
Manchester College City Centre Campus, Phase 2

Circular Economy Statement

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1. Introduction

Prepared by BDP on behalf of the LTE Group, this circular economy statement (CES) has been produced to support the detailed planning application for the development of the second phase (Phase 2) of the new Manchester College City Centre Campus. The City Centre Campus is part of an ambitious masterplan through which The Manchester College and UCEN Manchester plan to support Greater Manchester's long-term economic growth by meeting its educational and skills needs. The City Centre Campus will provide Centres of Excellence for the Digital and Creative Industries, and for Business and Professional Services.

The CES identifies how circular economy principles have been implemented within the design, to date, in order to support Manchester City Council's sustainability targets relating to embodied carbon emissions, and their response to the Climate Emergency. It also identifies potential additional opportunities to be incorporated following appointment of the principal contractor, as well as next steps in the process. This report and the process focuses on the 7 key circular economy (CE) principles:

- Designing in layers
- Material re-use
- Designing out waste
- Designing for adaptability
- Designing for disassembly
- Material selection
- Circular economy business models and enablers

The CES should be read in conjunction with other supporting documents such as the Environmental Standards Statement and Design and Access Statement.

1.1 Description of the Development

The new City Centre Campus is being developed as part of the wider estates' masterplan. Phase 1 of the college occupies the prominent corner of the site, opposite Manchester Arena, Phase 2 will abut the north façade of Phase 1 to complete the city block extending and replacing the current bike store and external storage space. The site has excellent public transport links, being within walking distance of mainline rail and Metrolink services at Victoria Station. The topography is largely flat, with a small number of shrubs, some trees and areas of scrub surrounding the perimeter.

Phase 2 comprises five storeys of education space, further expanding on the Phase 1 development. Key facilities to be provided include classrooms, laboratories, meeting rooms, hospitality and catering spaces, and other support facilities.

2. Policy Context and Drivers

This chapter summarises the key planning policy context and related guidance for Manchester College City Centre Campus Phase 2 in relation to circular economy.

2.1 Local Policy

2.1.1 Manchester Core Strategy (2012 – 2027)

There are two key policies within the Manchester City Council's Core Strategy¹—relevant to waste and the practice of circular economy:

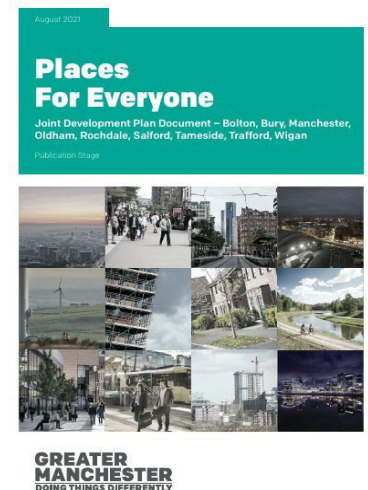
- Policy EN 19 Waste: This requires all developers to demonstrate the proposal's consistency with the principles of the waste hierarchy.
- Policy DM 1 Development Management: This policy requires all new developments to provide appropriate refuse storage and collection areas.

2.1.2 Places for People Joint Development Plan

In addition to the Core Strategy, Manchester has in place the Places for Everyone (PFE) Joint Development Plan for nine boroughs in Greater Manchester, including Manchester (City Council). The plan was submitted to the Secretary of State for Levelling Up, Housing and Communities in February 2022 for examination.

PFE includes notable environmental policies which support a circular and zero-waste economy, subsequently supporting Greater Manchester's ambition of becoming a leading green city region by 2038. Policy JP-S-7 "Resource Efficiency" requires the consideration of circular economy principles through:

- Development and implementation of the resource strategy for Greater Manchester which promotes the overall reduction of waste produced and supports resource efficiency within the Plan area to gain the maximum value from the materials we produce.
- Ensuring the design of all new development incorporates storage space to facilitate efficient recycling and, where appropriate, processing of waste on site.
- Recognition of the role of existing infrastructure in managing our waste and protecting such facilities to ensure adequate waste management capacity is maintained.
- 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.



¹ https://www.manchester.gov.uk/download/downloads/id/18981/final_core_strategy.pdf

2.2 National Guidance

2.2.1 UKGBC Circular Economy Guidance

The UK Green Building Council guidance² supports construction clients in identifying and achieving more ambitious circular design and construction targets. 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 approach should be underpinned by a transition towards renewable energy sources.

The UKGBC guidance focuses on the following circular principles:

- Reuse
- Design Buildings for Optimisation
- Standardisation or Modularisation
- Servitisation and Leasing
- 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.

2.2.2 Our Waste, Our Resources: A Strategy for England

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

The strategy aims to make England a world leader in resource efficiency and reduction. 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 for as long as possible so that maximum value can be extracted from them.

