

BREEAM Pre-assessment report

River Academy, Reading

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Summary

This pre-assessment report has been compiled for River Academy, Reading, and based on a meeting held 29th September 2021 between the BREEAM assessor and the design team.

The target BREEAM rating for the project is Very Good which requires a score of at least 55%. This pre-assessment shows that at this stage a score of 55.70% should be achievable provided the required evidence is compiled and provided to the assessor at the correct time.

Introduction to BREEAM New Construction

BREEAM (Building Research Establishment Environmental Assessment Method) was created by BRE in 1990 as means of assessing, rating and certifying the sustainability of buildings. The scheme applicable to River Academy is BREEAM New Construction 2018 Education (Fully fitted).

There are several factors involved in determining a BREEAM rating. These include the project's performance within the BREEAM categories and issues, and the minimum scores and standards required for each BREEAM rating. These are explained in more detail below.

Categories and Issues

To attain the required BREEAM rating, it is necessary to demonstrate performance in nine categories. Each category contains issues where credits can be awarded to build up a total score. Within each issue, there are several criteria which must adhered to in order to score one or more credits. These criteria often vary depending on the building type or context.

Minimum Scores

The weighted totals of achieved credits are used to create an overall percentage score for the development. Each BREEAM rating requires a minimum total percentage score, ranging from 'Pass' at 30% to 'Outstanding' at 85%. The minimum total scores required to attain each BREEAM rating are shown below. A project which does not achieve a rating of at least 30% is considered unclassified.

BREEAM Rating	Minimum Score
Outstanding	85%
Excellent	70%
Very Good	55%
Good	45%
Pass	30%

Minimum Standards and time limited credits

The project is targeting a Very Good rating. To achieve this there are several mandatory credits, listed below:

Issue	Mandatory credit/criterion
Man 04 Commissioning and handover	One credit (Commissioning test schedule and responsibilities)
Man 04 Commissioning and handover	Criterion 11 (Building User Guide)
Ene 02 Energy monitoring	One credit (First sub-metering credit)
Wat 01 Water consumption	One Credit
Wat 02 Water monitoring	Criterion 1 only
Mat 03 Responsible sourcing of construction products	Criterion 1 only

There are various time limited issues where action is needed at a specific RIBA stage to award the credit. Under BREEAM 2018 approximately 30% of the credits need thinking about at or around RIBA 2. Where the time limit exists this has been noted in blue in the 'credits targeted' table in Appendix A. These must be actioned at the correct time to ensure the target rating is achieved.

The Certification Process

It is possible to be awarded BREEAM certification at two stages, known as design stage and post construction stage. A development is not considered to have achieved BREEAM until the post construction certification has been issued.

The design stage assessment provides a rating of the building as specified and is also referred to as an 'interim' rating. This assessment should ideally be carried out prior to work on site starting. Is it not necessary to attain design stage certification in order to be certified at the post construction stage, although an interim certificate is sometimes required for planning. The post construction stage assessment is considered to determine the final BREEAM rating for the project.



BREEAM certificates are issued by BRE following the submission of a BREEAM report and compiled evidence by the assessor. A robust evidence policy is operated by BRE when considering projects for certification under BREEAM. Every criteria and requirement must be demonstrated by detailed documentary evidence in order for the credits to be awarded and for the certificate to be released. It is not the role of the assessor to produce evidence, instead evidence of compliance must be provided by the design team and compiled by the assessor for submission.

Pre-assessment score

The table below shows the score deemed achievable at this stage. It should be noted that a buffer of approximately 5%, over the target rating should be built in at this stage to ensure that, if credits are lost throughout the process, the rating is still achievable. A list of potential extra credits is included in the next section and a full list of targeted credits is provided in Appendix A.

As you can see from the table below the targeted credits plus the potential give a score of 79.10%, an overall score of Excellent. This score does rely on various credits being actioned asap at RIBA stage 2.

