



ELEMENT
SUSTAINABILITY

APEX TOWER DEVELOPMENT, MANCHESTER

CIRCULAR ECONOMY STATEMENT

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1. INTRODUCTION

Element Sustainability has been commissioned by Arrowsmith Investment Ltd. to develop a Circular Economy Statement for the proposed Apex Tower Development in Manchester.

The purpose of this statement is to outline the Circular Economy measures that have been considered with the design of the proposed development for both sites, and covers the two planning applications, as per the following:

- Site A (The Tower Site) – West of the Briton’s Protection Public House
- Site B - Between the Briton’s Protection Public House and the Jury’s Inn Hotel

This Statement has been developed in collaboration with the following stakeholders:

- Arrowsmith Investment Ltd.
- The Design Team; and
- Sustainability Consultant.

The following steps were taken in the development of the Statement:

- A Circular Economy (CE) Workshop was held among the key stakeholders (listed above);
- A study of international and local best practices and benchmarks;
- Review of existing documentation and plans;
- Integration of CE principles by the design team, where possible; and
- Development of a monitoring framework to track evidence of progress against CE design targets.



2. DEVELOPMENT PROPOSALS

2.1.1 Pre-Development Site Description

The site is located within the Manchester City Centre, within the inner ring road (Mancunian Way), on the Southern side of the city. The site is a short distance from the Rochdale Canal, and within close proximity to a number of new developments.

The site sits on a prominent street junction and is in close proximity to a number of key buildings and amenities such as the Manchester Central station and the Bridgewater Hall.

As mentioned previously, this Statement will highlight the Circular Economy measures that have been considered with the design of the proposed development for both sites.

The two sites are located next to each other (see figure 2.1 for site boundary and context), with the Britons Protection Public House between them. The details of the site are as below:

- Site A (also known as the Tower Site), faces onto the Albion Street (in the West).
- Site B is a long and narrow (5m wide) between the Britons Protection Public House and the Jury's Inn.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The proposal seeks planning approval for two buildings, Site A and Site B.

Site A proposals include for a residential development of 72 2-bedroom apartments in a 26-storey tower building. Associated landscaping and ancillary accommodation is also to be included within the planning approval.

Site A will be accessible from Albion Street, with frontages at Great Bridge Water Street and Trumpet Street. An entrance hall, staff area, and space for vertical circulation dominate the ground floor. The proposed basement has purely been included to house the sprinkler tanks.

The first floor is primarily dedicated to ancillary services such as the refuse bin area and storage for bicycles. The remaining floors will house the 2-bedroom apartments. In addition, 72 resident cycle spaces plus 6 visitor cycling spaces, as well as two car parking spaces with Electric Vehicle (EV charging points) are proposed for the Scheme.

The following table shows the accommodation summary for Site A.

Table 2.1 – Accommodation Schedule Summary (Site A)

Floor	2 Bed Apartments
Ground	-
Lower Mezzanine	-
Upper Mezzanine	-
2 nd – 25 th Floor	72

It is proposed that Site B will also be a mixed-use scheme, with office space (152 sqm of floor area) on the 1st – 2nd floor and 4 apartments on the 2nd – 4th floor. Site B is accessible by pedestrians from the Great Bridgewater Street. One space for parking (with EV charging) is proposed and located at the rear of building with access from Trumpet Street.



3. POLICY AND GUIDANCE

3.1 Local Planning Policy

3.1.1 Manchester Core Strategy

Manchester's Core Strategy (CS) was adopted on 11th July 2012 and is the key Development Plan Document in the Local Development Framework (LDF).

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

- **Policy EN4 – Reducing CO2 Emissions by Enabling Low and Zero Carbon Development** calls for the use of sustainable building materials with low embedded carbon
- **Policy EN19 – Waste** calls for proposals to demonstrate their alignment with the Waste Hierarchy principles. In addition, the policy requires the provision of sustainable waste management measures that promote a close-loop system.

