



House of Social 1 Limited

PLOT 10B FIRST STREET, MANCHESTER

Circular Economy Statement

HS-WSP-A180-Rp-XX-001





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EXECUTIVE SUMMARY

This Circular Economy Statement (CES) is submitted in support of the planning application for the Applicant, House of Social (Hereafter “the Applicant) for the proposed works at the site of Plot 10b First Street, Manchester (hereafter referred to as the “Proposed Development”). The Proposed Development comprises a 14-storey student accommodation providing 576 student residences along with an associated food hall, gym, cycle store, laundry and amenity spaces.

WSP has been commissioned by the Applicant to prepare the CES for the Proposed Development. This CES has been produced to demonstrate how the design and construction of the development addresses the challenges of the climate emergency by prompting resource efficiency and adopting a circular economy approach that contributes to sustainable development.

This CES reflects the structure and content of the Greater London Authority (GLA) London Plan Guidance which offers a robust framework to collate and present circular practices throughout the design of any development. Local requirements have also been adopted, where identified, to ensure compliance with local planning requirements.

Table 0.1 lists out the minimum information required from the London Plan Guidance on Circular Economy Statements, focusing on the Full Planning Application.

Table 0.1 - Adaptable table from London Plan Guidance: Circular Economy Statements

	Requirement by application stage	Pre-application (Suggested)	Outline application	Full Application /Reserved matters	Post-construction
RIBA Stage	0 to 2	0 to 2	2 to 3	4 to 7	N/A
CE Targets	Encouraged	YES	YES	YES	Yes
CE design Approaches	YES	YES	YES	N/A	YES
CE design Principles	YES	NO	NO	NO	YES
CE design Principles by building layer	NO	YES	YES	NO	YES
Pre-redevelopment Audit	Encouraged	YES	YES	N/A	NO

Pre-Development Audit	Encouraged	YES	YES	N/A	NO
Bill of Materials	NO	YES	YES (Estimated)	YES (Estimated are provided)	YES
End of Life Strategy	NO	NO	YES	Encouraged	NO
Operational Waste Management Plan	NO	NO	YES	Encouraged	NO
Recycling and waste report	NO	YES (Estimated)	YES (Estimated)	YES (Actual)	YES
Lessons learnt and key achievements	N/A	N/A	N/A	YES	YES

SUMMARY OF CIRCULAR ECONOMY COMMITMENTS

CONSERVE RESOURCES

The Proposed Development has been designed to ensure that material and resources are effectively used, managed, and reduced as far as possible, in accordance with the GLA's first principle of circular economy. The applicant will explore all opportunities to ensure that material quantities and other resources are minimised and both responsibly and locally sourced throughout the development process. The Applicant will aspire to ensure that at least **20%** of new material used on site will contain recycled content by total value which is in accordance with the GLA target.

ELIMINATE WASTE

The Proposed Development has been designed to eliminate waste generation as far as possible, with consideration to the full lifespan of the building, in accordance with the GLA's second principle of circular economy. The development has been designed to be flexible and adaptable, therefore increasing the building durability and longevity, and consequently reducing any need for future construction, demolition, or excavation waste arising. We will aspire to ensure that **95% of construction and excavation waste will either be reused, recycled, and diverted from landfill** however it should be noted that the existing site is fundamentally free of any existing buildings, consisting only of 4 small scale structures, and so demolition and excavation materials will be limited.

MANAGE WASTE SUSTAINABLY

- The Proposed Development has been designed to manage waste sustainably. A Construction Environment Management Plan¹ has been developed which outlines how construction wastes will be segregated, collected and managed across the works on the Proposed Development. A Waste Servicing Strategy Report has been produced² and can be submitted alongside the application which outlines how operational wastes will be segregated, collected and managed when the building is in use. Sufficient and compliant bin areas and appropriately sized bins will be provided at both the construction and operational stages to help maximise recycling and the reuse of municipal waste in accordance with best practice and local requirements. Moreover, a target to recycle 65% municipal waste & 75% business waste is anticipated to be achieved by 2030. In its Sustainable Consumption & Production Plan for 2022-2025³, the Greater Manchester Combined Authority has also set targets as part of priorities to move towards a circular economy and manage waste more sustainably. These include:
 - a 38% reduction in industrial emissions by 2025 and a 50% to 77% reduction by 2038;
 - a reduction in raw material consumption; and
 - a 65% recycling rate for municipal solid waste and no more than 10% to landfill by 2035.

The circular economy principles, and overarching commitments that were adopted on the Proposed Development, are presented in Section 6 and summarised in Table 0.2. The principles reflect the Greater London Authority guidance (GLA guidance), and reflects the principles set out in the Environmental Statement regarding climate change and waste.

Table 0.2 Circular economy principles and commitments

Principle	Commitments
Conserve resources, increase efficiency and source sustainably	Minimise the quantities of materials used
	Minimise the quantities of other resources used (e.g., technological assets)
	Specify and source materials and other resources responsibly and sustainably (including through the use of locally sourced and recycled material)
	Reuse of components and materials with minimal processing
	Material selection based on life expectancy of the building and embodied resource demands and/or maintenance requirements.

Principle	Commitments
	Efficient fabrication through the use of modern methods of construction (e.g., modular systems, precision manufacturing etc.)
	Use of lightweight materials
Design to eliminate waste (and for ease of maintenance)	Design for longevity and durability
	Designing for adaptability and flexibility
	Designing for replaceability or disassembly
	Design out construction, demolition, excavation and municipal waste arising
	Design building shape and form for efficient material use during construction and operation
Manage waste sustainably and at the highest value	Manage/minimise demolition and excavation waste
	Manage/minimise construction waste
	Manage/minimise municipal waste (and industrial waste) during operation, if applicable)
	Minimise operational water use and other 'peripheral' materials ⁴ during construction
Preserving and regenerating the natural environment	Use of materials that can be returned to natural nutrient cycles once their function has been fulfilled.
	Use of carbon-absorbing materials

Sourcing and specification

This section provides a summary of information on the key materials to be specified and used on the Proposed Development; it provides further evidence of how resource efficiency and circular economy principles have been implemented when specifying materials and when sourcing materials from suppliers.

¹ Renaker (2023). Construction Environment Management Plan. Planning Condition 5. Revision C- July 2023

² Vectos (2023). Waste Servicing Strategy Report: House of Social 1 Ltd Plot 10b, First Street. VN222431

³ Greater Manchester Combined Authority (2022). Sustainable Consumption & Production Plan 2022-2025.

⁴ Peripheral materials include materials that are used during design/ construction but are not incorporated within the structure – this could include water use, plastic sheeting and machinery etc.

In this, the Applicant has engaged early with its design team, delivery partners and contractors to refine the strategy for responsible sourcing⁵, and – as a result – requirements and targets for materials have been set (Table 0.3). The current strategy and accompanying targets will be reviewed and updated as the design evolves.

Table 0.3 Targets set for key materials

Material	Type	Targets and specification
Concrete	Cement	Concrete will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “very good” or equivalent ⁶ . Use of Ground Granulated Blast-furnace Slag (GGBS) - in place of Portland cement - will be encouraged where available. For example, the Applicant will aspire to use high GGBS mixes in the large ground pours where suitable. The Applicant will aspire to use 20-30% GGBS for other elements where possible and where high GGBS is available. Provision of data on the embodied carbon of all concrete mixes (in accordance with BS EN 15978:2011 Sustainability of construction works) will be required of suppliers, as part of procurement good practice.
	Aggregate	Recycled aggregates will be used where applicable and where permitted, in accordance with the Structural Specification for the Proposed Development ⁷ . All quarry products should meet the requirements of the BRE BES 6001 framework standard for Responsible Sourcing of Construction Products, or similar. Quarry products supplied should therefore be able to show a clear chain of custody from source to point of use ⁸ .
Masonry	Masonry	Masonry will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good” or equivalent ⁹ .

⁵ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

⁶ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

⁷ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

Material	Type	Targets and specification
		The materials on the Proposed Development achieve the following grades: <ul style="list-style-type: none"> Coloured Mortars – Facing Bricks – Crest Sandringham, Red Multi – whilst these materials do not hold BES 6001 certification; the Applicant has produced a dedicated sustainability policy/statement Masonry Support – IG/ Keystone Group – whilst these materials do not hold BES 6001 certification; the Applicant has produced a dedicated sustainability policy/statement and are seeking BES 6001 accreditation during 2024. Wetcast concrete architectural banding and window details.
Steel	Reinforcing steel	The Applicant will ensure that steel reinforcement is purchased through fabricators that adopt responsibly sourcing to BES 6001 through the Eco-Reinforcement sector scheme. Schemes such as Eco-Reinforcement which is a third-party certification scheme which assesses and recognises responsibly sourced reinforcing steel products should be considered ¹⁰ . Reinforcing steel will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good”, or equivalent. Reinforcing steel that is used across this proposed development will aspire to contain 90-95% recycled steel material,; any steel sourced from Electric Arc Furnace processes will comprise 100% recycled steel content. The volume and proportion of these elements, as a percentage of all steel used, can be calculated as the design evolves.
	Structural steel	Structural steel should, where possible, be sourced from either a BES 6001- Framework Standard for Responsible Sourcing - or an EMS certified supplier to a certification standard of “very good”

⁸ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

⁹ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

¹⁰ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

Material	Type	Targets and specification
		<p>with a minimum content from ResponsibleSteel™ Certified Steel (or equivalent) or Low Embodied Carbon Steel¹¹.</p> <p>Grade S355 steel will generally be adopted in the design and in accordance with the following technical delivery requirements unless otherwise specified:</p> <ul style="list-style-type: none"> BS EN 10 025 Hot rolled products of structural steels - Technical delivery conditions for non-alloy structural steels (Parts 2 to 6) BS EN 10210-1 Hot finished structural hollow sections of non-alloy and fine grain steels; and BS EN 10219-1 Cold formed welded structural hollow sections of non-alloy and fine grain steels).
Timber	Timber	Timber will be sourced from legal and sustainable sources as defined by the UK Government Central Point of Expertise on Timber, evidenced through a scheme recognised by CPET, such as the Forest Stewardship Council (FSC), alternatively Cat B where alternative documentary evidence is provided ¹² .
PVC	PVC	<p>The Applicant will seek sustainable sources of PVC materials. The Applicant will ensure that:</p> <ul style="list-style-type: none"> Suppliers have phased out, or be working towards and reporting on, the phasing out of heavy metals such as lead, mercury or cadmium. PVC products must be recyclable, and all waste produced during the manufacturing process must be recycled. All chemicals used in the production of virgin PVC must be registered for use under the regulations with the European Chemical Agency (REACH). Either operating a take-back scheme that offers a closed-loop recycling system or identifying a mechanical recycling system for installation waste.

¹¹ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

¹² Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

Material	Type	Targets and specification
Plasterboard	Plasterboard	Plasterboard should be sourced from manufacturers with certification under BES 6001 ¹³ .
Aluminium	Aluminium	Aluminium should be sourced from responsible sourcing schemes and traceability records should be provided due to the complexity of tracking global supply ¹⁴ .

Summary of the Circular Economy Targets:

The GLA guidance sets minimum targets which should be aspired to below:

- 20% of new materials used should contain reused/recycled content by value
- 95% of construction & demolition waste should be reused/recycled/diverted from landfill
- 95% of excavation waste should have beneficial use
- 65% of municipal waste should be recycled by 2030 (applicable to retail, café, residential spaces)
- 75% Business waste should be recycled by 2030 (applicable to office space)

This Circular Economy Statement also considers local targets; in its Sustainable Consumption & Production Plan for 2022-2025¹⁵, the Greater Manchester Combined Authority set targets as part of priorities to move towards a circular economy and manage waste more sustainably including a 65% recycling rate for municipal solid waste and no more than 10% to landfill by 2035. All the above targets (excluding demolition, due to there being limited existing infrastructure currently on site) are being pursued by the Applicant. Progress, and opportunities, will be continually reviewed across the construction and operation of the Proposed Development. This report highlights how they will be achieved, performance monitored, and the metrics that will be used to do this.

IMPLEMENTATION APPROACH

The CES will be reviewed throughout all design stages of the project, alongside the following reports in order to achieve and exceed Circular Economy targets:

- Bill of Materials – Design Team
- Responsible Sourcing of Construction Products-Sustainability Manager RIBA4-6
- Construction Environmental Management Plan-Sustainability Manager
- Operational Waste Management Strategy–Sustainability Manager/ Waste Champion–RIBA 5/6
- Moreover, ‘as built’ figures will be reported at practical completion, as requested against each of the key commitments made in the document.

¹³ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

¹⁴ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

¹⁵ Greater Manchester Combined Authority (2022). Sustainable Consumption & Production Plan 2022-2025.

1 INTRODUCTION



Figure 1.1 Image of the Proposed Development at First Street, Manchester

1.1 OVERVIEW

This Circular Economy Statement (CES) is submitted to address the following planning condition:

‘(3 b) Prior to above ground development submission of a Construction Environmental Management Plan (CEMP)- Circular Economy Statement (Materials) to include details of the strategy for securing more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction and how this would be achieved through the selection of materials with low environmental impact throughout their lifecycle in line with the Monitoring and Mitigation as set out in the Plot 10, First Street Environmental Statement (Chapter 7) February 2023 stamped as received on 01-03-23;’

This CES sets out the “strategy for securing more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction and how this would be achieved through the selection of materials”. A separate chapter then details how the Proposed Development will monitor and mitigate impacts, with a focus on elements specific to material usage.

