of new and refurbished buildings is considered, and that where possible renewable materials and/or those with low embodied carbon are used*'.

Guide to Development in Manchester Supplementary Planning Document and Planning Guidance Adopted April 2007

This Guide mentions that '*All developments should have a waste management strategy included in the Environmental Standards Statement. This will ensure that adequately sized bin storage areas, access for collection crews and vehicles, and other aspects of waste management are designed into the development at the earliest stage*'. And that '*greater emphasis is now being placed in the importance of the reduction and recycling of waste at source. Developers will be increasingly required to consider how this issue will be tackled on-site*'.

Also that '*Site Waste Management Plans should be implemented to reduce the quantity of waste generated and to increase reuse and recycling. Opportunities for reusing existing buildings should be explored, and where this is not appropriate, materials should be reused onsite and incorporated into the new design where practicable. Materials that are environmentally friendly, of low embodied energy, locally sourced, and can be recycled or reclaimed when the building comes to the end of its life should be prioritised*'.

1.3 Circular Economy Aspirations

The scheme will address circular economy principles, including the environmental impact of construction materials. The project team will work together to reduce waste, maximise material efficiency, design for longevity and flexibility and reuse and recycle material waste arisings from all stages of the scheme.

The scheme aspires for the highest possible adherence to the principles of circular economy, from the reuse of materials from the existing building to the new construction design. The project team are working together to reduce waste, maximise material efficiency, design for longevity and flexibility and reuse and recycle material waste arisings from all stages of the scheme. Circular economy principles for this scheme include:

- Prioritise re-use of existing structures/materials
- Optimise design for longevity, flexibility, adaptability, standardisation, leasing of products, disassembly, deconstruction and end of life recoverability
- Ensure each building element is serviceable and maintainable
- Use appropriate durable materials and products
- Increase the use of recycled content
- Use materials that can easily be reused at the end of their life
- Use low carbon and non-toxic materials
- Maintain materials at their highest value

1.4 Circular Economy Targets

The proposed targets at this stage are as follows:

- To divert 95% of non-hazardous demolition(refurbishment) waste away from landfill and incineration; targets for reuse and recycling to be agreed
- To divert 95% of construction (new build) waste from landfill and incineration, with an emphasis on reuse and high value recycling
- To divert 60% of operational waste away from landfill via reuse, recycling and composting
- Reused and recycled content at a minimum of 20%
- 3.4m³/100m² of internal floor area for construction waste arising for the development.

There is also a requirement to achieve BREEAM Excellent which includes key circular economy aspects including Mat06 (material efficiency), Wst01 (construction waste management), Wst06 (design for disassembly and adaptability); Man03 (responsible construction practices) and Mat03 (responsible sourcing of materials).

The Principal Contractor will be required to monitor waste levels and divert as much waste from landfill as possible. A Resource Management Plan will be produced to detail opportunities for reducing waste and maximising recycling and recovery rates.

2 Circular Economy Goals and Strategic Approach

The following table presents the scheme's circular economy strategic approach.

Aspect	Phase / Building / Area	Steering Approach	Explanation	Supporting processes
Circular economy approach for the existing building/ structure	Structure, skin	Refurbish	The building is being refurbished with the current structure maintained and added to as required with many materials kept as possible.	Design and specification stages
	Structure, skin, space	Design for longevity	Extending the building lifetime and use through refurbishment new roof. In new areas consideration of floor height, grid layouts and the use of convertible space in the communal areas.	Design and specification stages; end user requirements
	Skin, space, services	Reuse	Opportunities to reuse and recycle products and materials from the refurbishment. A specialist reuse organisation will be used for the reuse of certain interior items. Reuse in situ of certain M&E equipment.	Pre-demolition audit
Circular economy approach for the new development	Services, space	Design for flexibility	Design for internal flexibility depending on end user needs – CAT A fit out.	Design and specification stages; end user requirements
	Structure, skin/shell, space	Design for longevity	Products that need to be replaced in the building's lifetime to be accessible and preferably reusable/ recyclable at EoL. Use of durable, long lasting materials.	Design and specification stages. Main contractor procurement of materials

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Aspect	Phase / Building / Area	Steering Approach	Explanation	Supporting processes
	Structure, skin/shell, space	Design for disassembly	Use of standardised components, materials and connections allowing for disassembly. For new roof, façade options and internal fit outs.	Design and specification stages. Use of material passport and end of life plan.
	Structure, skin/shell, space, stuff	Design for end of life	Evaluate opportunities for reuse through the standardisation of materials and components and frame elements. Consideration of leasing schemes e.g. lighting, furniture.	Design and specification stages. Use of material passport and end of life plan. Procurement of materials.
	Structure, skin/shell, space	Use of reused/recycled materials	Maximise recycled content through the specification and procurement of materials e.g. copper panels, plasterboard, glazing, tiling, remanufactured RAF	Design and specification stages. Main contractor Procurement of materials.
	Structure, space	Reduce	Lean design elements will be incorporated within the specification. Lack of finishes. CAT A fit out.	Design and specification stages
	Construction	Reduce, reuse, recycle	Waste will be reduced through offsite manufacture (e.g roof frames), just in time delivery and good practice on site. Takeback of surplus materials. Reuse and recycling (upcycling) of construction waste will be prioritised.	Design and specification stages Contractor requirements Resource Management Plan – Construction Environmental Management Plan

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Aspect	Phase / Building / Area	Steering Approach	Explanation	Supporting processes
Circular economy approach for municipal waste during operation	All areas	Minimise operational waste	Updated operational policies will include adequate space and handling of commercial waste to enable segregation and recycling of waste where possible. As a minimum segregation of dry recyclables and food waste. Focus on packaging from the logistics unit.	Operational waste plan (note already one in place) and obligations with the end user

3 Circular Economy Processes

Key processes are likely to include:

Design

Pre-demolition Audit: this covers the estimated quantities arising from the refurbishment and identifies opportunities for reuse within the new design, other reuse opportunities and upcycling wherever possible.

