

Material Efficiency Plan

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Contents:

Executive Summary.....	2
RIBA Stage 1 - Preparation and Brief.....	3
RIBA Stage 2 - Concept Design.....	4

Material Efficiency Plan

Avenue One, Letchworth

Executive Summary

Introduction

This report has been produced to demonstrate how the proposed development will be designed and constructed to maximise materials efficiency in accordance with the Materials Efficiency BREEAM V6 New Construction requirements under credit issue Mat 06.

The planning application consists of the erection of two buildings for Flexible Use Classes including Eg (ii) (iii), B2, B8, including servicing, parking access, landscaping.
The BREEAM assessment will be undertaken using the Similar Buildings approach, with a single certificate issued upon completion that lists all assessed units.

Client requirement for the new build industrial development is as follows:

- Excellent BREEAM rating

Aims and objectives

This report examines the potential for materials efficiency throughout the design and construction process in order to avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building. The aims of this process are to:

- Reduce cost as a result of a reduction of material use in building design.
- Encourage the reuse of existing materials.
- Encourage the use of materials with higher levels of recycled content.
- Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Process

The Materials Efficiency Plan will be examined by the design team during preparation and brief, concept design stage, developed design stage, technical design stage and construction stage to determine where materials efficiency can be implemented in support of:

- Design for re-use and recovery
- Resource optimisation
- Off-site construction
- Resource efficient procurement
- Designing for the future.

Material efficiency strategy

The table below outlines the efficiencies to be considered at each work stage:

Preparation and brief	
Objective	To set requirements that inform decisions throughout the design and construction of the project.
Participants	Client or client's agent with input from the design team if appointed.
Action	Assess the site, the likely project scale, and the client's functional and aesthetic requirements to set material efficiency objectives for the project.
Concept design	
Objective	Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.
Participants	Design team including at least: • Architect • Structural Engineer • Building Services Engineer
Action	Hold workshops with the project team to identify design opportunities to reduce or optimise materials use through design, specification, construction techniques etc.
Developed Design and Technical Design	
Objective	Develop design proposals based on learning from the concept design.
Participants	All relevant members of the design team.
Action	Incorporate material efficiency measures and strategies identified in concept design into architectural, structural and building services design as appropriate. Review performance against previous stages and identify deviations.
Construction	
Objective	Implement material efficiency measures in construction.
Participants	Principal contractor.
Action	Implement material efficiency measures and strategies identified in previous stages in building construction and identify deviations. Identify further efficiencies as appropriate for this stage.

Material Efficiency Plan

Avenue One, Letchworth

RIBA Stage 1 - Preparation and Brief

Objective

To set requirements that inform decisions throughout the design and construction of the project.

Site assessment

Consultation was held with the following team members in February 2025:

- Letchworth Investment LLP for Wrenbridge - company/client
- CMP Architects - Architect

This established the following about the project:

- Site - Avenue One, Letchworth
- Project scale - Three industrial sheds with a GEA of 12,333 sqm
- Functional and aesthetic requirements - Storage and distribution

As a result of establishing the project aspirations at RIBA Stage 1, material efficiency objectives for the scheme have been determined as follows:

- Reuse of demolition material to prevent amount of waste to landfill as well as use of virgin materials
- Use of recycled materials within the construction where possible
- Efficient design of services to ensure adaptability of building use

Material Efficiency Plan

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RIBA Stage 2 - Concept Design

Objective

Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.

Workshop

Consultation was held with the following team members in March 2025:

- Letchworth Investment LLP for Wrenbridge - company/client
- CMP Architects - company/architect
- Burrows Graham- structural engineer
- MBA Consulting Engineers - services engineer

The consultation identified design opportunities to reduce or optimise materials use through design, specification, construction techniques etc. These are detailed in the tables overleaf.

Material Efficiency Plan

Avenue One, Letchworth

Considerations		RIBA Stage 2 Recommendations
Reuse and recovery A summary of developed design proposals and implementation of material efficiency measures in construction to demonstrate re-use of existing buildings, structures, components, materials and services from on site or elsewhere locally either now (re-use) or in the future (recovery).		
Identification of re-usable materials	- Reuse of demolition material. - Exploring the options for reuse of construction site facilities, temporary site works, site hoarding	- Reuse of demolition materials. - Cut and fill technique could be used to level the site.
Use of recycled materials	- Use of recycled materials - Exploring the options for reuse of construction site facilities, temporary site works, site hoarding. - Use of recycled aggregates	- Recycled aggregates could be included in the specification where possible. - A small amount of recycled aggregate could be specified in the sub-base, if available locally. - It is recommended that the cladding used includes recycled content. - Recommendations to reuse construction facilities (e.g. site offices) will be put forward to the contractor, where feasible.
Building with the fit-out requirements in mind	- Shell and core requirements - Location of core/risers - Exposed features and services	- The development should be kept as a shell & core to enable full flexibility for future tenants. - Risers will be located for ease of use for future tenants. - Raised access floors and ceiling tiles could be utilised to enable ease of reconfiguring services if required.
Resource Optimisation A summary of developed design proposals and implementation of material efficiency measures in construction to demonstrate design of a building or structure that can be constructed and used with optimal consumption of water, materials and energy, selecting sustainably sourced materials.		
Dimensions of the building	- Dimensions within the building that avoid cut-off waste. - Standard size / length materials to be considered.	- Construction would be carried out on a standard size grid system. This would allow for standard sized cladding panels to be used for construction. - Standard sized materials could be specified wherever feasible to reduce potential cut-off waste. - Common areas could be finished using standard size materials where feasible, e.g. ceiling tiles and carpet tiles. - Tiling could be utilised within the core areas to reduce potential cut-off waste.
Efficiency of services	Routing of services and their efficiencies to reduce excess use of material.	Risers could be located at each end of office, to reduce ducting and pipework.
Take-back scheme for un-used or waste materials	- Policy to support responsible procurement and waste management practices, including take-back schemes. - Requirements for contractors and sub-contractors.	- Architect to specify British Gypsum or similar approved suppliers for plasterboard as they provide a take-back scheme. - ER's to include requirements for the contractor to consider suppliers who provide take-back schemes.