Section	Section weighting	Targeted credits %	Potential extra %	Targeted plus potential %
Management	11%	8.38%	0.52%	8.90%
Health and wellbeing	14%	8.55%	3.90%	12.45%
Energy	16%	5.53%	4.30%	9.83%
Transport	10%	5.00%	0.84%	5.84%
Water	7%	4.37%	0.88%	5.25%
Materials	15%	5.35%	8.56%	13.91%
Waste	6%	3.60%	-	3.60%
Land use and ecology	13%	9.00%	3.00%	12.00%
Pollution	8%	5.33%	-	5.33%
Innovation	10%	0.00%	2.00%	2.00%
Totals	110%	55.10%	24%	79.10%

Potential extra credits

The list of credits below should be investigated by the design team to see which credits can be added in to increase the target score. As the predicted score is just over the 55% needed for a Very Good rating the additional credits should not be considered optional at this stage. To give some margin the design team should be aiming to achieve at least 60% in case any credits assumed in this pre-assessment are lost during and design and construction.

Ref	BREEAM issue	Credits and requirement	Credits available	%
Man 04	Testing and inspecting building fabric	Carry out thermographic survey	1	0.52
Hea 01	View out	95% of the floor area in 95% of spaces for each relevant building area has an adequate view out. Adequate view out: Where relevant building areas are within 8m of an external wall which has a window or permanent opening, and the window or opening is $\geq 20\%$ of the surrounding wall area. Where the room depth is greater than 8m, the percentage of window or opening must instead be the same as, or greater than, the values in Table 1.0 BS8206: Part 2.	1	0.78
Hea 02	Post-construction indoor air quality measurement	IAQ testing required pre-occupancy	1	0.78
Hea 04	Design for future thermal comfort	Re-run thermal comfort model with future weather data files to see whether the building still performs under a projected climate change. If not, the design team must confirm passive measures that could be easily implemented in the future	1	0.78
Hea 06	Security of site and building	Consult suitably qualified security specialist at RIBA 2, implement their recommendations	1	0.78
Hea 07	Safe access	Dedicated cycle and pedestrian pathways required. Full list of criteria needs to be reviewed by Ares.	1	0.78
Ene 01	Reduction of energy use and carbon emissions	CPW to update BRUKL so Build Energy can check possible credits from PV/ASHP/change in fabric	Up to 4	2.46
Ene 07	Energy efficient labs	Engage with the client during the preparation of the initial project brief to determine occupant requirements and define laboratory performance criteria. Ensure systems are sized correctly and that fume cupboards meet various best practice standards	1	0.61
Ene 08	Energy efficient equipment	Reduce energy consumption in kitchen by implementing two thirds of the energy efficiency measures from each section of CIBSE TM50.	2	1.23

		Reduce energy consumption in ICT areas by: specifying a natural ventilation and cooling strategy as standard. Use forced ventilation only when the internal temperature exceeds 20°C and active cooling only when the internal temperature exceeds 22°C OR Specify a mechanism to achieve automatic power-down of equipment when not in use, including overnight.		
Tra 02	Sustainable transport measures	Provide car sharer parking spaces for 10% of car parking spaces. Include car sharing information in the travel plan and market it to building users	1	0.84
Wat 03	Leak detection system	Install solenoid shut off valves for water in WC areas	1	0.88
Mat 01	Building life cycle assessment (LCA)	Carry out LCA at RIBA 2 and RIBA 4. This must be submitted to BRE before the respective stages are signed off	Up to 7 plus 2 exemplary	9.49
Mat 06	Material efficiency	At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. Develop and record the implementation of material efficiency through the design and construction	1	1.07
LE02 - LE05	Land use and ecology	Ecologist's report required to calculate number of credits likely in this section. Credits will be awarded for ecologist's early involvement, and protecting and enhancing site ecology in line with their recommendations	Up to 3	3
Total potential credits			27	24%

Appendices

Appendix A –Credits targeted

The following table lists available BREEAM credits and shows those targeted and potential extras to give a route to achieving the Very Good rating.