1.2 STATEMENT PURPOSE AND STRUCTURE

The purpose of this statement is to demonstrate how the development has and will continue to incorporate circular economy measures through design and construction activities, into the lifecycle of the assets and its componentry. This strategy is in alignment with principles and policies on circular economy as set out by various organisations such as the GLA, the Waste and Resources Action Programme (WRAP). It also aligns to any relevant local requirements. The structure of this strategy is as follows:

- **Section 2 - Development description:** the Proposed Development location, description, context within local planning and key design choices and evolution.
- **Section 3 - Circular design method statement:** outlines the relevant circular economy policy context, and key definitions and design principles that have been considered to adopting circular practice in support of a sustainable and ‘future ready’ development.
- **Section 4 - Circular economy targets:** sets the targets that are expected, and which will be aspired to, across the Proposed Development.
- **Section 5 – Circular economy design approach:** sets the context for how circular economy practices are to be considered against the layers of the Proposed Development, and across the lifespan of the building.
- **Section 6 – Circular Economy design principles by building layer:** sets the actions taken across each layer, and lifecycle stage, of the Proposed Development to minimise material usage.
- **Section 7 – Sourcing and Specification** which outlines the actions to be taken to ensure sustainable materials are responsibly sourced for the Proposed Development
- **Section 8 – Monitoring and Mitigation** which details how the Applicant will monitor and mitigate the impacts of the Proposed Development, where such risks and opportunities apply to materials.
- **Section 9 – Recycling and Waste reporting** showing how wastes will arise, be monitored and reported on an ongoing basis.

2 DEVELOPMENT DESCRIPTION

The Proposed Development comprises a 14-storey student accommodation scheme providing 576 student residences along with an associated food hall, gym, cycle store, laundry and amenity spaces.

The site covers 0.3 hectares and is bound by River Street to the north, River Street and vacant land to the east, Hulme Street to the south, and the development Plot 10a to the west. There are no permanent structures on the site, and no trees on or adjacent to the site.

The Proposed Development would make a significant contribution to the supply of student accommodation within the Area.

Table 2.1 Development Parameters

Measurement	Proposal
Site Area	0.3 hectares
Development Floorspace	20,382 sqm of Total Development Floorspace;
Residential (Use Class C3)	Clusters of 5 and 6 bed clusters providing 576 bedspaces
Catering facilities	Food hall of 1304sqm floorspace (709sqm Ground Floor & 595sqm Mezzanine) offering food and beverage for the public including a take-away use
Car and Cycle Parking Spaces	Circa 88 secure double stacked cycle parking places (15%) plus 6 x Sheffield Stands in the public realm that offers cycle parking for 12 cycles. There is no car parking provided.
Additional Facilities	Gym, cycle store, laundry and amenity spaces.

2.1 DESIGN EVOLUTION

The original proposal, envisaged in 2018, outlined plots 10a and 10b running east to west at a height of up to 17 commercial storeys. The new north to south layout that has since been adopted will allow the buildings to respond more sensitively to surrounding uses. During a pre-application meeting, Manchester City Council indicated a preferred lower height. The building height was reduced to 14 storeys, stepping down to Macintosh Mills. The image below shows the original building height against the final building.

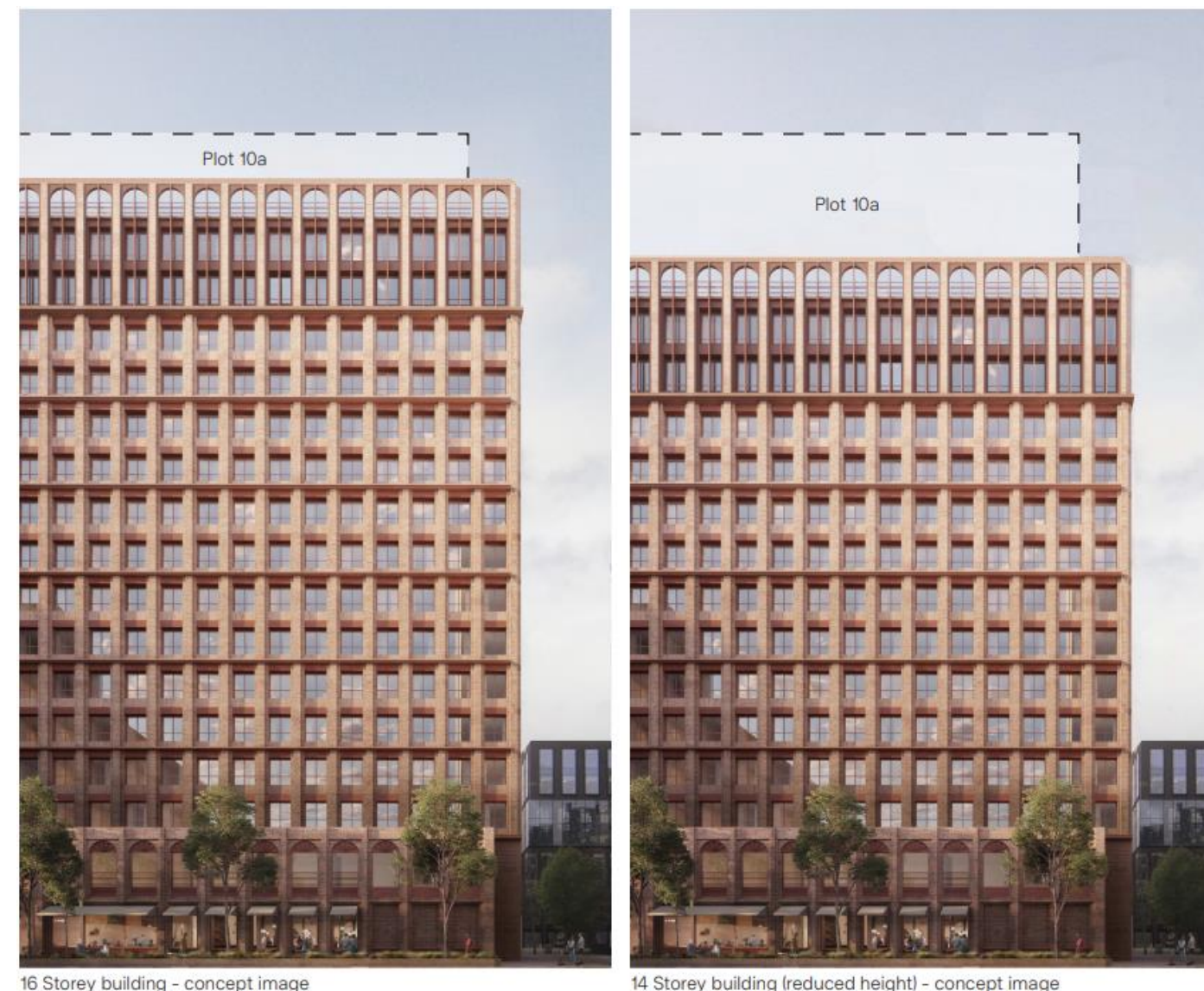


Figure 2.1 Original building height against the final building height

3 CIRCULAR ECONOMY METHOD STATEMENT

The next section (3) will cover the approach and the goals that were considered to achieve a circular economy for the development and give details of the specific targets that are set, following the London Plan CES Guidance, in relation to the six circular economy principles below. This section will also give details of how the measures identified will be incorporated and monitored during the whole design process, up to practical completion. The GLA's CE Principles are:

- Building in layers-ensuring that different parts of the building are accessible and can be maintained and replaced where necessary

- Design out waste-ensuring that waste reduction is incorporated from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials
- Design for longevity
- Design for adaptability & flexibility
- Design for disassembly
- Use systems, elements & materials that can be reused and recycled

The following design measures/principles have been carefully considered during the design of the Proposed Development, in no order of importance:

- Minimisation of excavation waste
- Offsite/modular construction
- Material efficiency
- Recycled content
- Material circularity
- Structural and fabric resilience
- Life-cycle assessments
- Low carbon construction
- Lean design principles
- Adaptability
- Flexibility
- Responsible procurement
- Suppliers take-back scheme
- Sustainable sourcing
- Local sourcing
- Supply chain engagement
- Tenant engagement
- Flexible and easily accessible waste segregation and storage spaces
- Waste minimisation schemes
- Consolidated waste schemes
- Smart logistics

3.1 POLICY CONTEXT REVIEW

In March 2022, the latest version of the GLA Guidance was adopted, which provides a policy framework for (inter alia) delivering a circular built environment.

For example, Policy SI7 'Reducing waste and supporting the circular economy,' includes specific requirements and targets for integrating circular economy principles into all stages of referable developments. To make this a reality, waste planning authorities and industry are expected to collaborate to achieve the following goals:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible.
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products.
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026.
- Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food
- To promote circular economy outcomes and achieve net zero-waste, any applicable applications should include a CES.

Other relevant national waste policies which have relevance to this CES, include:

- Ministry of Housing, Communities and Local Government (MHCLG), National Planning Policy Framework (2019).
- Ministry of Housing, Communities & Local Government (MHCLG), National Planning Policy for Waste (2014).
- Department for Environment, Food and Rural Affairs (DEFRA), Our Waste, Our Resources: A Strategy for England (2018); and
- HM Government, A Green Future: Our 25 Year Plan to Improve the Environment (2018).

LOCAL POLICY

Manchester's ambition and vision for the city is to be in the topflight of world-class cities by 2025¹⁶. The new Manchester Local Plan 'Core Strategy 2021 to 2027'¹⁷, is a plan for the future development of the Manchester city area and sets out the long-term strategic policies that accord. The table below outlines the strategies of the Local Plan that are relevant to this CES.

TABLE 3.1 SCHEDULE OF LOCAL POLICIES OF CORE STRATEGY 2012 RELEVANT TO CIRCULAR ECONOMY STATEMENT

Policy Reference	Policy Title	Policy Description
Policy EN 9	Green Infrastructure	New development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with

¹⁶ Manchester City Council (2021) [State of the City Report 2021](#)

¹⁷ Manchester City Council (2012) [Core Strategy 2012-2027](#)

Policy Reference	Policy Title	Policy Description
		current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.
Policy EN 19	Waste	<ul style="list-style-type: none"> 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 of new waste management facilities within the District to plan for and, where appropriate, use sustainable modes for waste transport, including use of modes such as rail and the Manchester Ship Canal. 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. Have full regard to the economic and environmental benefits that well designed and run, waste management facilities can bring to the District, subject to any conditions required to protect the amenity of existing adjacent users. 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.

Policy Reference	Policy Title	Policy Description
		<ul style="list-style-type: none"> Encourage communities to take responsibility for the waste they create through the provision of accessible facilities.
Guide to Development in Manchester	Environmental Standards	Section 4 of the guide states that developers will be expected to submit a statement on how their proposal will achieve the environmental standards set out in the document. This Environmental Standards Statement will clearly assist in demonstrating how the planning policy context has affected the development of the Proposed Development as required in the process of producing the Design and Access Statement.

4 CIRCULAR ECONOMY TARGETS

The Applicant will seek to achieve the targets below:

- 20% of new materials used should contain reused/recycled content by value
- 95% of construction & demolition waste should be reused/recycled/diverted from landfill
- 95% of excavation waste should have beneficial use
- 65% of municipal waste should be recycled by 2030 (applicable to retail, café, residential spaces)
- 75% Business waste should be recycled by 2030 (applicable to office space)

In its Sustainable Consumption & Production Plan for 2022-2025¹⁸, the Greater Manchester Combined Authority has also set targets including:

- a 65% recycling rate for municipal solid waste; and
- no more than 10% to landfill by 2035.

The Applicant will seek to meet both the GLA 2030 target which is more ambitious than those from the Greater Manchester Combined Authority.

¹⁸ Greater Manchester Combined Authority (2022). Sustainable Consumption & Production Plan 2022-2025.