3.1.2 Greater Manchester Joint Waste Development Plan (2012)

The Plan's objective is for the movement of waste up the waste hierarchy in order to maximise the diversion of waste from landfills. In addition, the Plan recognises the need to adapt to climate change through measures that seek to improve energy efficiency and reduce CO2 emissions.

3.1.3 Places for Everyone Joint Development Plan Document (Emerging Policy)

The PfE Plan, currently in its consultation period, intends to set the vision for 2037 and sets an ambitious target for Manchester to become carbon neutral by 2038. Under its objective 7 'Playing our part in ensuring that Greater Manchester is a more resilient and carbon neutral city-region', all new developments to become carbon neutral by 2028.

Another of the Plan's ambitious targets is to create a circular and zero waste economy through its **Policy JP – 7 Resource Efficiency**, which calls for:

'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.'

A Zero Waste Strategy is also currently in development and will expand upon the measures that developments will need to comply against to demonstrate evidence of circular economy and zero waste principles.

In addition, **Policy GM-S 2 Carbon and Energy** will prescribe developments to include a carbon assessment to demonstrate how the design and layout of the development sought to maximise reductions in whole life CO2 equivalent carbon emissions.



3.2 Best Practice Guidance

3.2.1 The Waste Hierarchy

Department for Environment, Food and Rural Affairs (DEFRA) provides guidance on applying the waste hierarchy for any kind of business or development that generates, handles or treats waste.

The Waste Hierarchy is a tool that ranks waste management options (top to bottom) based on their associated environmental impacts, with 'Prevention' being the preferred option, and 'Disposal' being the least preferred option.

Figure 3.1 - DEFRA Waste Hierarchy Model



Source: www.defra.gov.uk

3.2.2 Circular Economy Principles for Building Design

The European Commission issued the 'Circular Economy – Principles for Building Design' guidance in 2020 to present a set of principles for stakeholders within the built environment sector. The objective of these principles is to help design sustainable buildings with the aim to create less waste during the lifecycle of the development and facilitate the reuse and recycling of materials.

The three core principles relate to:

Durability - buildings to be better designed and improved construction systems that can extend the longevity of the materials;

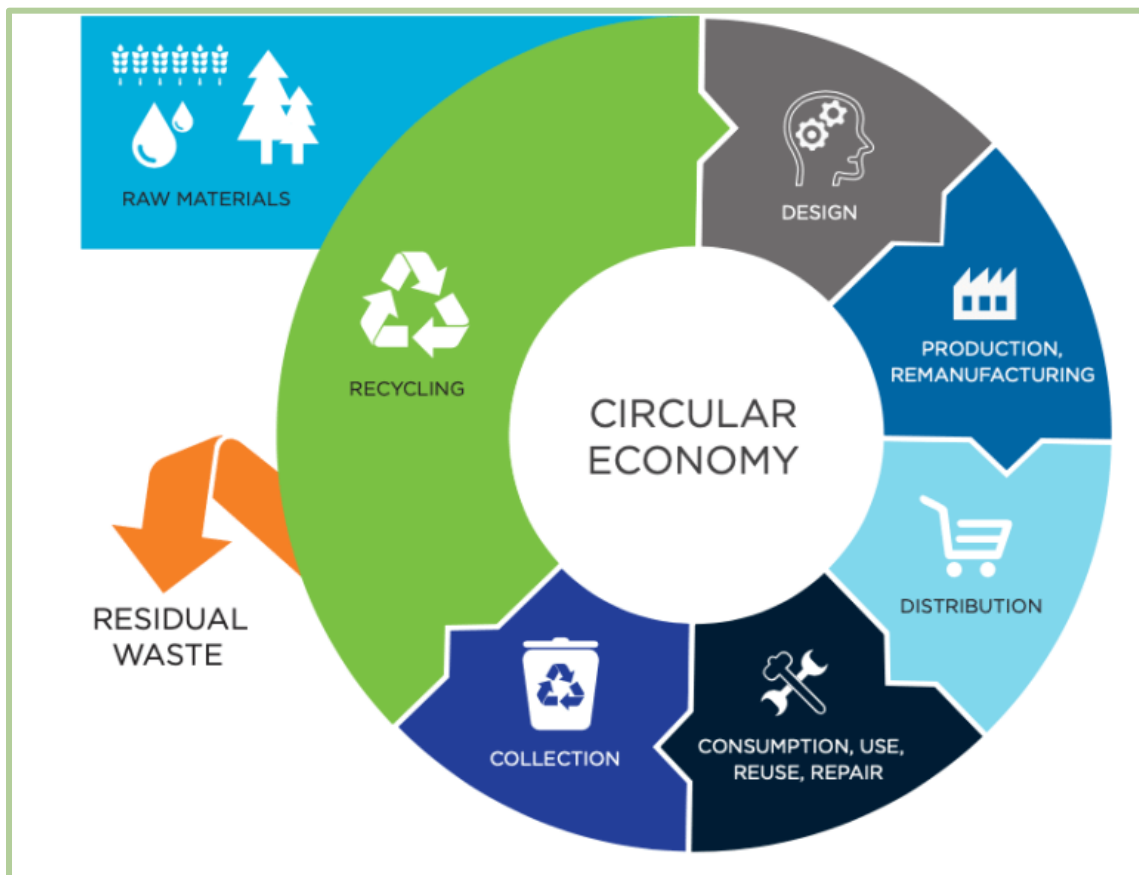
Adaptability - buildings to be adaptable for future transformations where the buildings and their components can be re-used and recycled; and