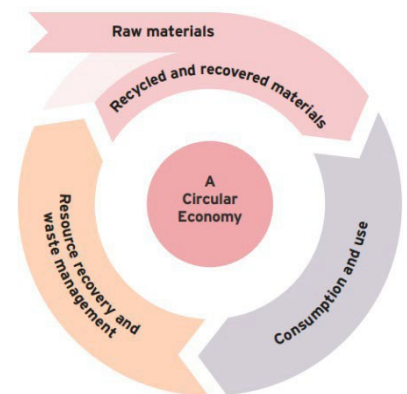


Figure 1: Circular Economy Waste Strategy for England

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

1. To maximise the value of resource use
2. To minimise waste and its impact on the environment.

² <https://www.ukgbc.org/ukgbc-work/circular-economy/>

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

2.2.3 Guidance from the Greater London Authority

Although applicable to Greater London, the guidance provided supports the production of CE statements in the UK through setting out CE requirements at different stages for the topic area. The core principles of the guidance document are:

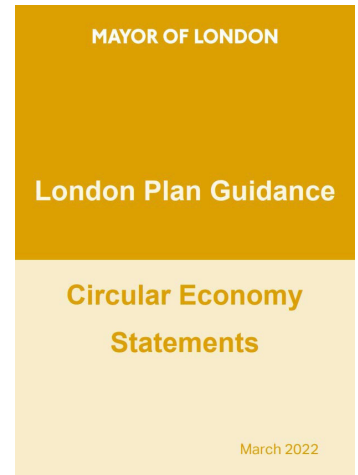
- Conserve resources, increase efficiency and source sustainably
- Design to eliminate waste (and for ease of maintenance)
- Manage waste sustainably and at the highest value.

Each of these principles incorporate several commitments to manage quantities of materials, resources, and waste.

2.3 Policy and Guidance Summary

The national principles and guidance, and policies EN19 and DM1 of the adopted Manchester Core Strategy, along with PFE, demonstrates the ambition to move to a circular economy.

In lieu of existing guidance, the project has adopted a high level approach based on the GLA circular economy guidance.



3. Methodology

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 CES are closely entwined with the approach of the RIBA 2030 Climate Challenge, BREEAM strategy and other sustainability measures, as set out within the Environmental Standards Statement which supports the planning application.

A number of sustainability workshops were held during the early stages of the design to identify opportunities to enhance the environmental performance of the development, as far as possible. This included discussions on circular economy principles. A dedicated circular economy workshop was also undertaken on 25th January 2023 to further review and identify the circular economy outcomes for the project.

The workshop was attended by the following project team members:

- Client: Niall Wright (LTE Group)
- Architect: Rob Makey (Bond Bryan Architects)
- Structural and Civil Engineer: Jake Huxley (AECOM)
- MEP Consultants: Danny Ingham and Andrew Rennox (BDP)
- Sustainability Advisors: Kat Ringland and Anna Graham (BDP)

The discussions around opportunities and outcomes were framed around the waste and circular economy hierarchies (Figures 2 and 3).

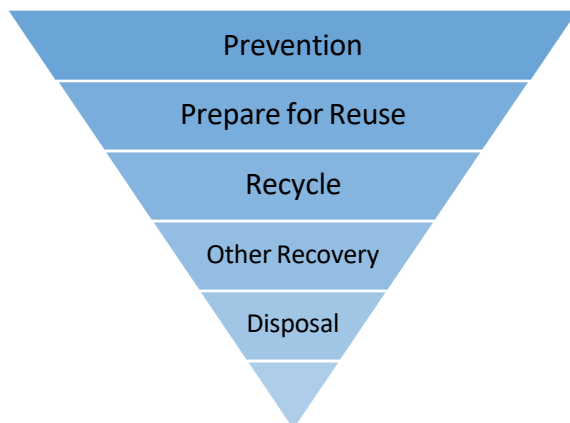


Figure 2: Waste Hierarchy

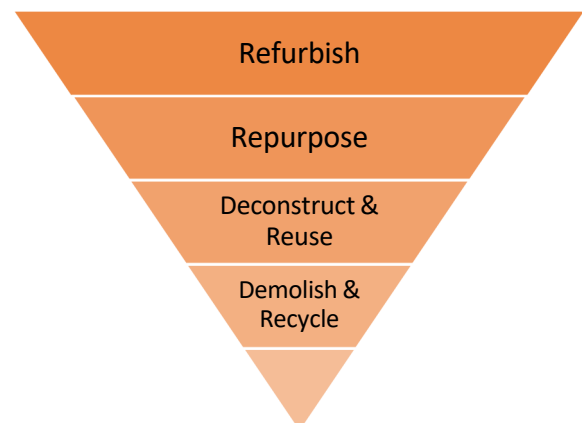


Figure 3: Circular Economy Hierarchy

The opportunities and outcomes are discussed further within Section 4.