Table 4.1 Targets and specification set for key materials

Material	Type	Targets and specification
Concrete	Cement	<p>Concrete will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “very good” or equivalent¹⁹.</p> <p>Use of Ground Granulated Blast-furnace Slag (GGBS) - in place of Portland cement - will be encouraged where available. For example, the Applicant will aspire to use high GGBS mixes in the large ground pours where suitable. The Applicant will aspire to use 20-30% GGBS for other elements where possible and where high GGBS is available.</p> <p>Provision of data on the embodied carbon of all concrete mixes (in accordance with BS EN 15978:2011 Sustainability of construction works) will be required of suppliers, as part of procurement good practice.</p>
	Aggregate	<p>Recycled aggregates will be used where applicable and where permitted, in accordance with the Structural Specification for the Proposed Development²⁰.</p> <p>All quarry products should meet the requirements of the BRE BES 6001 framework standard for Responsible Sourcing of Construction Products, or similar. Quarry products supplied should therefore be able to show a clear chain of custody from source to point of use²¹.</p>
Masonry	Masonry	<p>Masonry will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good” or equivalent²².</p> <p>The materials on the Proposed Development achieve the following grades:</p> <ul style="list-style-type: none"> Coloured Mortars – Tarmac Mortars – compliant with BES 6001 Excellent Rating Facing Bricks – Crest Sandringham Red Multi – whilst these materials do not hold BES 6001 certification; the

Material	Type	Targets and specification
		<p>Applicant has produced a dedicated sustainability policy/statement</p> <ul style="list-style-type: none"> Masonry Support – IG/ Keystone Group – whilst these materials do not hold BES 6001 certification; the Applicant has produced a dedicated sustainability policy/statement, and are seeking BES 6001 accreditation during 2024. Wetcast concrete architectural banding and window details.
Steel	Reinforcing steel	<p>The Applicant will ensure that steel reinforcement is purchased through fabricators that adopt responsibly sourcing to BES 6001 through the Eco-Reinforcement sector scheme. Schemes such as Eco-Reinforcement which is a third-party certification scheme which assesses and recognises responsibly sourced reinforcing steel products should be considered²³.</p> <p>Reinforcing steel will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good”, or equivalent.</p> <p>We will aspire to ensure that reinforcing steel that is used across this proposed development will contain 90-95% recycled steel material, insofar as possible; any steel sourced from Electric Arc Furnace processes will comprise 100% recycled steel content. The volume and proportion of these elements, as a percentage of all steel used, can be calculated as the design evolves.</p>
	Structural steel	<p>Structural steel should, where possible, be sourced from either a BES 6001- Framework Standard for Responsible Sourcing - or an EMS certified supplier to a certification standard of “very good” with a minimum content from ResponsibleSteel™ Certified Steel (or equivalent) or Low Embodied Carbon Steel²⁴.</p> <p>Grade S355 steel will generally be adopted in the design and in accordance with the following technical delivery requirements unless otherwise specified:</p>

¹⁹ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

²⁰ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

²¹ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

²² Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

²³ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

²⁴ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

Material	Type	Targets and specification
		<ul style="list-style-type: none"> BS EN 10 025 Hot rolled products of structural steels - Technical delivery conditions for non-alloy structural steels (Parts 2 to 6) BS EN 10210-1 Hot finished structural hollow sections of non-alloy and fine grain steels; and BS EN 10219-1 Cold formed welded structural hollow sections of non-alloy and fine grain steels).
Timber	Timber	Timber will be sourced from legal and sustainable sources as defined by the UK Government Central Point of Expertise on Timber, evidenced through a scheme recognised by CPET, such as the Forest Stewardship Council (FSC), alternatively Cat B where alternative documentary evidence is provided ²⁵ .
PVC	PVC	<p>The Applicant will seek sustainable sources of PVC materials. The Applicant will ensure that:</p> <ul style="list-style-type: none"> Suppliers have phased out, or be working towards and reporting on, the phasing out of heavy metals such as lead, mercury or cadmium. PVC products must be recyclable and all waste produced during the manufacturing process must be recycled. All chemicals used in the production of virgin PVC must be registered for use under the regulations with the European Chemical Agency (REACH). Either operating a take-back scheme that offers a closed-loop recycling system or identifying a mechanical recycling system for installation waste.
Plasterboard	Plasterboard	Plasterboard should be sourced from manufacturers with certification under BES 6001 ²⁶ .
Aluminium	Aluminium	Aluminium should be sourced from responsible sourcing schemes and traceability records should be provided due to the complexity of tracking global supply ²⁷ .

5 CIRCULAR ECONOMY DESIGN APPROACH

CIRCULAR ECONOMY DEFINITION

There are a number of different definitions of the circular economy. The following represent industry recognised definitions which have been used to prepare and shape this CES. As a starting point, the Ellen MacArthur Foundation defines circular economy as²⁸:

“a systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution.”

Therein, the circular economy is based on three principles, driven by design:

- ‘Eliminate waste and pollution’,
- ‘Circulate products and materials’ (at their highest value) and
- ‘Regenerate nature’.

These principles are underpinned by a transition to renewable energy and materials. Therein, a circular economy decouples economic activity from the consumption of finite resources and removes, insofar as possible, the creation of waste. It is a resilient system that is good for business, people and the environment.

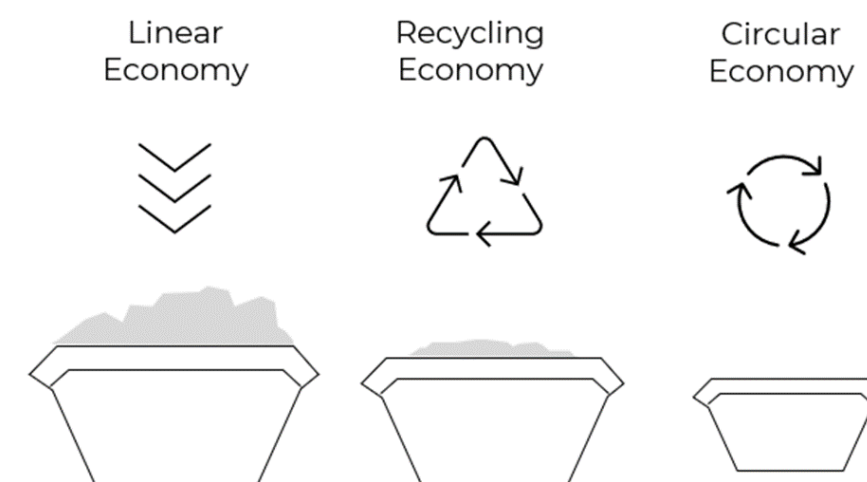


Figure 5.1 Difference Between Linear Economy, Recycling Economy and Circular Economy

²⁵ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xp-A-Fi_10_10-00502

²⁶ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xp-A-Fi_10_10-00502

²⁷ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xp-A-Fi_10_10-00502

²⁸ Ellen MacArthur Foundation (2023) [What is a circular economy?](#)

To achieve this transition, a framework of principles has been established in the GLA Guidance. For buildings, this entails developing a regenerative built environment that prioritises retention and refurbishment over demolition and rebuilding. It also involves designing buildings that are durable and adaptable to prolong their lifespan, and to enable the recovery, reuse or recycling of components and materials.

Due to the Proposed Development being a new development, with no significant demolition or excavation works, the relevant Circular Economy design approaches focus upon the use of design principles to minimise material usage. Figure 5.2 shows some of the approaches adopted for the new development. A summary of the design approaches adopted for each building layer are summarised in Section 6.

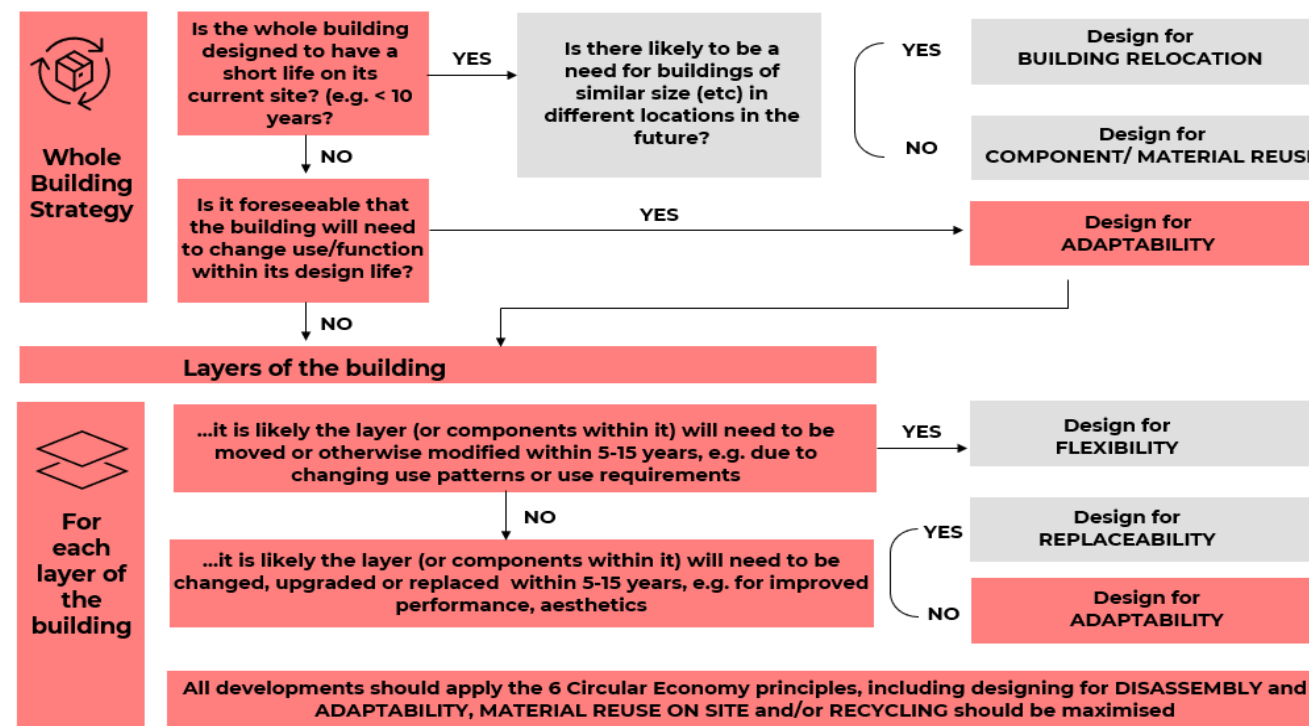


Figure 5.2 Design Approaches for New Buildings (Source: Adapted from the London Plan CES Guidance, March 2022)

The principles in **Table 5.1** have been incorporated into the Proposed Development building design process to date. Each principle aligns to the Waste Hierarchy (whereby avoiding or reducing waste is prioritised) and sustainable resource management good practice.

Table 5.1 CE design principles and measures for new buildings

Principle	Measure
Building in layers	Ensure that different parts of the building are accessible and can be maintained and replaced efficiently, where necessary.

Principle	Measure
Designing out waste	Ensure 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.
Designing for longevity	Design to avoid a premature end of life for all components by considering maintenance and durability.
Designing for adaptability or flexibility	Design by considering how a building might be easily altered to prolong its life, for instance by adaptation, addition or contraction, to suit new uses or patterns of use. This includes allowing easy rearrangement of internal fitouts and arrangements to suit the evolving needs of occupants.
Designing for replaceability or disassembly	Design to facilitate easy removal and upgrade (ideally for reuse, remanufacturing or recycling) assets on a part-by-part basis. This includes allowing the building and its components to be taken apart with minimal damage. If designed well, it should be possible to replace any component in accordance with this ethic.
Component or material reuse	Use systems, elements or materials that can be reused and recycled: preferably in their original form and 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 a kit of parts on one or more different sites.
Material selection	Appropriate material choices are key to carbon reduction. Ensuring that there is synchronicity between materials selected and planned life expectancy of the building reduces waste and the need for replacement, thus reducing in use costs.
Minimise operational water use	Choice of materials and durability of systems, to avoid leakage and subsequent building damage, contribute to reducing the carbon cost of water use.
Building shape and form	Compact efficient shapes help minimise both operational and embodied carbon emissions for a given floor area. This means a more efficient building overall resulting in lower construction and in use costs.
Building life expectancy	Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value.

Principle	Measure
Local sourcing	Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits.
Minimising waste	Waste represents an unnecessary and avoidable carbon cost. Buildings should be designed to minimise fabrication and construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs.
Efficient fabrication	Efficient construction methods (e.g., modular systems, precision manufacturing and modern methods of construction) contribute to better build quality, reduce construction phase waste and reduce the need for repairs during post completion and the defects period (snagging).
Lightweight construction	Lightweight construction uses less material which reduces the carbon footprint of the building as there is less material to source, fabricate and deliver to the Proposed Development.
Regenerative design	Use of materials that can be returned to natural nutrient cycles once their function has been fulfilled. Removing CO ₂ from the atmosphere through materials and systems absorbing it makes a direct positive contribution to carbon reduction.

5.1 BUILDING IN LAYERS

A building should be designed and constructed in layers. This involves each layer having its own lifecycle, lifespan, and approaches to circular economy which will be dependent on their function and life expectancy. Each layer should be independent, accessible, and removable whilst, where possible, upholding its value. This will support each layer's reuse and recycling.

Figure 5.3 shows the building layers which include the site, skin/shell (façade), structure /frame/ superstructure, substructure, building services, interior space, stuff/contents, and construction materials. A summary of the Circular Economy design principles by building layer can be observed in Section 6.