Management of Waste - buildings to encourage occupants to be able to reuse, reduce, recycle and recover products where possible and using recycled products in construction.

Figure 3.2 presents these principles in action, where the input of raw materials is limited, and solutions are proposed for the output in terms of residual waste.

Figure 3.2 - Principles of Circular Economy



Source: Ellen McArthur Foundation, 2021

3.2.3 Mayor of London Circular Economy Guidance

The London Plan 2021, through its policy 'S1 17 Reducing Waste and Supporting the Circular Economy' requires all new developments to submit a Circular Economy Statement in their planning applications on a bid to transition to zero carbon city by 2030.

To support this requirement, a guidance document (currently in draft) has been developed to help developers outline their circular economy commitments as well as structure their circular economy statements for planning approval.

This Statement has drawn from the guidance provided in this document and has applied the following key objectives that underpin and support the principles of circular economy:

- Conserve resources, increase efficiency and source sustainably;
- Design to eliminate waste (including design for adaptability); and
- Manage waste sustainably (all streams of waste).



4. CIRCULAR ECONOMY STATEMENT

4.1 Circular Economy Principles

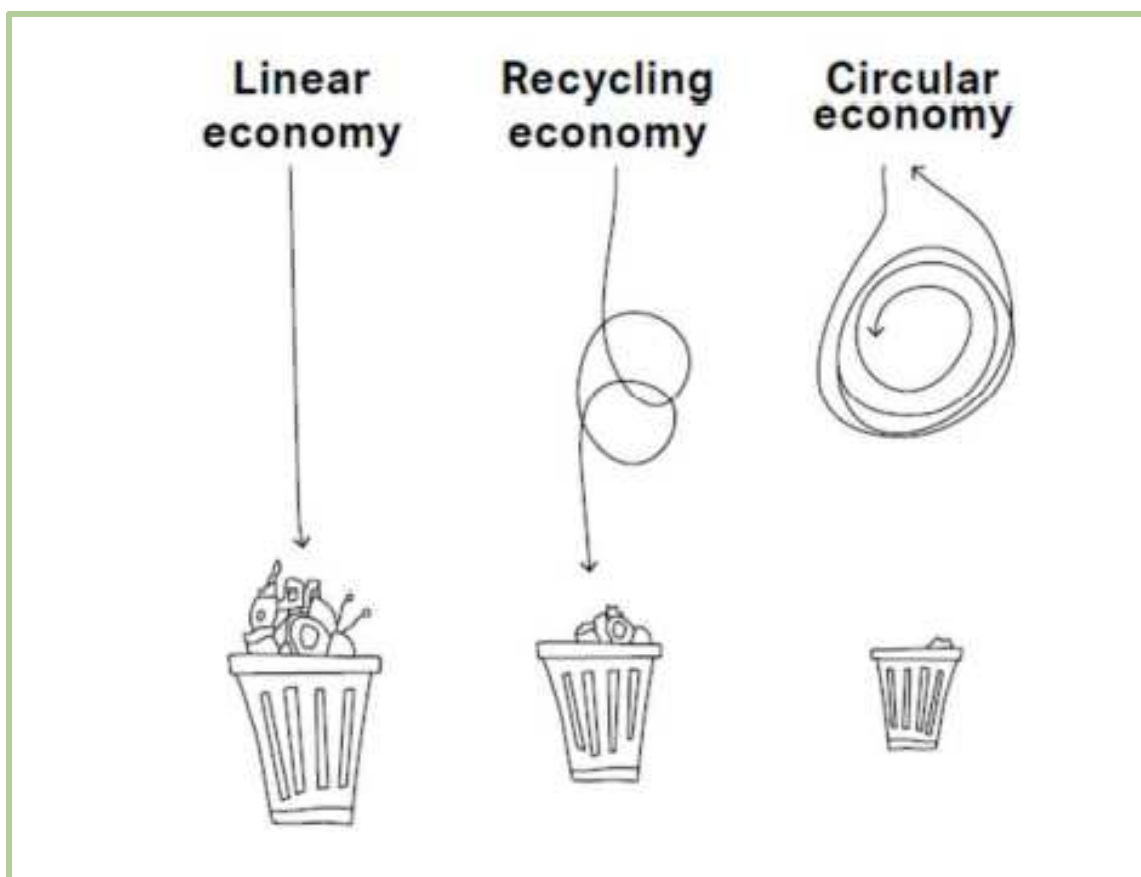
Circular Economy is typically defined as a close-loop system where resources are retained for as long as possible and re-used and recycled continuously so that there is minimal or zero waste sent to landfill.

Often the by-product of one material becomes the raw material for another activity, so that there is a reduced demand for additional resources, and as a result a smaller carbon footprint. It is envisaged that the emerging Places for Everyone Plan in Manchester will seek to follow the same pathway, especially given the city's aspirations for becoming zero carbon by 2038.

