

Mat06

Material efficiency

Actions:

- i. Compile a material efficiency strategy at **every stage** of the project.

i. Material efficiency strategy

Targets and opportunities to optimise the use of materials should be identified for the following **RIBA Stages: 1, 2, 3, 4 and 5**. The strategy should follow the below structure:

Work stages and efficiencies	
RIBA Stage 1	
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.
Evidence	Dedicated report that sets out a clear framework to guide material efficiency activities throughout the design and construction of the project. The report should set out aims, objectives, targets, performance indicators, opportunities, constraints and responsibilities to guide material efficiency activities.
RIBA Stage 2	
Objective	Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.
Participants	Design team including at least: <ul style="list-style-type: none">- 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.
Evidence	Minutes of the workshops held. Documentation demonstrating how the feedback from the workshop has been incorporated in the concept design of the project, for example: outline specification for materials selection, report on approximate predicted reductions in material quantities.

Note: This document is intended as guidance only. Consult your BREEAM AP or Assessor to ensure compliance is achieved.

Work stages and efficiencies

RIBA Stages 3 and 4

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.
Evidence	Report on deviations from previous stages and additional actions to be taken. Documentation demonstrating the incorporation of the outcomes from the concept stage and additional actions, for example: design drawings or specifications demonstrating materials efficiency measures undertaken.

RIBA Stage 5

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.
Evidence	Report on deviations from previous stages. Documented evidence of activity to further identify efficiencies at this stage, for example: meeting minutes, training events, waste reduction documentation etc.

This table is based on the principles set out in Parts 1 and 2 of the BS 8895 series of standards, and provides examples of how material efficiency can be considered at each work stage. As a minimum, the measures listed under the 'evidence' column must be met to show compliance with the issue.

Material Efficiency Examples:

- Increasing the utilisation factor of structural members
- Designing to standard material dimensions to reduce off-cuts and waste on site
- Removing redundant materials from the design
- Using materials that can be recycled or reused at the end of their service life
- Making use of recycled or reclaimed materials
- Designing for deconstruction and material reuse
- Using pre-fabricated elements where appropriate to reduce material waste
- Consider using an 'exposed thermal mass' design strategy to reduce finishes
- Avoiding over-specification of predicted loads
- Using lightweight structural design strategies
- Making use of bespoke structural elements where this will reduce overall material use

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- 'Rationalisation' of structural elements
- Optimising the foundation design for embodied environmental impact.

Further key questions to consider:

- Can the design, form and layout be simplified without compromising the design concept?
- Can the design be coordinated to avoid or minimise excess cutting and jointing of materials that generate waste?
- Is the building designed to standard material dimensions?
- Can the range of materials required be standardised to encourage reuse of offcuts?
- Is there repetition and coordination of the design, to reduce the number of variables and allow for operational refinement (e.g. reusing formwork)?

Material efficiency strategy checklist

Report	Completed
Stage 1	<input type="checkbox"/>
Stage 2	<input type="checkbox"/>
Stage 3	<input type="checkbox"/>
Stage 4	<input type="checkbox"/>
Stage 5	<input type="checkbox"/>

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