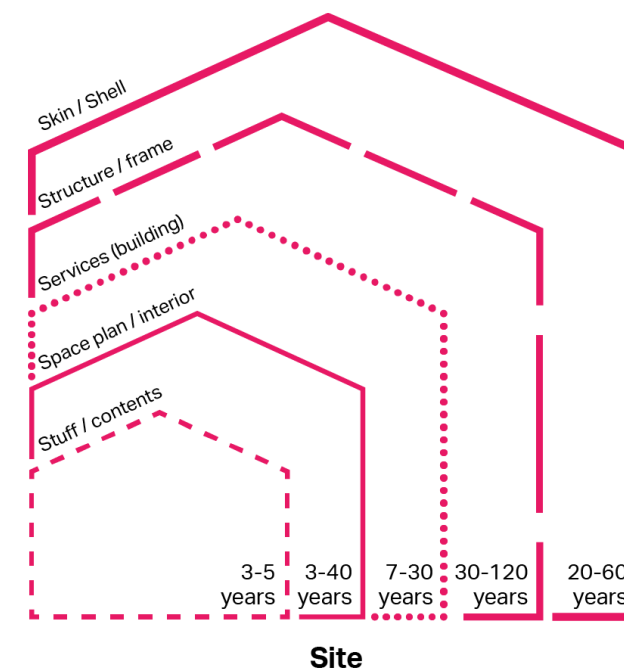


Figure 5.3 Building in Layers & Lifespans (Source: Adapted from London Plan CES Guidance, March 2022)

The following principal layers can be identified as follows:

- **Structure:** foundations and load-bearing elements including reinforced concrete columns are designed to last the life of the building and the building layers of the development stand independently, especially when components have different lifespans
- **Skin:** the various cladding panel systems and glazed curtain walling employed for the facade are independent from the structure and can be demounted at the end of its lifespan.
- **Loose equipment** is independent from the rest of the building and can be moved around to suit the internal activity.
- **Services:** MEP plant and service distribution will be provided with sufficient isolation points. Sections will be able to be replaced while other areas remain isolated.
- **Spaces:** are flexible and adaptable for any future changes in use. The spaces can easily be adapted into residential clusters, with minimal alterations or need for resource intensive works.
- **Contents:** contents are made of durable materials and are independent of the building, allowing for easy replacement when needed.

5.2 DESIGNING OUT WASTE

MINIMISING QUANTITIES OF MATERIAL - MATERIAL EFFICIENCY

Material efficiency is a priority for the Design Team and one of the key considerations during detailed design. Potential measures for reducing the material demand and for designing out waste has been and will be further explored by all key design team disciplines at each design stage. Material efficiency seeks to optimise the use of materials within building design, procurement, construction, maintenance, and end of life; with the aim being to reduce the quantities of new materials used in the development.

The key issues for First Street relate to Material efficiency; to minimise the environmental impact of the development. The development targets one credit out of one for 'Material efficiency' category Mat 06. The material efficiency aims, as outlined in the Material Efficiency RIBA stage 1 and 2 summary report, are as follows:

- The project aims to use materials with recycled content where appropriate.
- The project aims to use standardised dimensions.
- The project considers the rationalisation of structural elements. The structural members are designed to a high utilisation ratio to ensure the structure is as efficient and as light as possible.
- The project aims to provide a facility with potential for future uses with minimal works needed to adapt the use of the building.

The architectural, MEP and structural considerations for material efficiency includes:

- The building has been designed to a smaller regular grid where possible to economise on concrete and carbon.
- Structural members designed for a high utilisation and minimum size required to ensure that they are sized appropriately and as small as possible
- Reuse of formwork for different structures is considered
- A higher quality of concrete finish can be specified to avoid additional screeds and treatments to concrete surfaces. where appropriate

Moreover, a Whole Life Carbon (WLC) Assessment has been carried out to help identify and manage the carbon emissions arising from the material specification of the development. Two further WLC Assessments will be undertaken in a reiterative process as the design of the development progresses to ensure residual effects (carbon emissions) are foreseen as accurately as possible.

The environmental impact of the proposed materials will be minimised by selecting components that score well under The Green Guide to Specification where feasible. where appropriate, the Design Team will include environmental impact as a key performance indicator (KPI) when reviewing options. This will include favouring products with verified Environmental Product Declaration (EPD) certification.

For the Façade, the building is constructed with various layers that work independently from one another allowing for easy repair or replacement of components. The use of a concrete frame provides the primary structure for the building, with secondary SFS supporting the external envelope. The external leaf is constructed using brickwork, with wetcast concrete lintels for the head of windows and linear banding, which are both durable materials and easily replaceable if required. Should the external facade require to be replaced, the building remains watertight and structurally sound following the removal of the external brick shell, allowing the building facade to be adapted to meet future design or practical requirements. The Proposed Development has allowed for effective insulation to a high standard of thermal performance and would unlikely require any improvements to insulation for the adaptation of any future uses.

The design and specifications will ensure that environmentally sensitive (non-toxic) building materials are used throughout. Specifically, the design and specification of materials used internally will be based on the use of products that contain low levels of or no Volatile Organic Compounds (VOCs). The selection criteria for external materials will include the specification of low toxicity to humans and the wider environment, especially those that deplete stratospheric ozone.

MINIMISING QUANTITIES OF OTHER RESOURCES

The Proposed Development has also focused on minimising the use of other resources such as land, ecosystems, energy, and water. During the construction stage the Principal Contractor should be required to set targets for energy and water used on site and ensure measures are put in place to minimise consumption of these resources. These could consist of:

- Low carbon energy sources used during construction phase (renewable sources of energy and offset of main utilities)
- Use of highly efficient plant and battery powered energy storage
- The Proposed Development will be fitted with roof mounted photovoltaic panels to produce renewable energy.

The Proposed Development will employ design measures regarding water conservation and will have reduced mains water demand over typical performance. Proposed water saving features include:

- The Proposed Development elements are currently targeting 40% reduction in water consumption from the baseline, corresponding the following performance levels:
 - Hand Wash Basin Taps: $\leq 4.50\text{L/min}$ flow rate; and
 - Low flow urinals
 - Centralised washing machines encourage a sharing economy as opposed to individual assets in each cluster.
- The development is currently targeting water credits in the BREEAM assessment. A consumption target of 'Excellent' in Wat 01 is targeted, equating to 3 or more of 5 credits.

To ensure ongoing sustainability performance during building operation, Water use will be properly and effectively regulated and managed during construction to maintain sustainable performance. The building management staff will be able to monitor and assess water usage thanks to the connection of main water metres to the building management system. These meters will be split into landlord/tenant, retails spaces and detailed/scheduled. Also, water consumption targets will be set by the principal contractor for the construction site and usage will be report and monitored in accordance with BREEAM Man 03 Monitoring of construction site impacts requirements. General water leak detection system will be specified to reduce flooding and loss of water resources. A refrigerant leak detection system will also be specified where appropriate with requirement of the overall system.

5.3 RESPONSIBLE SOURCING AND SPECIFICATION

The responsible sourcing of materials will be a key consideration in the selection of suppliers, and a sustainable procurement strategy has been produced for the Proposed Development prior to construction and discussed in detail in Section 7. Materials from suppliers who participate in responsible sourcing schemes such as the BRE BES 6001:2008 Responsible Sourcing Standard will be prioritised.

All timber specified will be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation—which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

Aluminium should be sourced from responsible sourcing schemes and traceability records should be provided due to the complexity of tracking global supply.

Where viable the Design Team will specify materials that are grown or made locally. Likewise, the appointed contractor will be asked to prioritise local sourcing of materials.

There are following potential material database which are considered to address the responsible sourcing of materials:

- Architectural Salvage Yard – Manchester - <https://insitumanchester.com/>
- GreenSpec for green building design products and materials in UK
- Globechain, a reuse marketplace for business which Includes a lot of interior home appliances and fittings
- Enviromate, Free Leftover Building Materials Marketplace,
- Salvo, Marketplace focused on architectural salvage, reclaimed building materials, decorative objects, garden antiques and furniture
- Cleveland Steel Specialise in remanufacturing and repurposing steel
- Community Wood Recycling, Commercial waste wood collection service. Variety of reclaimed wood, depending on availability

Natural resource depletion will be minimised throughout the development, and materials such as peat and natural weathered limestone will not be used in the buildings or landscape features.

5.4 DESIGN OUT CONSTRUCTION, DEMOLITION, EXCAVATION AND MUNICIPAL WASTE ARISING

It has been acknowledged in the wider industry that the best way to design out waste (both construction (and demolition) waste) is for developments to use 'material standardisation and modularity' of building components and 'offsite construction'; this will help to minimise waste of materials during construction and elements can easily be disassembled at the buildings end of life and reused or repurposed depending on their lifespan.

According to the WRAP case study (WAS031), as seen in Figure 5.4 there was circa 50% savings in material waste when a site-based construction is compared to a volumetric construction.

Another method that encourages waste reduction during the operation of a project is the 'supplier take-back scheme' where the supplier is responsible for collecting and recycling/dismantling/remanufacturing said product/element once it has reached its end of life or becomes faulty and needs to be replaced. This method will reduce waste and encourage waste to be diverted from landfill. This will also help the supplier reduce the use of raw material for manufacturing new products as they can easily dismantle and reuse elements that are still in good condition from the element/product collected from the development.

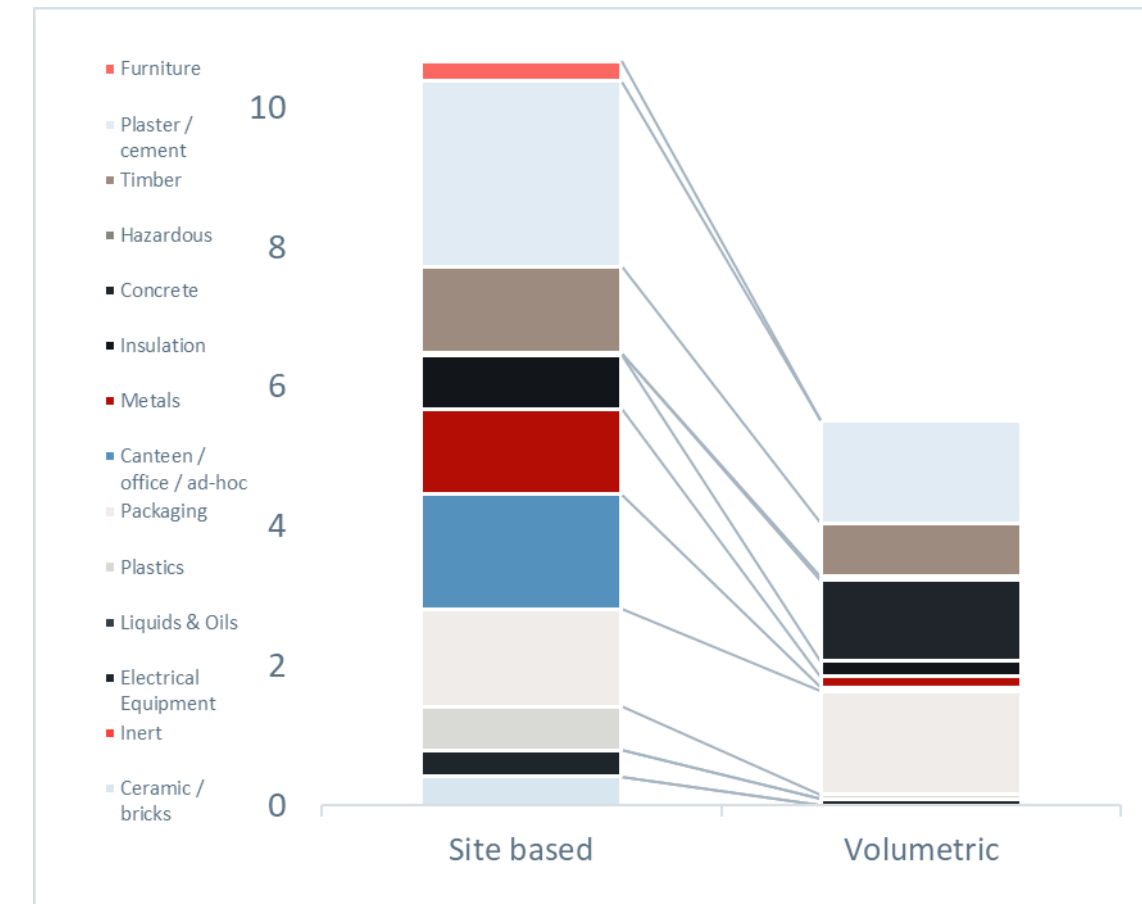


Figure 5.4 WRAP Case Study - Waste Reduction by Using Volumetric Method of Construction

The Applicant will work with the supply chain to adopt best practice behaviours such as:

- Offsite construction of components
- Takeback services for packaging, surplus materials or spent products which can be repaired, recovered or recycled by suppliers
- Design for Manufacturing and Assembly (DfMA)
- Just-in-time delivery
- Larger pack sizes to reduce amount of package per unit. (e.g., paints delivered in tanks than containers)
- Excavation waste arising from the development should be removed from site, treated where necessary, and re-used as fill on suitable projects. It is anticipated that at least 95% of construction and excavation waste will be diverted from landfill however these wastes are extremely limited on this development
- Modular and off-site construction methods will be deployed across the development to help minimise wastes that commonly accrue through surplus materials, offcut wastes and damaged materials when left on site.
- Workshops being held with staff, at design stage, to identify opportunities for waste minimisation and material selection.
- Working with subcontractors and suppliers to explore onsite or offsite reuse or recycling options.

- For MEP services, sections of the installation such as pump arrangements and riser sections can be prefabricated offsite.

5.5 DEMOLITION WASTES

A Pre-Demolition / Refurbishment Audit has been completed for the existing site²⁹. The audit has found that the existing site consists of only four small-scale structures consisting of steel, brickwork and metal. The images below present these existing structures. The upper left image depicts a steel structure with a brick façade. This has been dismantled and alternative uses are being explored.