Ref	BREEAM issue	Credits	Credits available	Credits targeted	Potential extra credits	Comments
Management						
Man 01	Project brief and design	Project delivery planning- RIBA 2	1	1	0	
		Stakeholder consultation (interested parties)- RIBA 2	1	0	0	
		BREEAM AP (Concept Design)- RIBA 2	1	1	0	
		BREEAM AP (Developed Design)	1	1	0	
Man 02	Life cycle cost and service life planning	Elemental LCC- RIBA 2	2	0	0	
		Component level LCC options appraisal- RIBA 4	1	0	0	
		Predicted capital cost reporting	1	1	0	
Man 03	Responsible construction practices	Prerequisite - Legal and sustainable timber	-	-	-	
		Environmental management	1	1	0	
		BREEAM AP (site)	1	1	0	
		Responsible construction management	2	2	0	
		Monitoring of construction site impacts	2	2	0	
Man 04	Commissioning and handover	Commissioning - testing schedule and responsibilities	1	1	0	

		Commissioning - design and preparation	1	1	0	
		Testing and inspecting building fabric	1	0	1	
		Handover- Building User Guides and training schedules	1	1	0	
Man 05	Aftercare	Aftercare support	1	1	0	
		Commissioning - implementation	1	1	0	
		Post-occupancy evaluation (POE)	1	1	0	
Total credits- Management			21	16	1	
Health and well being						
Hea 01	Visual comfort	Control of glare from sunlight	1	1	0	
		Daylighting	2	2	0	
		View out	1	0	1	
		Internal and external lighting levels, zoning and control	1	1	0	
Hea 02	Indoor air quality	Prerequisite - Indoor air quality (IAQ) plan	-	-	-	
		Ventilation	1	0	0	
		Emissions from construction products	2	1	0	
		Post-construction indoor air quality measurement	1	0	1	
Hea 04	Thermal comfort	Thermal modelling	1	1	0	
		Design for future thermal comfort	1	0	1	
		Thermal zoning and controls	1	1	0	
Hea 05	Acoustic performance	Acoustic performance a. Sound insulation b. Indoor ambient noise level c. Room acoustics	3	3	0	
Hea 06	Security	Security of site and building – RIBA 2	1	0	0	
Hea 07	Safe and healthy surroundings	Safe access	1	0	1	
		Outside space	1	1	0	
Total credits- Health and well being			18	11	4	

Energy						
Ene 01	Reduction of energy use and carbon emissions	Energy performance (BRUKL)	9	0	4	Current BRUKL gives zero credits
		Prediction of operational energy consumption	4	0	0	
Ene 02	Energy monitoring	Sub-metering of end-use categories	1	1	0	
		Sub-metering of high energy load and tenancy areas	1	1	0	
Ene 03	External lighting	External lighting	1	1	0	
Ene 04	Low carbon design	Passive design- RIBA 2	1	1	0	
		Free cooling	1	0	0	
		Low and zero carbon technologies- RIBA 2	1	1	0	
Ene 05	Energy efficient cold storage	Refrigeration energy consumption	1	1	0	
		Indirect greenhouse gas emissions	1	1	0	
Ene 06	Energy efficient transportation systems	Energy consumption	1	1	0	
		Energy efficient features	1	1	0	
Ene 07	Energy efficient laboratory systems	Design specification- RIBA 1	1	0	1	
Ene 08	Energy efficient equipment	Reduction of unregulated energy	2	0	2	
Total credits- Energy			26	9	7	
Transport						
Tra 01	Transport assessment and travel plan	Transport assessment and travel plan- RIBA 2	2	2	0	
Tra 02	Sustainable transport measures	Transport options implementation	10	4	1	-Cycle spaces, showers & changing room, nearby amenities and EV charge credits targeted. -Car sharing is a potential extra
Total credits- Transport			12	6	1	
Water						

Wat 01	Water consumption	Water consumption	5	3	0	
Wat 02	Water monitoring	Water monitoring	1	1	0	
Wat 03	Water leak detection	Leak detection system	1	1	0	
		Flow control devices	1	0	1	
Total credits- Water			8	5	1	
Materials						
Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	Superstructure LCA. RIBA 2 and RIBA 4	6	0	6	
		Substructure and hard landscaping options appraisal during Concept Design- RIBA 2	1	0	1	
Mat 02	Environmental impacts from construction products - Environmental Product Declarations	Specification of products with a recognised environmental product declaration (EPD)	1	1	0	
Mat 03	Responsible sourcing of construction products	Prerequisite - Legal and sustainable timber	-	-	-	
		Enabling sustainable procurement- RIBA 2	1	1	0	
		Measuring responsible sourcing	3	2	0	
Mat 05	Designing for durability and resilience	Protecting vulnerable parts of the building from damage and protecting exposed parts of the building from material degradation	1	1	0	
Mat 06	Material efficiency	Material efficiency- RIBA 1	1	0	1	
Total credits- Materials			14	5	8	