4. Circular Economy Outcomes

The proposed development of the makes use of previously developed land, protecting virgin land and minimising disruption to the existing landscape.

From project conception, there was a clear priority made by the applicant and project team to deliver a sustainable, net zero carbon and resource efficient building.

This section sets out further detail on the strategic approach, in line with the requirements of the GLA Circular Economy Guidance, and confirms the current and future potential CE interventions.

4.1 Principle 1: Building in Layers

Value

Buildings are made of separate and interlinking layers, each with a different lifespan. Building in layers means that each element may be easily separated and removed, with minimal intervention and disruption to other layers.

Additional benefits include:

- Facilitation of reuse, remanufacture and recycling, thereby reducing waste to landfill.
- Avoidance of large scale wastage of assets, lowering resource use and other environmental impacts.
- Each element or layer can to be repaired, replaced, moved or adapted at different times without the affecting the wider entity, thereby reducing any impacts of other layers, and increasing flexibility of use and longevity over time.

Current design interventions

The external façade and services are designed and positioned separately to the building structure. The building comprises a concrete frame with fixed and flat slab-to-slab construction. The remaining layers are then bolted onto these, minimising cross-throughs.

Furthermore, the repetitive structural frame design allows for a separate “layer” of internal spaces. This also allows for future flexibility and adaptability, allowing rooms sizes to be easily changed.

Further considerations

n/a

4.2 Principle 2: Material Reuse

Value

The reuse of demolition and excavation materials from the site, or other sites, will not only reduce waste to landfill, but will also reduce the embodied carbon impact associated with the project.

Current design interventions

There is very limited demolition / excavation associated with the development of Phase 2 and, as such, opportunities for material re-use are limited. The specification does, however, make an allowance for the use of recycled and / or secondary aggregates. The decision to use recycled or secondary aggregate will be made by the principal contractor, however.

The College have confirmed that much of the existing furniture is to be reused in Phase 2.

Further considerations

As described above, the contractor will consider the use of recycled or secondary aggregates. They will also consider the reuse of materials from other construction sites.

4.3 Principle 3: Designing out Waste

Value

In line with the waste hierarchy, the most effective way to reduce the environmental impact of waste is to reduce the amount of waste created in the first instance. Addressing resource efficient design and manufacturing will reduce the total amount of waste generated, as well as the overall embodied carbon associated with the project.

Current design interventions

The design incorporates numerous interventions relevant to designing out waste. For example:

- The building has been designed to standard dimension (including steelwork, where used). This reduces the requirement for the creation of bespoke building elements and reduces waste, such as offcuts, on site.
- To maximise efficiency, the structure has a utilisation factor of 1.0.
- Numerous materials that can be easily reused and recycled at the end of their life have been specified. Examples include the concrete frame, which can be recycled for aggregate, and steelwork.
- Use of pre-fabricated elements and modular construction to reduce overall consumption of raw materials. The façade has been designed to allow for pre-fabrication of the panels, and consideration has been given to the use of a prefabricated plant room. The riser design will easily allow for modular construction. The decision to ultimately use pre-fabricated and modular elements, however, belongs to the principal contractor.
- The use of piled foundations limits the requirement for excavation and subsequent excavation waste.
- Consideration is being given to the use of roll mat reinforcement, as opposed to individual bars. This will also result in fewer construction emissions due to reduced construction time.
- The need for solar shading, e.g. blinds, and additional cooling (thus requiring additional services) has been designed out. The fritted panels provided to the façade will limit both heat gain and glare. Furthermore, the south façade is shaded by Phase 1, and the north façade by adjacent development.

Further considerations

As described above, the principal contractor will consider the use of pre-fabrication and modular design. Furthermore, consideration will be given to the specification of materials that can be recycled or reused at the end of their service life.

4.4 Principle 4: Designing for Adaptability

Value

Designing adaptability and flexibility into buildings facilitates their use for a longer period of time without the need for major interventions.

Adaptability can come in many forms including designing spaces that people value, flexible plan form, layout and structure, and creating spaces that are functionally, volumetrically and temporally adaptable.