Figure 5.5 Images of the existing structures on the existing site.

Key demolition and refurbishment materials are shown in the Figure below

Material	Estimated Quantity	Potential Reuse Applications	Potential Recycle Applications	Potential Recovery (e.g. backfill, energy generation from incineration)	Landfill / Hazardous Waste Disposal
<i>Please identify the appropriate strategy for each material</i>					
Metals	62m2		X		
Timber	N/A	N/A	N/A	N/A	N/A
Bricks / Blocks	25m2			X	
Roofing Material	118m2			X	X
Hard Landscaping	5000m2				X
Windows	N/A	N/A	N/A	N/A	N/A
Doors	1		X		
Ceiling Tiles	N/A	N/A	N/A	N/A	N/A
Plasterboard	N/A	N/A	N/A	N/A	N/A
Floor Coverings (e.g. carpet, vinyl, tiles)	N/A	N/A	N/A	N/A	N/A
Insulation Board	N/A	N/A	N/A	N/A	N/A
Sanitaryware	N/A	N/A	N/A	N/A	N/A
Furniture	N/A	N/A	N/A	N/A	N/A

Figure 5.6 Opportunities for key demolition and refurbishment materials from the existing site.

The Pre-Demolition / Refurbishment Audit confirms that there is no reason to refurbish or reuse the existing structures as they are limited in volume and have no place for reuse within the plans for the Proposed Development, however the Applicant will continue to explore any opportunity to incorporate these materials into the foundation, landscaping or other aspects of the Proposed Development on an ongoing basis.

5.6 MANAGING WASTE SUSTAINABLY

The Proposed Development will incorporate best practice waste reduction measures developed in line with the waste hierarchy to reduce, reuse, and recycle. These include:

²⁹ Tim Groom Architects; Wst 01 – Pre-Demolition / Refurbishment Audit. File name: 1172-TGA-XX-XX-RP-A-FI_10_10-00501

5.6.1. CONSTRUCTION WASTE

- Prefabricated and modular design options have been examined and, where feasible, favoured as the detailed design progresses
- A Construction Environmental Management Plan³⁰ (CEMP) has been drafted, and which will continue to be updated, including the following:
 - Setting of a target benchmark for construction site waste management (in line with BREEAM Wst01)

Two credits are targeted for WST 01 hence it is anticipated that the amount of non-hazardous construction waste generated on site will be less than 7.5 m³.
 - Procedures and commitments for minimising non-hazardous waste in line with the benchmark
 - Procedures for minimising hazardous waste
 - Procedures for monitoring, measuring, and reporting hazardous and non-hazardous site waste
 - Procedures for sorting, reusing, and recycling construction waste into defined waste groups including monthly reports from Contractors showing waste diverted from landfill and % recycled.
 - Avoiding bonfires and burning of waste materials
 - 95% of construction waste generated by the development will be diverted from landfill and reused or recycled (in line with BREEAM Wst 01).

Construction waste will be cleared daily to a main holding skip. The waste will be segregated into five categories at an off-site waste transfer station subject to the chosen supplier; the categories are likely to include:

- CAT A: Hazardous waste – Paint tins, mastic etc
- CAT B: Metal
- CAT C: Timber
- CAT D: Plasterboard
- CAT E: General Waste

Waste collection suppliers will sort waste for recycling (providing relevant percentage data), and hazardous waste will be stored separately.

Skip locations are shown in the figure below.



Figure 5.7 Skip locations for construction wastes

5.6.2. OPERATIONAL WASTE

A Waste & Servicing Strategy Report³¹ has been produced separately to support the planning application of the Proposed Development. The Waste & Servicing Strategy Report has considered the need to lessen the overall impact of waste generation through recycling of materials from the operational phase of the Proposed Development.

The Greater Manchester Combined Authority has also set targets including a 65% recycling rate for municipal solid waste and no more than 10% to landfill by 2035³², this is 5 years later than the GLA target. The Applicant will seek to meet the GLA 2030 target.

Estimated waste generation from the Proposed Development has been quantified based on typical waste generation metrics. The waste generation metrics are summarised below:

Student accommodation – 100 litres per week x 576 clusters = 57,600 litres per week; and

- Food Hall – The waste generated by the food hall is based on observations at Mackie Mayor food hall, Manchester. In general terms the scale of the Plot 10b food hall is comparable to that at Mackie Mayor where they have the following waste collected 6 days a week:
 - 2 x General Waste – 1100 litre

³⁰ Renaker (2023). Construction Environment Management Plan. Planning Condition 5. Revision C- July 2023

³¹ Vectos (2023). Waste Servicing Strategy Report: House of Social 1 Ltd Plot 10b, First Street. VN222431

³² Greater Manchester Combined Authority (2022). Sustainable Consumption & Production Plan 2022-2025.

- 1 x Mixed Recycling 1100 litre
- 1 x Food Waste - 240 litre
- 2 x Glass Waste - 240 litre

Once a week we expect:

- 1 x Waste Oil Collection (swap with clean oil delivery)

It is proposed that the wastes will be collected daily. Details of the estimated daily waste arisings are summarised below.

Table 5.2 Estimated daily Waste Generation (Extract from Waste Management & Servicing Strategy Report)

Use	TOTAL WASTE (Litres/Day)	Refuse (Litres/Day)	Recycling (Litres/Day)	Food Waste (Litres/Day)
Student accommodation	8257	4220	4036	
Food Hall		2200	1340	240
TOTAL	8257	6420	4376	240

Bin containers will allow residents to separate their wastes so to maximise the recycling of operational wastes. The students will be encouraged to separate waste at the source and to then bring their waste to a Refuse Drop Lobby. Each cluster will be provided with 3 x separate bins and bags colour-coded to help recycling which accord to the 3 main waste streams (general waste, paper/card and plastic/metal/glass). There will be three chutes which the students can deposit their waste which then drops into a Eurobin on the other side in the Refuse Store. Container provisions are summarised below.

Table 5.3 Types of Waste & Bin Numbers (student accommodation) (Extract from Waste & Servicing Strategy Report)

Waste Type	Container Details	
	1,100 Litre Eurobins / every 2 days (No.)	140 Litre Wheeled Bins / Day (No.)
Refuse	8	-
Recycling	8	-
Food Waste	-	-
TOTAL	16	-

The food hall will have bins for use by the public. The kitchen and bar areas will have further bins. All bin areas will encourage separation of recyclable materials from residual wastes.. The food hall will also be served by a weekly waste oil collection. Waste would be collected by the staff and cleaners and deposited in the bins located back of house. The table below sets out the containers what will be available in the food hall.

Table 5.4 Types of Waste & Bin Numbers (Food Hall) (Extract from Waste & Servicing Strategy Report)

Waste Type	Container Details	
	1,100 Litre Eurobins / 6 Days a week (No.)	240 Litre Wheeled Bins / Day (No.)
Refuse	2	
Recycling	1	2
Food Waste		1
TOTAL	3	3

The location of the proposed food hall waste storage area is shown in Figure 5.8.

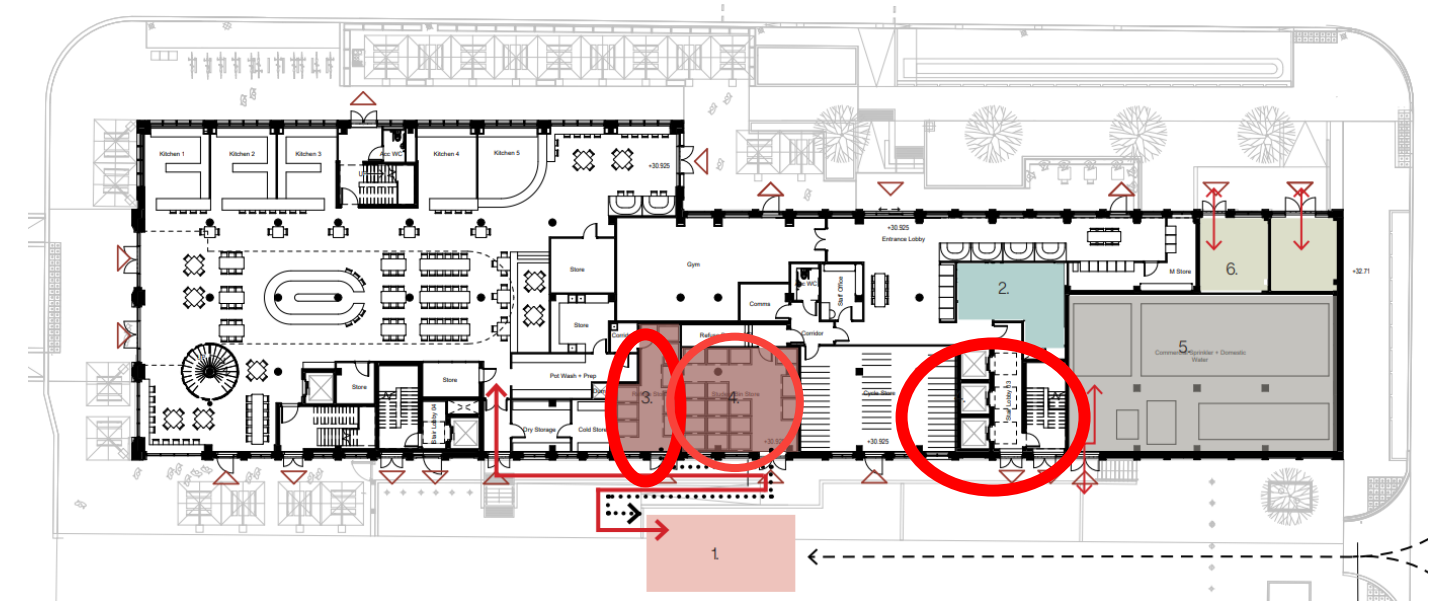


Figure 5.8 Plot 10b Bin Stores for the food hall

The figure above shows that the proposed bin stores can accommodate the required number of bins with additional space available for further containers if needed e.g. if further separation of wastes are required through future policy changes. The waste transfer routes are also shown on this plan from the food hall and the PBSA lifts to the bin store.

The diagram also shows the refuse drop for the students with the chutes colour coordinated to ensure that waste - which is separated within the clusters - is then deposited in the correct bin. Here there would be CCTV to monitor activity and to monitor the capacity of the bins allowing the bins to then be swapped when at they are at capacity.

The bin stores would have impervious floors, bump strips to avoid damage to doors and walls and will be appropriately ventilated. A power point will assist staff when cleaning the space. The on-site management team will keep the bin stores and transfer routes clean and clear of blockages or side wastes. The communal waste storage area will be designed to the specifications detailed in BS5906:2005 Waste management in buildings – Code of practice.

5.7 DESIGN FOR LONGEVITY, ADAPTABILITY & FLEXIBILITY

The Proposed Development has ensured that the third and fourth principles of CE are embedded in the design of the project by ensuring the design is flexible and adaptable therefore increasing the building's lifecycle and providing a building lifespan of at least 50 years as per British standards and Eurocodes.

SKIN / SHELL - FAÇADE

The façade has been designed for longevity, adaptability and flexibility which supports the Applicant's commitment to minimise minimal material use. The façade materials and the façade design have been chosen to allow for easy repair and replacement whilst also ensuring that the building performs well in reducing energy demands through high thermal performance.

- The building has allowed for effective insulation to a high standard of thermal performance and would unlikely require any improvements to insulation for the adaptation of the future uses including conversion to residential spaces.
The proposed development will be aiming to achieve as high GGBS content as possible for the structural concrete

SERVICES

As a general principle, adaptability and flexibility will be considered for the design of the 'Services' to minimise waste generation during maintenance and future reconfigurations. Further detail will be provided at future design stages. The followings strategies are considered to maximise the longevity, adaptability, and flexibility of MEP services:

- All MEP services are designed to allow for future expansion and adaptation.
- Major plant services within the residential part of the building support a change in use to residential clusters with a slight adaptation of the M&E strategy for future clusters. The location of the structural cores and smoke shafts maintain the existing escape strategy for future adaptations
- The current ventilation strategy of the residential units could be easily upgraded following a change to residential clusters on the upper floors. Additionally, the exposed services currently used within the food hall enable easy reconfiguration or future enclosure with dry linings.
- Mechanical, electrical and plumbing service risers can remain in place to avoid additional design or relocation of services in the future.
- Services are separately attached to the structure, operating independently across the projects other than where services voids are cast in the structural frame.
- Majority of MEP elements are recyclable, incorporating copper or steel piping over plastic.

- Generally, all MEP items can be de-commissioned and removed for re-use or recycling. Ductwork will be installed with flanges and pipework which will aid in the deconstruction of large portions of services.