A Circular Economy differs significantly from a linear one, where resources are often used inefficiently and are sent to landfill, or when resources are recycled a number of times, but eventually end up in landfill.

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

Figure 4.1: A comparison of linear, recycling and circular economy models



Source: Mayor of London Circular Economy Guidance, 2021



4.2 Circular Economy Principles at Apex Tower

This Statement has been prepared in line with international and national best practice and aims to reflect the following key principles of circular economy, which have been included within the design of the development.

Table 4.2 – Key Principles of CE at Apex Tower

Key Principles of Circular Economy
Conserve Materials: • Reduce demand for materials and minimise quantities used. • Reduce the quantity of other resources – energy, water etc. Responsible Sourcing: • Source materials responsibly and sustainably. Waste Management: • Manage the amount of waste generated, from: ○ Excavation and construction activities. ○ Operational activities.

4.2.1 Reduce Demand for Materials and Minimise Quantities Used

In line with the Waste Hierarchy principles, the design team has carefully considered the reduction of materials as the primary approach towards material circularity within the design. As the design progress through the RIBA stages, the following objectives will be adhered to:

- Reduce the demand for materials with a high carbon footprint (such as concrete), especially in the production and transport stages of the project's lifecycle;
- Replace materials with high embodied carbon energy (such as aluminium) with alternatives that are less carbon intensive (e.g., timber and / or recycled steel);
- Extend the longevity of the materials (e.g., specifying appliances with extended warranty and lifespan);
- Use materials that have been previously recycled in the building itself or in the landscaped areas (e.g., use of recycled aggregates); and
- Minimise the use of materials that require more frequent replacement or refurbishment (such as carpets and floor coverings).