Flexibility and adaptability: the scheme will be designed to include flexibility through the CAT A fit out, and the new communal areas

Specification of materials: the scheme will aim to source the main material from responsible sources including those from reused and recycled sources. Use of reused and recycled material will promote a circular economy approach to material management.

Material Passport: this will be created for the key products to aid with the ability for each material to be repurposed for reuse in future applications. Including information such as manufacturer, fixing, warranties, maintenance instructions

Deconstruction Information: the drawings and design details will include information to assist with deconstruction such as joints and fixings; disassembly information for products will also be included in the material passport.

Construction

Resource Management Plan: will be followed for the demolition, refurbishment and construction activities, which will identify and implement areas for reduction of waste, reuse and upcycling and diversion of waste material from energy to waste and landfill to recycling facilities, as well as ensuring the reporting of quantities and Duty of Care commitments.

In Use

Operational Waste Management Plan: the current plan will be updated the with the amounts of waste likely to be generated by types including recyclables and the need for bin types, segregation, storage and collection. Note this will be dependent on end users.

End of life

End of life plan: as part of the O&M manual, an end-of-life plan will be written including relevant information on products and materials and construction details.

4 Potential opportunities

Initial opportunities for the new elements which will be explored more fully as the design progresses include the following:

Design Principle		Phase / Building / Area / Layer	Potential opportunities
Designing out waste	Module A - Product Sourcing and Construction Stage	All layers	Light weighting of frame and façade; high levels of recycled content (e.g. aluminium, composite floor deck. glass); remanufactured Raised Access Flooring; opportunities for reclaimed elements in interiors; offsite fabrication; exposed finishes; WC's material choice
	Module B - In-Use Stage	Services, space, stuff	Exposed services reducing need for access; service strategy; modular components for ease of replacement and review of EoL opportunities; potential leasing of items e.g. furniture, bathroom equipment, planting
	Module C - End-of-Life Stage	Structure, skin/space, shell	Review of end-of-life options for key components with a view of maximising residual value.
	Module D - Benefits and Loads Beyond the System Boundary	Structure, space	Ability to reuse (steel frame for roof); steel staircase
Designing for longevity		Structure, shell/skin and space	Coating and paints for external finishes; design life considerations and durability a key factor in material selection e.g. timber decking; replacement for parts with limited life span (e.g. interior items/exterior furniture)
Designing for adaptability or flexibility		Services and space	CAT A, allowing for tenant fit out and ongoing flexibility; flexibility in lighting and services (modular approach)
Designing for disassembly		Structure, skin and shell	Disassembly consideration of connections and material usage for new rooftop extension and pergola. Use of standard materials/dimensions and simple layout. Note, potential limitations with matching/joining existing façade.

Using systems, elements or materials that can be re-used and recycled	All layers	Investigation of leasing models for certain elements (e.g. lighting, furniture); design review for key elements and ability to be reused and recycled and potential limitations e.g. composite floor and façade; ability to standardise.
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5 Conclusion

This statement has been prepared through collaboration between a multi-disciplinary design team that includes suitably qualified architects, circular economy experts and sustainability experts. The strategies and approaches will be developed further with the aim of instilling the principles of a circular economy into the scheme, which should help minimise the waste generated from the scheme and the materials used throughout its life cycle.

6 Disclaimer

This report is strictly private and confidential and intended for the sole use of Avison Young and its advisors. Whilst it may be made available to Avison Young's professional advisors, ADW Developments Ltd. accepts no responsibility for the contents or consequences of the use of this report.

Appendix A

Report Authors

Katherine Adams

Katherine has worked in the area of construction resource efficiency for nearly 20 years, mostly at BRE, where she has been instrumental in shaping the construction industry to achieve high levels of diversion of waste from landfill and reducing waste. She has much experience of pre-demolition audits, having undertaken and reviewed many for various clients, which has involved the development of a robust methodology. She has been responsible for developing waste reporting, including the online system Smartwaste. She enjoys working closely with many elements of the industry, at both a sector and project level. She has recently finished a PhD at Loughborough University looking how circular economy can be embedded in the building sector and continues to assist organisations such as the Alliance for Sustainable Building Products.

Anthony Waterman

Anthony is an expert in Construction Economics and Resource Efficiency with over 18 years professional experience. His experience includes providing consultancy to help project teams design for efficient waste management and responsible sourcing of construction material, key aspects in enabling Circular Economy compliance. Anthony currently sits on the ISO TC59, a working group responsible for the development of high-profile international standards developed to assess performance of buildings and other constructed assets.