STRUCTURES/ INTERNAL LAYOUT

The internal structures and layouts have been carefully considered to ensure that the building can adapt and evolve to meet future changes in use. Examples of approaches taken which support this include:

- Utilising a gridded concrete frame and structural concrete floor plates, the internal environment can be adapted to accommodate changes in a range of working practices. New internal walls can divide the grid at the upper levels, changing the building from Student accommodation to Residential clusters or hotel. One limitation to the changes is the limited floor-to-floor height of 2.855m for the upper levels, limiting the uses of these spaces other than for residential use ~~or hotel~~.
- The ground floor food hall and additional amenity space are highly versatile, designed as an open plan space with headroom suitable for office space or educational space. With the implementation of separating walls, and splitting the open plan space into rooms, it is capable of being used for a variety of functions following its initial use as a food hall.
- The building's structural concrete grid supports the removal of internal walls and easily allows for the adaption of spatial organisation within the building for future adaptations of the building.
- The building has allowed for effective insulation to a high standard of thermal performance and would unlikely require any improvements to insulation for the adaptation of the future uses outlined in this report.
- Steelwork can be recycled at the end of its life and reused in other buildings
- Any steelwork shall use bolted connections for ease of disassembly
- A higher quality of concrete finish can be specified to avoid additional screeds and treatments to concrete surfaces.
- The regular and uniform structural grid and maintaining a flat slab soffit standardise and simplifies the frame construction and allows for reuse of formwork on other floors
- Interior finishes will be designed with layer independence to enable dismantling at the end of the service life.

5.8 DESIGNING FOR DISSASSEMBLY/ END OF LIFE STRATEGY

The Proposed Development has been designed and constructed to reduce material demands as far as practicable and will use systems, elements and materials that can be reused and/or recycled at the end of their useful life.

The building structure has been designed with the industry design life of 50 years (as per the British Standards and Eurocodes).

Modularity will be encouraged, where feasible to allow for disassembly and reuse at the end of the building's useful life. Building information will be stored, including the reuse and recycling potential of materials, by using Building Information Modelling and material passporting during the building's life to facilitate disassembly and identify any key challenges to allow for end-of-life strategy, future reuse, disassembly, and waste reduction/avoidance.

The development targets 2 credits out of 2 for ‘Design for disassembly and adaptability’ category Wst 06 of BREEAM. The ease of disassembly and the functional adaptation potential of different design scenarios have been considered for the development and that includes:

- Fairly uniform building and layout grid, taller floor to ceiling heights and the absence of internal shear walls allow the feasibility of the building to be used with other layouts or for variety of uses other than an office over the course of its life span.
- All MEP services are designed to allow for future expansion and adaptation.
- Structural soft spots in the slab are being considered to allow for to ease of creating future openings between floors.
- The primary structural frame is independent from and protected by the façade which enable the replacing of façade.

The Proposed Development will follow the default EoL scenarios (UK Statistics on Waste (2016) from DEFRA) for metals and timber whilst construction and demolition-related items will follow the London Plan Policy Targets.

A variety of opportunities are specified within the Proposed Development which support material circularity and aid the application of reuse or recycling at the end of the service life:

- The building is constructed with various layers that work independently from one another. The use of a concrete frame provides the primary structure for the building, with secondary SFS supporting the external envelope. The external brick shell is also part of a separate layer of the building
- Repetition of structural slabs to allow for reuse of formwork on other levels.
- The façade will be reviewed regarding extracting materials at end of life for recycling and reuse. In particular, any metal componentry or sheets.
- Interior finishes will be designed with layer independence to enable dismantling at the end of the service life.
- The external leaf is constructed using brickwork, with wetcast concrete lintels for the head of windows, which are both durable materials or easily replaceable if required.
- External windows can be removed and replaced or upgraded from within the building
- Plastic-free components and building materials are targeted where possible, to avoid specifying plastic components which cannot be recycled at the end of their service life. Mineral wool insulation rather than insulation made from oil-based polymers will be specified where appropriate. Any plastics specified will be recyclable where possible, e.g., polypropylene in lieu of PVC.
- Majority of MEP elements are recyclable. Incorporate copper or steel piping over plastic.
- The concrete in the floor slabs and foundations can be crushed, screened, and graded for suitable re-use in various applications such as fill materials, backfilling to retaining structures, resurfacing for car parks, below ground pipe bedding and in general landscaping.
- Any steelwork shall use bolted connections for ease of disassembly.
- Steelwork can be recycled at the end of its life and reused in other buildings.
- All MEP items can be de-commissioned and removed for re-use or recycling. Ductwork will be installed with flanges and pipework which will aid in the deconstruction of large portions of services.
- The structure is formed with a traditionally reinforced concrete slab. Concrete frame can be deconstructed and recycled.
- The plasterboard used on internal walls and ceilings can also be recycled or reused.

- Given the nature of student accommodation, all standard furnishings and finishes are separate from other elements allowing them to be stripped out and replaced following standard wear and tear.
- Proposed internal finishes and decoration, whilst high quality and durable, can easily be replaced and maintained if required i.e.: Luxury Vinyl Tile flooring (LVT), carpets, furniture, etc.
- Anodised finish hook on aluminium panels have been used at the ground floor level, making use of the durability of the material but again, a longer finish lifespan and allowing it to be removed and replaced where required with ease

6 CIRULAR ECONOMY DESIGN PRINCIPLES BY BUILDING LAYER

The table below sets out, in detail, the range of initiatives adopted against each circular economy principle with a focus on each building layer.

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
Conserve resources, increase efficiency and source sustainably	Minimise the quantities of materials used	<p>Design avoids overspecification of components.</p> <p>Foundations and load-bearing elements including reinforced concrete columns are designed to last the life of the building.</p> <p>Use of natural material insulation</p> <p>The wetcast concrete bandings and brick reveals will offer shading to the cluster and lounge windows</p>		<p>Services are central through the building cores and routed in the most efficient manner, taking the shortest route to minimise use of material (e.g., cabling). Stack transfers are avoided between clusters, minimising material use.</p> <p>Oversizing of services has been avoided.</p> <p>The size and dimensions of services has been taken into account in the design to avoid excessive cut offs and wastage.</p> <p>The Proposed Development will be fitted with roof mounted photovoltaic panels to produce renewable energy. The Proposed Development will employ design measures regarding water conservation and will have reduced mains water demand over typical performance.</p> <p>Majority of MEP elements are recyclable, incorporating copper or steel piping over plastic.</p> <p>Generally, all MEP items can be de-commissioned and removed for re-use or recycling.</p> <p>Cluster unit ventilation has been designed to facilitate the use of lightweight plastic ductwork to reduce material use and facilitate reuse when dismantled.</p> <p>A fabric first approach has been adopted to reduce the operational energy demand of the Proposed Development. A centralised energy loop would provide heating, hot water and cooling through the use of heat pump technology to all aspects of the</p>	Not applicable	Cluster kitchens have been designed to suit the layouts in the most efficient manner based on cluster numbers

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
				<p>Proposed EIA Development. This is highly efficient and would allow the Proposed EIA Development to respond to the decarbonisation of the national grid (though grid decarbonisation has not been assumed in order to present a worst-case assessment).</p> <p>High performance heating, cooling and ventilation systems will be used to minimise energy demand.</p>		
	Minimise the quantities of other resources used (e.g., technological assets)	The construction management plan includes measures to reduce waste, implement waste segregation, use just-in-time procurement, and offer recycling services.		<p>Where possible, lightweight plastic pipework will be used within clusters, rather than copper.</p> <p>Rainwater harvesting will be in operation throughout the construction process and used in site operations.</p>	<p>Lightweight partitions will be used within units and communal areas to minimise material use.</p> <p>Plastic-free components and building materials are targeted where possible, to avoid specifying plastic components which cannot be recycled at the end of their service life.</p> <p>Mineral wool insulation rather than insulation made from oil-based polymers will be specified. Any plastics specified will be recyclable where possible, e.g., polypropylene in lieu of PVC.</p>	The building provides common facilities which can be used by multiple individuals, reducing the need for residents acquire their own equipment, and thus demonstrating the circular principle of shared assets.
	Specify and source materials and other resources responsibly and sustainably (including through the use of locally sourced and recycled material)	<p>Structural systems prioritise recycled materials like steel, aggregates, and cement with high recycled content to reduce primary material demand.</p> <p>The Proposed Development will aspire to reduce primary material demand by using recycled content such as GBBS in concrete where this material is available and aiming for high levels of recycled content within reinforcing steel (ranging from 90-95% to 100% of recycled content subject to manufacturing source).</p> <p>Provision of data on the embodied carbon of all concrete mixes (in accordance with BS EN 15978:2011 Sustainability of construction works) will be required of suppliers, as part of procurement good practice.</p>		Not applicable	Not applicable	Not applicable

Principle	Commitments	Design Layer			
		Skin / shell	Structure / Frame	Services	Space / interior
		<p>Supplier take-back schemes will be explored where the supplier is responsible for collecting and recycling/dismantling/remanufacturing products/elements once it has reached its end of life or becomes faulty and needs to be replaced.</p> <p>Just in Time delivery methods will be used to reduce the creation of surplus materials and to avoid the risk of damage to materials left on site</p> <p>Concrete will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “very good” or equivalent.</p> <p>Masonry will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good” or equivalent.</p> <p>Timber will be sourced from legal and sustainable sources as defined by the UK Government Central Point of Expertise on Timber, evidenced through a scheme recognised by CPET, such as the Forest Stewardship Council (FSC), alternatively Cat B where alternative documentary evidence is provided.</p> <p>Plasterboard should be sourced from manufacturers with certification under BES 6001.</p> <p>Aluminium should be sourced from responsible sourcing schemes and traceability records should be provided due to the complexity of tracking global supply.</p> <p>The contractor must endeavour to reduce CO2 emissions by reducing the distances travelled to and from site, promote sustainable forms of transport and provide staff welfare accommodation. The contractor shall also monitor and record data on transport movements resulting from the delivery of the majority of construction materials to</p>			

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
		site and construction waste away from site.				
	Reuse and retrofit of existing buildings	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Reuse of components and materials with minimal processing	As the development is situated on an empty site with only 4 small buildings, there is limited opportunity to recover and reuse existing materials. However, the use of crushed and graded demolition material will be considered for use as backfill. There are only modest opportunities to recycle it within concrete mixtures.				
	Material selection based on life expectancy of the building and embodied resource demands and/or maintenance requirements.	Natural and low-carbon materials with minimal processing will be selected for elements in the Shell/Skin of the building. Glass and stonewool insulation, and a low u value (as a measurement of thermal transmittance) have been specified across the scheme, which will reduce the energy consumption through the scheme lifespan	Exposed concrete wearing surfaces specified in the design will require periodic inspection and maintenance, to function properly for at least 50 years.		Natural and low-carbon materials with minimal processing will be selected for elements in the Space of the building. For example, the Proposed Development has carefully chosen durable materials - like porcelain tiles and robust flooring materials - for reception and common areas, food hall and food hall mezzanine to withstand the high traffic demand and significantly reduce the need for repair or replacement.	
	Efficient fabrication through the use of modern methods of construction (e.g., modular systems, precision	Production-efficient methods such as off-site manufacturing will be used for elements of the services (and space/interior) where possible, reducing material wastage that commonly arises with typical approaches to on-site fitting.			Not applicable	Modular products will be produced to reduce wastes associated with bespoke items

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
	manufacturing etc.)					
	Use of lightweight materials	Not applicable	Concrete grades will be reviewed to reduce the weight of reinforcement.	Lightweight plastic pipework will be used within clusters, rather than copper.	Lightweight partitions will be used within units and communal areas to minimise material use.	Not applicable
Design to eliminate waste (and for ease of maintenance)	Design for longevity and durability	Not applicable	Superstructure elements that are not easily accessible have generous corrosion protection, exceeding 50-year life for predicted environmental conditions. Substructure elements cast against ground are designed for a working life of more than 50 years.	Not applicable	Double layer plasterboard has been specified in common areas for additional robustness. Access panels will be considered into the design of bathrooms and kitchens <i>in lieu</i> of destructive access	Door stoppers will be provided within the clusters to avoid damage to the doors/walls. In built furniture and kitchens will utilise robust materials to maximise durability. Centralised washing machines encourage a sharing economy as opposed to individual assets in each cluster.
	Designing for adaptability and flexibility	Should the external facade wish to be replaced, the building remains watertight and structurally sound following the removal of the external brick shell. This enables the building facade to be adapted to meet future design or practical requirements.	A flat slab (with flat soffit) has been used to allow flexibility to change the services layout, if required in future. Utilising a gridded concrete frame and structural concrete floor plates, the internal environment can be adapted to accommodate changes in a range of working practices. New internal walls can divide the grid at the upper levels, changing the building from Student accommodation to Residential clusters.	As a general principle, adaptability and flexibility will be considered for the design of the 'Services and Space' layouts to minimise waste generation during maintenance and future reconfigurations. Further detail will be provided at future design stages. All MEP services are designed to allow for future expansion and adaptation. Major plant services within the residential part of the building support a change in use to residential clusters with a slight adaptation of the M&E strategy for future clusters. The location of the structural cores and smoke shafts maintain the existing escape strategy for future adaptations. Mechanical, electrical and plumbing service risers can remain in place to avoid additional design or relocation of services in the future.	A uniformly distributed load allowance has been made for non-structural partitions, so that in-resident layout can be changed in future. The floor-to-floor height has been designed for flexibility and future conversion, with consideration for residential use. The ground floor, designed as a food hall with additional amenity space, has been considered as a change to educational space due to its larger ceiling height, but may be considered for a range of office or commercial spaces. The upper floors of the building can be converted into residential clusters without changing the existing concrete grid or concrete floor plates.	Most furniture in the food hall is loose, however, furniture such as the bar area and mezzanine booths may require a more extensive strip out or could be retained as part of any adaptations.