In addition to the above, the proposed development has a significantly reduced number of car parking spaces (see figure 4.2 below) and will rely on sustainable and alternative modes of transport.



Figure 4.2 – Car Parking Spaces at the proposed Apex Tower Development



4.2.2 Reduce Quantities of Other Materials

The energy strategy for the proposed development looks at a number of improvements in the building fabric, as well as the installation of energy efficient systems that will contribute to the reduced demand for energy.

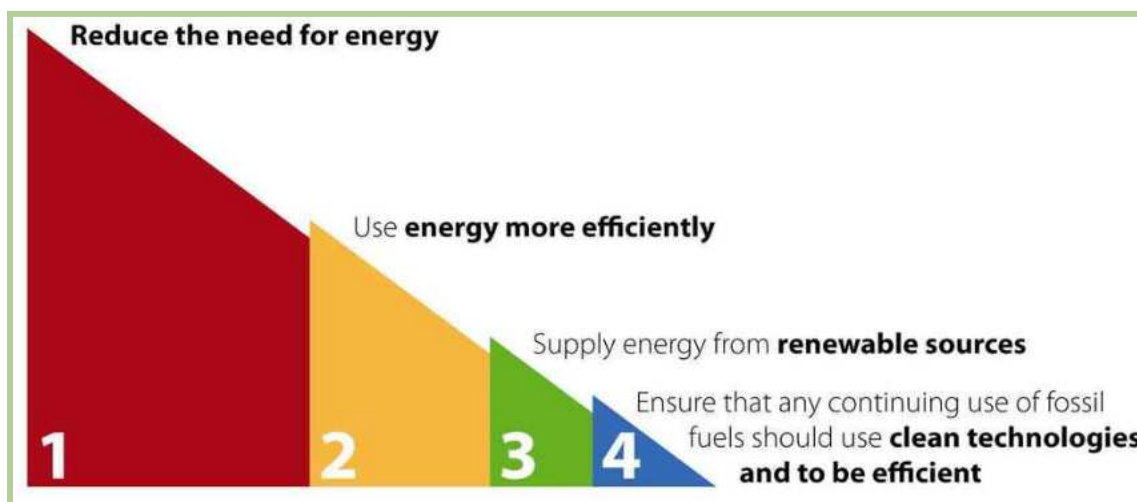
The following measures have been specified:

- Enhanced building fabric specification to limit heat loss (low U values);
- Air Source Heat Pumps (ASHPs) for space heating;
- Use of Photovoltaic (PV) panels on the roof;
- High efficiency electric systems for water heating;
- A and A+ rated white goods (with EU energy labelling);
- Electric car charging points;
- 100% low energy and/or LED internal lighting; and
- All external space lighting to be provided by dedicated energy efficient fittings and controls.

The strategy has been designed so that it is closely linked to the principles of the Energy Hierarchy and is heavily focussed on reducing the need for energy as the first principle in the hierarchy.



Figure 4.3 – The Energy Hierarchy



In addition, a number of design measures will be specified to reduce consumption of potable water, such as:

- 'A' rated goods for water conservation;
- Low-flow water fixtures (taps, showerheads, dual flush WCs and low volume baths); and
- Landscape strategy that carefully considers plant selection with low water requirements.

4.2.3 Responsible Sourcing

Materials, especially those with high levels of embodied carbon (such as aggregate and asphalt), will be sourced locally and / or by sea where possible. Other material such as timber will be procured from FSC (Forest Stewardship Council) certified sources or 'Grown in Britain' standard. The developer will also seek to contract local supply of workers.

In addition, finishing materials such as paints and coatings, as well as furnishing will be specified to contain zero or low VOC content and low levels of GWP for insulation materials.

4.2.4 Management of Waste – Construction & Operational

Construction Phase:

A Construction Management Plan will seek to maximise the re-use and recycling of waste and minimise the volume of construction waste sent to landfill. This will be achieved by following best practice techniques to prevent and minimise waste arising during the design and construction phases of the development (such as training the staff and segregating the waste at source on each floor of the building).

Any waste generated from excavation activities (such as soil) will be used within the softscape surfaces of the development, where possible.