Material Efficiency Plan

Avenue One, Letchworth

Considerations		RIBA Stage 2 Recommendations
Reducing waste	- Reuse of concrete - Exposed features.	- Consideration could be given to the durability of the materials specified. - Where delicate materials are specified in areas where they are at risk of damage, durability measures could be incorporated to protect these. - A resource management plan could be used to monitor and measure waste produced on site, as well as maximising reuse and recycling. - Modular cladding system could be utilised to ensure resource optimisation - reducing waste during construction. - ER's could include requirements for the contractor to ensure waste off-cuts are utilised elsewhere on the site where possible. - A built-up insulated wall system could be utilised for internal wall partitions to maximise efficiencies. - Cladding and roof system could be manufactured off-site.
Off-Site Construction A summary of developed design proposals and implementation of material efficiency measures in construction to demonstrate implementation of prefabricated structures, components, panels or composites that offer reduced consumption of water, energy, materials in order to create less waste.		
Materials constructed off-site	- Materials that can be constructed off-site. - Pre-fabricated elements (e.g. glazing / curtain walling systems). - Duplicated sized materials.	- Pre-fabricated and manufactured off- site materials could be considered for the development, including fixtures / fittings within the development. - Pre-cast elements could be considered within the development. A built-up insulated wall system could be utilised for internal wall partitions to maximise efficiencies. - A built-up insulated wall system could be utilised for internal wall partitions to maximise efficiencies. - Pre-cast concrete lifts shafts could be specified. - Cladding and roof system could be manufactured off-site.
Finishing products	Products with finishes completed off-site.	- The cladding and roofing system will be treated off-site. - Pre-fabricated pre-finished panels can be specified for internal office walls.
Resource Efficient Procurement A summary of developed design proposals and implementation of material efficiency measures in construction to demonstrate resource efficient procurement and construction methods and using waste contractors who can offer the best re-use and recycling performance.		
Sustainable Procurement Policy	- Sustainable Procurement Plan. - Other policies / PQOs for contractors that are tendering for work.	- Ensure Sustainable Procurement policy is established and circulated to all appropriate parties at early stage in the design. This will outline targets, including local procurement. - Where possible, materials with recycled content will be specified. - Prioritisation could be given to the specification of locally sourced materials.
Materials that allow for end of use recycling	Materials that can be disassembled, and recycled separately at end of life, e.g. component wall systems.	- The cladding will be a built up system, that allows for panels and insulation to be removed separately, and recycled. - Frame could be mostly bolted to allow ease of separation from other materials.

Material Efficiency Plan

Avenue One, Letchworth

Considerations		RIBA Stage 2 Recommendations
Procurement strategies	Procurement strategies allowing for efficiencies.	- At this stage no specific procurement routes are specified; this will be identified by the contractor following their appointment. - Materials with the potential for off-site production and just-in-time delivery could be prioritised. - The contractor is expected to follow the sustainable procurement plan and ensure efficient procurement strategies are implemented (e.g. ordering in order of construction).
Sustainable sourcing certificates	Policies on bidding contracts to ensure responsible and sustainable procurement.	- Recycled content will be specified within concrete / aggregate, if feasible. - Procure responsibly in accordance with Sustainable Procurement Plan. - The contractor could be required to ensure materials used are manufactured under an ISO 14001 certificate.
Design for the Future A summary of developed design proposals and implementation of material efficiency measures in construction to demonstrate consideration of potential future uses of the building, selecting materials that match intended use and durability, enabling easy maintenance / refurbishment.		
Consideration of future-proofing to reduce waste	Consideration of future-proofing to reduce waste	- Development is to be 'shell & core' to enable full flexibility for future tenant. Where applicable, layout and M&E will be designed for future tenant in mind to avoid the need for fixtures / fittings to be stripped out prior to their fit-out works. - The development could be designed with the future adaptability in mind, considering future use of individual units and flexibility of spaces. - Consideration could be made with respect to future use of building services, and this could be reflected in the servicing strategy and riser location. - Built up cladding system allows for insulation to be upgraded, without whole external wall being replaced - Recommendations within functional adaptability strategy to be implemented where feasible.
End of life	- Carbonation of crushed concrete aggregate. - Reusing recovered materials to avoid the use of virgin resources, preferably where it is more carbon efficient to do so. - There are a range of established uses for recovered concrete, with no evidence of any material being sent to land fill.	The building could be designed for deconstruction – concrete could be crushed and re-used, roof and wall cladding systems can be cost effectively dismantled, and the steel within the system either re-used or more likely recycled, meaning that some of the initial 'unavoidable' embodied CO2 can be recovered during the recycling process.

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Conclusion

- This report outlines how the opportunities for materials efficiency have been identified and appropriate measures investigated and recommended to optimise the use of materials in building design during the preparation and brief and concept design stages. This report will be used as a basis to demonstrate how the development is meeting the principles of materials efficiency.
 - These considerations will be reviewed and readdressed later in the design stages (developed design and technical design), throughout procurement and during construction stages, to ensure that opportunities continue to be identified, investigated and implemented throughout the project.
 - Detailed documentation, including drawings, reports and specifications will be collated throughout the project to support the materials efficiency strategies that will be implemented within the final buildings, and the achievement of the BREEAM Mat 06 Materials Efficiency credit.
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