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
				Should the student clusters be removed and replaced with residential clusters, the existing mixed mode ventilation will still be applicable. The designed service voids in the ceilings allow for 200mm of space for the installation of an MVHR duct and vent. The existing core provides lift and stair access that would remain unchanged to distribute materials to each floor during any adaptations.	<p>The Development has been designed to be built with standard lightweight partition walls; the walls are not load-bearing and are easily removed to enable a new internal layout to be installed</p> <p>Existing ancillary spaces and amenity spaces such as the gym, bin store and bike store can be either updated, altered or retained following future developments of the building</p> <p>Additional walls can be added to the spaces to separate areas for various uses. Existing ancillary spaces such as storage space and toilet facilities can be retained and used in future functions within the space and may require aesthetic updates at most.</p> <p>The fire and accessibility strategy would also support any future adaptations of the space, with the food hall containing 2 main escape cores including a fire stair and passenger lift from the upper floor.</p> <p>The building has allowed for effective insulation to a high standard of thermal performance and would unlikely require any improvements to insulation for the adaptation of the future uses considered across this CES.</p>	
	Designing for replaceability or disassembly	<p>The design considers future disassembly and recycling opportunities. For example, the tower has been designed with modular items - such as unitised curtain walls - that can be easily replaced, upgraded and disassembled.</p> <p>The technical design stage of the project will consider additional 'design for disassembly' principles, such as bolted joints. The building will contain curtain walling / aluminium cladding, secondary steelwork which can be disassembled for reuse at end of life. Anodised finish coated hook on aluminium panels have</p>		Services are separately attached to the structure, operating independently across the projects other than where services voids are cast in the structural frame.	Not applicable	<p>Proposed internal finishes and decoration, whilst high quality and durable, can easily be replaced and maintained if required i.e.: Luxury Vinyl Tile flooring (LVT), carpets, furniture, etc.</p> <p>Loose equipment is independent from the rest of the building and can be moved around to suit the internal activity.</p>

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
		<p>been used at the ground floor level, making use of the durability of the material and lifespan but again, allowing it to be removed and replaced where required with ease</p> <p>The building is constructed with various layers that work independently from one another. The use of a concrete frame provides the primary structure for the building, with secondary SFS supporting the external envelope. The external brick shell is also part of a separate layer of the building</p> <p>External windows can be removed and replaced or upgraded from within the building.</p>				
	Design out construction, demolition, excavation and municipal waste arising	Not applicable	<p>Use of crushed and graded demolition material on the Proposed Development will, subject to further suitability analysis, be used in the temporary piling mat during construction, where possible.</p> <p>Excavation waste arising from the development – which cannot be reused on site - should be removed from site, treated where necessary, and re-used as fill on suitable projects.</p> <p>It is anticipated that at least 95% of demolition and excavation waste will be diverted from landfill.</p>	<p>Some plantrooms are located in otherwise unusable areas of the ground floor plan to best utilise the space available</p> <p>The size and dimensions of services has been considered in the design to avoid excessive cut offs and wastage.</p> <p>The layout and shape of the building allows for central distribution of services and is very efficient for minimising services runs to each cluster.</p>	Not applicable	Not applicable

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
	Design building shape and form for efficient material use during construction and operation	Not applicable	Not applicable	The layout and shape of the building allows for central distribution of services and the rectilinear shape is very efficient for minimising services runs to each apartment.	Not applicable	Not applicable
Manage waste sustainably and at the highest value	Manage/ minimise demolition and excavation waste	<p>The use of crushed and graded demolition material has been considered for use in foundations or backfill opportunities. There are only modest opportunities to recycle it within concrete mixtures.</p> <p>Reuse of existing materials and suitable treatment of hazardous soil have also been investigated. Opportunities will be explored for the relocation and reuse of noncontaminated soils, within the site. An authorised contractor will be appointed to remove and dispose of any hazardous soils which cannot be reused on the site.</p>	Not applicable	Not applicable	Plasterboard wastes will be taken to a Waste Transfer Station, by our Waste Contractor, and recycled where possible.	Not applicable

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
	Manage/ minimise construction waste	<p>The construction management plan outlines measures to minimise waste generation, to reuse materials for temporary works, to implement a clear labelling system for waste segregation and to explore the use of just-in-time procurement, plasterboard recycling services and take-back schemes for packaging materials. The CEMP will also ensure staff engagement through training.</p> <p>Construction waste will be cleared daily to a main holding skip. The waste will be segregated into five categories at an off-site waste transfer station subject to the chosen supplier; the categories are likely to include:</p> <p>CAT A: Hazardous waste – Paint tins, mastic etc</p> <p>CAT B: Metal</p> <p>CAT C: Timber</p> <p>CAT D: Plasterboard</p> <p>CAT E: General Waste</p> <p>Waste collection suppliers will sort waste for recycling (providing relevant percentage data), and hazardous waste will be stored separately.</p>				
	Manage/ minimise municipal waste (and industrial waste) during operation, if applicable	Not applicable		<p>The development is forecast to generate 57,800 litres of waste, per week, for the student accommodation; the main waste streams are expected to be general, dry mixed (paper card) and glass/metal/plastic. Approximately 2,700 litres of waste will be generated at the food hall per week; the main waste streams are expected to be general, dry mixed recycling, food waste and glass waste. A weekly collection of waste oil will also be available to the food hall.</p> <p>Suitable waste containers will include 1,100L Eurobin and 240L wheeled bins.</p> <p>Council and private contractor collections will be used, and the building management company will monitor and promote high recycling rates by educating residents and placing recycling bins closer to access gates.</p>		
	Minimise operational water use and other 'peripheral' materials during construction	<p>The construction management plan outlines measures to minimise waste generation, reuse materials for temporary works, implement a clear labelling system for waste segregation, use just-in-time procurement, store materials correctly on-site, utilise plasterboard recycling services, offer take-back schemes for packaging materials, and engage staff through training</p>		<p>Solar PV to be accommodated on the available roof space of Building 10a, providing a source of on-site renewable energy.</p> <p>High performance heating, cooling and ventilation systems will be used to minimise energy usage.</p>	Not applicable	<p>All sanitary fittings shall be complete with flow restrictors to limit the flow to 9l/m to each shower, 4.5l/m to each wash hand basin. The mechanical contractor shall supply and install flow restrictors of 5.0l/m to each kitchen sink and all the accessible and adaptable cluster bedrooms.</p>
Preserving and regenerating the natural environment	Use of materials that can be returned to natural nutrient cycles once their function has been fulfilled.	<p>The Proposed Development will provide green landscaped areas, replacing the previously surface level carpark (hardstanding)</p>	Not applicable	Not applicable	<p>When timber resources reach the end of their lifespan, opportunities will be explored that allow for this material to be recycled where possible.</p>	not applicable

Principle	Commitments	Design Layer				
		Skin / shell	Structure / Frame	Services	Space / interior	Contents
	Use of carbon-absorbing materials		Not applicable	Not applicable	Not applicable	In built furniture and kitchens will utilise robust materials to maximise durability

7 SOURCING AND SPECIFICATION

This section outlines the key materials to be used in the development with specific considerations as to how resource efficiency and circular economy principles have been considered. It also details how these measures have been incorporated into the project specification and applied to the development. A bill of materials is also presented in this section.

7.1 MATERIAL SELECTION

Material efficiency has been a key aspect of the design process, with the goal of reducing material demand and waste throughout the building's life cycle. This has involved exploring measures to optimise material use during design, procurement, construction, maintenance, and end-of-life stages.

The design team has considered environmental impact as a key performance indicator when reviewing options, favouring low impact materials that are supported (where available) by Environmental Product Declaration certification.

Ultimately, material efficiency and carbon reduction efforts have reduced the quantities of new materials used in the development and promoted sustainable building practices. Examples are now presented.

CONCRETE & MASONRY

Concrete and masonry will be specified to be sourced in accordance with BES 6001 level “Very Good” or equivalent. Contractors are expected to state the “cradle to gate” embodied carbon of all concrete mixes in accordance line with BS EN 15978³³.

Cement replacement

Portland cement is a major contributor to global CO2 emissions. Pulverised Fuel Ash (PFA) and Ground Granulated Blast-furnace Slag (GGBS). PFA and GGBS are by-products of steel manufacturing and power generation that can replace up to 80% of Portland cement content in concrete, reducing its embodied energy and embodied CO2 by over 40%, fly ash by over 20%, and limestone fines by 15%.

GGBS will be considered for a number of concrete elements on the proposed development, subject to availability. For example, the Applicant will seek to use high GGBS mixes in ground large pours.

Concrete grades will also be reviewed to reduce the weight of reinforcement. All contractors must consider the slower strength gain for high cement-replacement mixes and make allowances in the construction

programme. The use of lower cement replacement mixes will only be accepted under prior agreement for unexpected circumstances.

Masonry

Masonry will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good” or equivalent³⁴. The Proposed Development will incorporate masonry materials which will achieve the following grades:

- Facing Bricks – Crest Sandringham, red multi
- Coloured Mortars – Cemex coloured mortar – compliant with BES 6001 Excellent Rating
- Facing Bricks – Crest Sandringham, red multi – whilst these materials do not hold BES 6001 certification; the Developer has produced a dedicated sustainability policy/statement
- Masonry Support – IG/ Keystone Group – whilst these materials do not hold BES 6001 certification; the Developer has produced a dedicated sustainability policy/statement and are seeking BES 6001 accreditation during 2024.
- Wetcast concrete architectural banding and window details

Aggregates

All quarry products should meet the requirements of the BRE BES 6001 framework standard for Responsible Sourcing of Construction Products, or similar³⁵. Quarry products supplied should therefore be able to show a clear chain of custody from source to point of use

Recycled and secondary aggregates can be used as a substitute for traditional concrete aggregates obtained through quarrying and marine dredging, reducing the environmental impact of the concrete production process. The use of recycled concrete aggregate, recycled masonry, and industrial by-products such as China Clay Waste can reduce the carbon footprint of concrete.

The use of recycled aggregates in concrete has been specified by the design team for designated concrete applications for the binding to pile caps, retaining walls. Where additional opportunities arise to incorporate aggregate into the Proposed Development, efforts will be made to source recycled aggregate where suitable, subject to adherence to the Structural Specification for the Proposed Development.

STEEL

Reinforcing steel

Global consumption of steel continues to rise, mainly as a consequence of industrialisation in developing countries. Despite international supply and demand challenges, and rising costs of primary steel, significant movements continue to be made in industry to evidence recycled content in steel. Recent action in the UK has also been taken to evidence the carbon and cost benefits of steel refabrication and reuse.

³³ WSP (2023) Port Street - NBS Specification [Z0-WSP-A180-Sp-XX-0003]

³⁴ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

³⁵ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

The Applicant will ensure that steel reinforcement is purchased through fabricators that adopt responsibly sourcing to BES 6001 through the Eco-Reinforcement sector scheme³⁶. Schemes such as Eco-Reinforcement - a third-party certification scheme which assesses and recognises responsibly sourced reinforcing steel products - should be considered.

Reinforcing steel will be specified to be sourced in accordance with BES 6001- Framework Standard for Responsible Sourcing - level “good”, or equivalent. Reinforcing steel that is used across this proposed development will contain 90-95% recycled steel material, insofar as possible; any steel sourced from Electric Arc Furnace processes will comprise 100% recycled steel content. The volume and proportion of these elements, as a percentage of all steel used, can be calculated as the design evolves.

Structural steel

Structural steel will, where possible, be sourced from either a BES 6001- Framework Standard for Responsible Sourcing - or an EMS certified supplier to a certification standard of “very good” with a minimum content from ResponsibleSteel™ Certified Steel (or equivalent) or Low Embodied Carbon Steel³⁷. Grade S355 steel will generally be adopted in the design and in accordance with the following technical delivery requirements unless otherwise specified:

- BS EN 10 025 Hot rolled products of structural steels - Technical delivery conditions for non-alloy structural steels (Parts 2 to 6)
- BS EN 10210-1 Hot finished structural hollow sections of non-alloy and fine grain steels; and
- BS EN 10219-1 Cold formed welded structural hollow sections of non-alloy and fine grain steels).

Structures will be assembled off-site as far as practicable which will reduce on-site waste generation. All steel will be supplied from steelmaking sites that meet Conditions 1 and 2 (listed below) and "Minimum Content". These conditions are presented as stated within the specification.

- Condition 1:
 - ▶ A site whose corporate owner has made a public commitment to develop and make public both a long-term emissions reduction pathway and a medium-term, quantitative science-based GHG emissions target for the corporation. A science-based target approved by the SBTi (Science Based Targets initiative), or other quantitative, scientifically justified target of comparable ambition, quality and coverage would meet this requirement in full, **Or**
 - ▶ A site that is publicly committed to achieving ResponsibleSteel™ certification, or certification to an equivalent international standard.
- Condition 2:
 - ▶ A site that discloses the GHG emissions intensity of the crude steel produced at the site (tonnes CO₂e/ tonne crude steel), together with the proportion of scrap iron/steel that is

used as an input material for steel production, to allow assessment of performance as specified in the SteelZero definition of ‘Low Embodied Carbon Steel’ (*see below).