Operational Phase:

The waste from the operational phase of the project will be managed through the implementation of a waste management strategy. The strategy will be designed to allow for the maximum recycling rate possible, in line with the requirements of the Council. This will be achieved through the following steps:



- Waste will be segregated at source (into general waste and recyclables) to encourage a high rate of recyclability;
- Satellite bins will be placed on each floor of the building, where residents will be expected to deposit their waste and recyclables;
- Waste generated at the ground floor and basement will be transferred to the refuse room on the first floor by the staff;
- A management company will be responsible for transferring the waste from the floors to the main refuse area on the first floor via the lifts;
- Waste will be stored in 1100 litre capacity euro bins (for general waste and recyclables);
- Building management will be responsible for transferring the bins to loading bays for collection on a weekly basis. The Council will be responsible for the collection of all domestic waste; and
- Signage will be posted across the development to show the location of the bins and information on recycling will be provided to all occupants of the scheme.

The image below (on the left) shows how the waste will be collected at each floor through the use of satellite bins and transferred via the lifts to be stored on the ground floor (image on the right).

Figure 4.4 and Figure 4.5 – The Operational Waste Management Strategy for Apex Tower



5. CIRCULAR ECONOMY MONITORING FRAMEWORK

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

Table 5 – Monitoring Framework for Apex Tower Development

Objective	Activity	Lead / Responsibility	Timeline
Reduce Demand for Materials and Minimise Quantities Used.	Issue a Pre-Qualification Questionnaire (PQQ) to check compliance of suppliers with the Developer's Circular Economy commitments. Bill of Materials to benchmark quantity of recycled content and re-used building materials.	Developer / Construction Contractor	Pre-Construction to Post-Completion
Source Materials Responsibly and Sustainably.	Request for Environmental Product Declarations (EPD) for recycled products, and products with low embodied carbon.	Developer / Construction Contractor	Construction Phase
Reduce the amount of construction waste.	Construction Environmental Management Plan, with a Construction Waste Management Strategy to maximise diversion of construction waste from landfills.	Construction Contractor	Construction Phase
Reduce the amount of operational waste.	Operational Waste Management Plan.	Operator	During occupancy
Reduce the Quantity of Other Resources (energy and water for example).	RICS whole life carbon assessment – a more detailed iteration of the exercise that would also include operational energy use. Post Completion Report with supporting evidence (audits, tests, specifications etc.) to show outcomes against targets set out (for energy and water).	Developer / Operator	Post Construction / During Occupancy



6. CONCLUSION

The design proposed for the Apex Tower Development has been assessed against the key principles of Circular Economy, which have been influenced by national guidance and local planning policy framework.

These principles were based around the following criteria:

Conserve Materials:

- Reduce demand for materials and minimise quantities used
- Reduce the quantity of other resources – energy, water etc.

Responsible Sourcing:

- Source materials responsibly and sustainably.

Waste Management:

- Reduce (and manage) the amount of waste generated, from:
 - Excavation and construction activities.
 - Operational activities.

The design meets the above criteria through the following measures:

- Reduce quantities of materials with high carbon intensity such as concrete and asphalt with sustainable alternatives such as timber and recycled aggregates;
- Reduce or avoid the use of materials with short life spans that require more frequent replacement and refurbishment;
- Procure materials locally, and where possible from certified and sustainable sources;
- The enhanced fabric specification (over the baseline) and the installation of energy and water efficient systems will mean that the proposed development has a smaller carbon and ecological footprint, as less resources (for example energy, water and land) are utilised;
- The use of renewable energy technology such as PVs and ASHPs will further reduce the scheme's reliance on the production of fossil fuels;
- The implementation of the construction waste management plan will help to divert waste from landfills;
- The implementation of the operational waste management facility has been designed to encourage the occupants to segregate their waste at source and maximise the potential for recycling.

In conclusion, the Apex Tower scheme is aligned with the principles of Circular Economy, accords with national best practice and supports the vision for Manchester City to become a zero-waste city in the near future.