Current design interventions

The design incorporates numerous interventions relevant to designing for adaptability. For example:

- Phases 1 and 2 have been designed to allow each section to sit independently. Should the City Campus need to be reduced in the future, Phase 2 could be sectioned off from Phase 1, becoming an independent building. The design also allows for change of use, e.g. into apartments.
- The design of Phase 2 allows for future expansion. There is currently an option for a future Phase 3 development. To facilitate this, Phase 2 services have been developed for 60% utilisation to allow for future expansion.
- The floorplate and structural grid have been designed to be heavily adaptable for change of use and internal reconfiguration.
- The internal environment has been designed to accommodate changes in working practices. The lightweight internal partitions are non-structural and able to be removed should reconfiguration be required to facilitate different building uses (this applies to partitions located outside of the fire compartment line or around bracing).
- Organic lighting response systems are specified. Each luminaire will be fitted with a sensor node that allows it to respond to its environment and information from its neighbouring luminaire, so that the optimal amount of light is delivered when and where needed. This allows the lighting design to easily adapt to future changes.

Further considerations

A thermal modelling exercise will be undertaken in due course. This will take into consideration the thermal comfort of occupants under future climatic conditions. The outcomes of this exercise may inform the design future, and to ensure comfort conditions are maintained, reducing the need to future invasive works such as the introduction of additional cooling.

4.5 Principle 5: Design for Disassembly

Value

Designing for disassembly and deconstruction facilitates the reuse of resources from component up to building level. It further allows buildings to be considered as materials banks, where resources can be extracted with little or no loss in value.

Current design interventions

The design incorporates numerous interventions relevant to designing for disassembly. For example:

- As discussed in Section 4.1, the building has been designed in layers, allowing for easier disassembly. The external façade and services are designed and positioned separately to the building structure. The building comprises a concrete frame with fixed and flat slab-to-slab construction. The remaining layers are then bolted onto these, minimising cross-throughs.
- The internal cladding is easily removable and could be reused. The secondary steelwork over the atrium space will also be easily dismantlable.
- The design is currently considering a greater proportion of mechanical fixing methods, as opposed to glues.

Further considerations

Where materials are not currently specified, materials with unnecessary toxic treatments and finishes will be avoided. Modularity and procurement from manufacturer's that operate product takeback schemes will be considered further by the contractor.

4.6 Principle 6: Material Selection

Value

Careful material selection supports the circular economy process. This is achieved through, for example, specifying out virgin materials, specifying materials that are re-used, recycled, or easily recyclable, and specifying materials that are robust.

Current design interventions

Examples of where material selection supports the CE approach are summarised below:

- Furniture and other FF&E items are being reused from other campus sites, where appropriate.
- The carpet tiles and insulation specified will contain recycled content.
- Concrete will contain a minimum 25% GGBS content (or equivalent).
- The concrete frame is inherently more fire resistant than steel, requiring less treatment.
- The brickslips specified are inherently durable and robust.
- The material specification states that low VOC and formaldehyde materials must be specified. Low toxic materials are easier to reuse and recycle.
- Most of the FF&E will be procured from Senator Furniture. The Senator Group are committed to upcycling and remanufacturing furniture, as well as product recycling and recycling packaging waste.

Further considerations

The contractor will consider the use of recycled or secondary aggregates, as well as the use of materials from other construction sites.

4.7 Principles 7 and 8: CE Business Models and Enablers

Value

Traditional ownership models tend to support the linear economy, where the manufacturer-consumer relationship is based on initial product cost rather than life-cycle cost. Leasing or manufacturer take back schemes put the responsibility on the manufacturer to design high quality, robust products.

CE enablers provide a level of transparency, allowing for the responsible selection of materials with low embodied carbon content.

Current design interventions

- A BIM model has been created for the project. BIM ultimately reduces material consumption by providing visualisation of the final condition, which improves both the design team and contractors' understanding of what is being built. As this visualisation occurs early on in the design process, it reduces any potential re-work due to misunderstandings.
- Numerous products currently specified have EPD certificates. Although they may not necessarily reflect the product with lowest environmental impact available, EPDs increase accuracy of embodied carbon/environmental impact reporting and drive the industry to higher sustainability standards.

Examples of materials specified on Phase 2 with EPD certification include:

- Corium brickslips
- Desso Iconic carpet tiles
- Rockfon ceiling tiles
- Tarkett Granit Safe T vinyl
- Tarkett Primo Safe T vinyl

Further considerations

The main contractor will work with the supply chain and request Environmental Product Declarations (EPD) wherever possible. Procurement from suppliers with takeback schemes will also be considered.

Due to cost implications, the leasing of services or components is not considered.

5. Next Steps

Following on from this issue of this circular economy statement, the design team will continue to collaborate to identify further opportunities for the implementation of circular economy principles. The following additional activities will be undertaken:

- A circular economy workshop will be undertaken with the contractor team.
- The principal contractor will be required to identify and implement further CE principles.
- The principal contractor will be required to demonstrate how site waste and materials consumption are reduced.
- A bill of materials will be produced to inform the buildings' end-of-life strategy, with regards to opportunities for materials reuse, recycling etc.

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