- Minimum Content:
 - ▶ From 1st January 2022, a minimum percentage of the steel procured for the project should comply with at least one of the conditions below:
 - ▶ Steel produced by a steelmaking site where the site’s corporate owner has defined and made public both a long-term emissions reduction pathway and a medium-term, quantitative science- based GHG emissions target for the corporation. A science-based target approved by the SBTi (Science Based Targets initiative), or other quantitative, scientifically justified target of comparable ambition, quality and coverage would meet this interim requirement in full.
 - ▶ ResponsibleSteel™ Certified Steel, or steel meeting an equivalent international standard.
 - ▶ Low Embodied Carbon Steel. Defined as crude steel with a GHG emissions intensity (tonnes CO₂e/ tonne crude steel) of less than or equal to the values below, depending on the percentage of scrap steel used in its production³⁸.
 - For steel procured in 2022: 5%
 - For steel procured in 2023: 10%
 - For steel procured in 2024: 15%

TIMBER

Timber to be sourced from legal and sustainable sources as defined by the UK Government Central Point of Expertise on Timber, evidenced through a scheme recognised by CPET, such as the Forest Stewardship Council (FSC), alternatively Cat B where alternative documentary evidence is provided. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied will be obtained. Suppliers will be asked to evidence that they have adopted - and are implementing - a formal environmental purchasing policy for timber and wood-based products.

PVC

The Applicant will seek sustainable sources of PVC materials, ensuring that suppliers have phased out, or be working towards and reporting on, the phasing out of heavy metals such as lead, mercury or cadmium whilst ensuring materials are recyclable with all waste produced during the manufacturing process being recycled³⁹. All chemicals used in the production of virgin PVC must be registered for use under the regulations with the European Chemical Agency (REACH), and the supplier must operate a take-back scheme that offers a closed-loop recycling system or identifying a mechanical recycling system for installation waste.

³⁶ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

³⁷ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

³⁸ SteelZero Low Embodied Carbon Steel threshold – to be finalised by SteelZero subject to consultation

³⁹ Tim Groom Architects (2023) 1172 Plot 10b First Street, Manchester BREEAM Mat 03 - Responsible Sourcing Of Construction Products 1172-Tga-Xx-Xx-Rp-A-Fi_10_10-00502

8 MONITORING AND MITIGATION

This chapter demonstrates the commitments made by the Applicant to align with the “Monitoring and Mitigation” set out in the Plot 10, First Street Environmental Statement (Chapter 7) February 2023. This is part of the Applicant’s strategy to ensure more efficient use of non-renewable material resources, minimisation of the lifecycle impacts of construction materials and the methodology for achieving this through the selection of materials with low environmental impact.

This section details how the Applicant will discharge the monitoring and mitigation requirements of the planning condition below.

‘(3 b) Prior to above ground development submission of a Construction Environmental Management Plan (CEMP)- Circular Economy Statement (Materials) to include details of the strategy for securing more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction and how this would be achieved through the selection of materials with low environmental impact throughout their lifecycle in line with the Monitoring and Mitigation as set out in the Plot 10, First Street Environmental Statement (Chapter 7) February 2023 stamped as received on 01-03-23;’

This section additionally outlines the set mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted. As the development undergoes changes throughout the design stages, mitigation measures will adapt subsequently. Planning conditions will also be monitored to ensure the means of implementation are carried out at their respective timelines.

In addressing the requirement to align the actions of this CES to the “Monitoring and Mitigation as set out in the Plot 10, First Street Environmental Statement (Chapter 7) February 2023 stamped as received on 01-03-23;”, this section will align to the GLA’s Monitoring and Mitigation requirements, outlined below, before then setting out how the Proposed Development will address these requirements.

8.1 MONITORING AND MITIGATION INITIATIVES ON THE PROPOSED DEVELOPMENT

- A Whole Life Carbon (WLC) Assessment has been carried out to help identify and manage the carbon emissions arising from the material specification of the development. Two further (WLC Assessments will be undertaken in a reiterative process as the design of the development progresses to ensure residual effects (carbon emissions) are foreseen as accurately as possible.

To discharge Condition 3(b), the Applicant commits to:

- monitor the construction, operation and decommissioning of the development effects on climate change. Specifically, a monitoring plan will be developed to check that the assumptions made throughout this CES remain valid and will record greenhouse gas emissions associated with raw material extraction, manufacture and transport of building materials, along with the processes of construction, maintenance, repair and replacement, dismantling, demolition and eventual material disposal.
- submit a post-construction report to the Local Planning Authorities (LPAs) detailing the actual materials used – and wastes generated - across the project, how materials were responsibly

sourced and used, how wastes were managed and the environmental impacts of each of these materials.

- mitigate GHG emissions which are expected to have a moderate-adverse significant effect. The design of the Proposed Development ensures efficient use of space and routing of services. This reduces material usage with a positive impact in reducing carbon impacts.
- utilise recycled content, or responsibly sourced materials, to improve the environmental credentials of the building.
- Undertake construction works in a way that reduces vehicle movements insofar as possible. In addition, any construction wastes will be carefully segregated on site to maximise the opportunities for reuse and recycling.
- Ensure ease of repair to minimise material demands across the operations of the Proposed Development. The Proposed Development has been carefully designed to facilitate ease of repair in allowing components to be replaced independently of other components.
- Design the building in a way that minimises the need for additional materials when altering the use of the building. The building has been designed for easy adaptability into other uses – such as conversion into residential apartments - which will reduce material demand for any alterations to the purpose of the building in future.
- minimise energy demand for cooling the building. Glazing ratios will be reduced, and solid façade will be introduced to reduce solar gain and energy demand for cooling. This approach will be implemented and monitored through separate overheating and ventilation assessments as well as a separate HVAC/Energy Strategy which will be developed at preconstruction stage for relevant planning conditions.

As the development undergoes changes throughout the design stages, mitigation measures will adapt subsequently. As such a Monitoring Plan will be developed to check that the assumptions made above remain valid. Planning conditions will also be monitored to ensure the means of implementation are carried out at their respective timelines.

9 RECYCLING & WASTE REPORTING

At this point in the process, the Applicant expects the following wastes to arise with the corresponding waste management routes and these have been discussed throughout the earlier sections of this CES.

Type of waste	Comment	Overall (tonnes)	Waste Management Routes
Demolition (Waste product & Construction Stage (Module A))	Limited material on site. See Section XX and the Pre-Demolition and Refurbishment Audit (file name 1172-TGA-XX-XX-RP-A-	N/A	Removal from site for safe disposal. 95% recycled offsite, 5% landfill

Type of waste	Comment	Overall (tonnes)	Waste Routes	Management
	FI_10_10-00501 (version 2.0))			
Excavation Waste (Waste (product & Construction Stage (Module A))	There is no anticipated excavation waste.	N/A	N/A	
Construction Waste (Waste (product & Construction Stage (Module A))	N/A	N/A	N/A	
Demolition / Strip-out Waste (Use Stage Module B)	There is no anticipated demolition/strip out during the use stage	N/A	N/A	
Construction Waste (Use Stage Module B)	There is no anticipated construction during the use stage	N/A	N/A	
Municipal Waste		57,800 litres of waste, per week, for student accommodation, Approximately 2,700 litres of waste will be generated at the food hall per week;	The main waste streams are expected to be general, dry mixed recycling, food waste and glass waste. A weekly collection of waste oil will also be available to the food hall. Suitable waste containers will include 1,100L Eurobin and 240L wheeled bins which will be collected and recycled by approved contractors	
Industrial Waste	There will be no industrial waste generated from the Proposed Development	N/A	N/A	

The Applicant will ensure that a robust Site Waste Management Plan is in place, with an appropriate Information Management System (IMS) to record waste arisings, waste movements and waste treatment

across the works. The Facility Management company will then work with waste Contractors to record waste arisings, waste movements and waste treatment across the operation of the building.

9.1 BILL OF MATERIALS

An estimated summary of the Bill of Materials (BOM) for the Proposed Development is summarised below. This will be updated on an ongoing basis across construction of the development.

Table 9.1 Bill of materials

Reference	Description	Quantity	Unit
<u>1</u>	<u>RF Concrete</u>	<u>7,343</u>	<u>M³</u>
<u>2</u>	<u>Hot Melt Roof</u>	<u>1,132</u>	<u>m²</u>
<u>3</u>	<u>Windows</u>	<u>2,271</u>	<u>m²</u>
<u>4</u>	<u>Stick Curtain Walling</u>	<u>526</u>	<u>m²</u>
<u>5</u>	<u>Brickwork</u>	<u>6,800</u>	<u>m²</u>
<u>6</u>	<u>Blockwork</u>	<u>486</u>	<u>m²</u>
<u>7</u>	<u>SFS</u>	<u>5,180</u>	<u>m²</u>
<u>8</u>	<u>MF Ceiling</u>	<u>30,368</u>	<u>m²</u>
<u>9</u>	<u>Internal Dry Lined Walls</u>	<u>89,037</u>	<u>m²</u>
<u>10</u>	<u>Timber Doors</u>	<u>3,460.8</u>	<u>m²</u>
<u>11</u>	<u>Carpets</u>	<u>89</u>	<u>m²</u>
<u>12</u>	<u>Laminate Flooring</u>	<u>15,501</u>	<u>m²</u>
<u>13</u>	<u>Sealed Concrete Flooring</u>	<u>826</u>	<u>m²</u>
<u>14</u>	<u>Wall and Floor tiles</u>	<u>7392</u>	<u>m²</u>

Reference	Description	Quantity	Unit
<u>15</u>	Skirting Board – Timber	<u>16,282</u>	<u>m</u>
<u>16</u>	Cladding	<u>911</u>	<u>m²</u>

9.2 CUT AND FILL CALCULATIONS

A summary of the cut and fill calculations for the Proposed Development is summarised below. This will be updated on an ongoing basis across construction of the development. All opportunities will be explored to use any surplus material within the foundations or landscaping of the Proposed Development.

Table 9.2 Cut and Fill materials

FILL	Volume (m3)
Fill – Pile Mat (1000mm thick)	1630
TOTAL	1630
CUT	Volume (m3)
Cut – Removal of Mat	1630
Cut – Disposal of Pile Arisings	756
Cut – To Formation Level	1030
TOTAL	3416

10 REFERENCE DOCUMENTS

This section of the report covers and provides document references and evidence for the commitments, targets and metrics contained within this CES.

Evidence of Commitments	Comment	Document Reference Number/Title
Pre-demolition and refurbishment assessment showing limited opportunities for reuse and recycling.	Wst 01 : Pre-Demolition / Refurbishment Audit	- 1172-TGA-XX-XX-RP-A-FI_10_10-00501
Wide range of opportunities for disassembly and adaptability, across the Proposed Development, which are summarised in this CES	1172 First Street, Manchester Breeam Wst 06 - Design For Disassembly And Adaptability	- 1172-TGA-XX-XX-RP-A-FI_10_10-00500_BREEAM Wst 06 Report_P01
Commitments to ensure responsible sourcing of construction products	BREEAM MAT 03 - Responsible Sourcing Of Construction Products	- 1172-TGA-XX-XX-RP-A-FI_10_10-00502
Detail on the collection facilities to be introduced within the operational stage of the Proposed Development	Vectos (2023). Waste Servicing Strategy Report: House of Social 1 Ltd Plot 10b, First Street. VN222431	- Vectos (2023). Waste Servicing Strategy Report: House of Social 1 Ltd Plot 10b, First Street. VN222431
Amendments to the design of the building height.	Amendments to the design of the building height to 14 storeys.	- Plot 10b First Street, Manchester, Design And Access Statement

11 CONCLUSION

This Circular Economy Statement is submitted in support of the planning application made on behalf of the Applicant, House of Social, for the Proposed Development at Plot B First Street, Manchester. This document seeks to discharge the planning condition:

'(3 b) Prior to above ground development submission of a Construction Environmental Management Plan (CEMP)- Circular Economy Statement (Materials) to include details of the strategy for securing more efficient use of non-renewable material resources and to reducing the lifecycle impact of materials used in construction and how this would be achieved through the selection of materials with low environmental impact throughout their lifecycle in line with the Monitoring and Mitigation as set out in the Plot 10, First Street Environmental Statement (Chapter 7) February 2023 stamped as received on 01-03-23;'

In doing so, this CES demonstrates how the design and construction of the development addresses the challenges of the climate emergency by prompting resource efficiency and adopting a circular economy approach that contributes to a sustainable development and has followed the Circular Economy Statement Guidance (updated in March 2022) in the following areas:

- Building in layers
- Designing out waste by:
 - Minimising the quantities of materials and resources used
 - Specifying and sourcing materials and other resources sustainably
 - Design out construction, demolition, excavation, and municipal waste arising
 - Managing construction, demolition, excavation, and municipal waste
- Designing for longevity
- Designing for adaptability & flexibility
- Designing for disassembly
- Using systems, elements and materials that can be reused and recycled

The document further sets out how the Applicant will monitor and mitigate against climate risks, with a focus upon the role that materials will play against the risks and impacts identified across the First Street Environmental Statement (Chapter 7) February 2023 stamped as received on 01-03-2023.



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