Waste						
Wst 01	Construction waste management	Pre-demolition audit- RIBA 2	1	1	0	
		Construction resource efficiency	3	2	0	
		Diversion of resources from landfill	1	1	0	
Wst 02	Use of recycled and sustainably sourced aggregates	Project Sustainable Aggregate Points	1	0	0	
Wst 03	Operational waste	Operational waste	1	1	0	
Wst 05	Adaptation to climate change	Resilience of structure, fabric, building services and renewables installation- RIBA 2	1	0	0	
Wst 06	Design for disassembly and adaptability	Design for disassembly and functional adaptability – recommendations- RIBA 2	1	1	0	
		Disassembly and functional adaptability – implementation	1	1	0	
Total credits- Waste			11	7	0	
Land use and ecology						
LE01	Site selection	Previously occupied land	1	0	0	
		Contaminated land	1	1	0	
LE02	Ecological risks and opportunities	Survey and evaluation- RIBA 1	1	1	0	
		Determining ecological outcomes	1	1	0	
LE03	Managing impacts on ecology	Planning and measures on-site	1	1	0	
		Managing negative impacts	2	1	1	
LE04	Ecological change and enhancement	Change and enhancement of ecology	1	1	0	
		Ecological enhancement	3	1	2	
LE05	Long term ecological management and maintenance	Management and maintenance throughout the project–	1	1	0	
		Landscape and ecology management plan	1	1	0	

Total credits- Land use and ecology			13	9	3	
Pollution						
Pol 01	Impact of refrigerants	Impact of refrigerant	2	1	0	
		Leak detection	1	1	0	
Pol 02	Local air quality	Local air quality- NOx emissions from heating and hot water	2	0	0	
Pol 03	Flood and surface water management	Flood resilience	2	1	0	
		Surface Water Run-Off - Rate	1	1	0	
		Surface Water Run-Off - Volume	1	1	0	
		Minimising watercourse pollution	1	1	0	
Pol 04	Reduction of night time light pollution	Reduction of night time light pollution	1	1	0	
Pol 05	Reduction of noise pollution	Reduction of noise pollution	1	1	0	
Total credits- Pollution			12	8	0	
Innovation						
Man 03	Responsible construction practices	Responsible construction management	1	0	0	
Hea 01	Visual comfort	Daylighting	1	0	0	
		Internal and external lighting levels, zoning and control	1	0	0	
Hea 02	Indoor air quality	Minimising sources of air pollution - Emissions from construction products	1	0	0	
Hea 06	Security	Security of site and building	1	0	0	
Ene 01	Reduction of energy use and carbon emissions	Up to 2 credits-Beyond zero net regulated carbon	3	0	0	
		3 credits- Carbon negative				
Wat 01	Water consumption	Water consumption	1	0	0	

Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	Core building services options appraisal during Concept Design- RIBA 2	1	0	1	
		LCA and LCC alignment- RIBA 2 and RIBA 4	1	0	0	
		Third party verification of LCA- RIBA 2 and RIBA 4	1	0	1	
Mat 03	Responsible sourcing of construction products	Measuring responsible sourcing	1	0	0	
Wst 01	Construction waste management	Construction resource efficiency and diversion of resources from landfill	1	0	0	
Wst 02	Use of recycled and sustainably sourced aggregates	Project Sustainable Aggregate Points	1	0	0	
Wst 05	Adaptation to climate change	Responding to climate change	1	0	0	
LE02	Ecological risks and opportunities	Wider site sustainability	1	0	0	
LE04	Ecological change and enhancement	Change and enhancement of ecology	1	0	0	
Total credits- Innovation (maximum of 10 achievable)			10	0	2	
Overall total credits			100	0	0	

Appendix B –RIBA Stage 2 – time limited credits

Full requirements are listed below for the early credits where action is required at Stage 2. Where these have been targeted in this pre-assessment it has been noted next to each credit below.

Man 01 Project delivery planning

1. Prior to completion of the Concept Design (**RIBA Stage 2** or equivalent), the project delivery stakeholders meet to identify and define their roles for each of the key phases of project delivery:
 - a) Roles
 - b) Responsibilities
 - c) Contributions
2. Consider each one of the following items when defining roles, responsibilities and contributions for each key phase of the project:
 - a) End user requirements
 - b) Aims of the design and design strategy
 - c) Particular installation and construction requirements or limitations
 - d) Occupiers' budget and technical expertise in maintaining any proposed systems
 - e) Maintainability and adaptability of the proposals
 - f) Operational energy
 - g) Requirements for the production of project and end user documentation
 - h) Requirements for commissioning, training and aftercare support.

Where the building occupants are not known, the list of considerations above still applies. The appropriate project delivery stakeholder considers each item, based on likely scenarios of building occupancy.

3. The project team demonstrates how the project delivery stakeholders' contributions and the consultation process outcomes influence the following:
 - a) Initial Project Brief
 - b) Project Execution Plan
 - c) Communication Strategy
 - d) Concept Design.

Man 01 Advisory Professional (Concept Design)

Pre –requisite (Concept Design- RIBA Stage 2)

The project team, including the client, formally agree strategic performance targets early in the design process, (with the support of the BREEAM AP where appointed).

Involve a BREEAM AP in the project at an appropriate time and level to:

- a) Work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout Concept Design.
- b) Monitor progress against the performance targets agreed throughout all stages after their appointment where decisions critically impact BREEAM performance.
- c) Proactively identify risks and opportunities related to the achievement of the targets agreed

- d) Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets.
- e) Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.

Hea 06 Security of site and building

1. A Suitably Qualified Security Specialist (SQSS) conducts an evidence based Security Needs Assessment (SNA) during or prior to Concept Design (**RIBA Stage 2**). The purpose of the SNA will be to identify attributes of the proposal, site and surroundings which may influence the approach to security for the development.
2. The SQSS develops a set of security controls and recommendations for incorporation into the proposals. Those controls and recommendations shall directly relate to the threats and assets identified in the preceding SNA.
3. The controls and recommendations shall be incorporated into proposals and implemented in the as-built development. Any deviation from those controls and recommendations shall be justified and agreed with the SQSS.

Ene 04 Low carbon design – passive design analysis

1. The first credit within issue Hea 04 Thermal comfort has been achieved to demonstrate the building design can deliver appropriate thermal comfort levels in occupied spaces.
2. The project team analyses the proposed building design and development during Concept Design (**RIBA Stage 2**) to identify opportunities for the implementation of passive design measures.
3. Implement passive design measures to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption in line with the passive design analysis findings.
4. Quantify the reduced total energy demand and carbon dioxide (CO₂) emissions resulting from the passive design measures.

The Passive Design Analysis must cover, as a minimum:

- Site location
- Site weather
- Microclimate
- Building layout
- Building orientation
- Building form
- Building fabric
- Thermal mass or other fabric thermal storage
- Building occupancy type
- Daylighting strategy
- Ventilation strategy
- Adaptation to climate change.

Ene 04 Low carbon design – Low zero carbon feasibility study

1. An energy specialist completes a feasibility study by the end of Concept Design (**RIBA Stage 2**).

2. Establish the most appropriate recognised local (on-site or near-site) low or zero carbon (LZC) energy sources for the building or development based on the feasibility study.
3. Specify local LZC technologies for the building or development in line with the feasibility study recommendations.
4. Quantify the reduced regulated carbon dioxide (CO₂) emissions resulting from the feasibility study.

The LZC study should cover as a minimum:

- Energy generated from LZC energy source per year
- Carbon dioxide savings from LZC energy source per year
- Life cycle cost of the potential specification, accounting for payback
- Local planning criteria, including land use and noise
- Feasibility of exporting heat or electricity from the system
- Any available grants
- All technologies appropriate to the site and energy demand of the development
- Reasons for excluding other technologies
- If appropriate:
 - The building is connected to an existing local community CHP system or
 - the building is connected to an existing source of waste heat or power OR
 - a building or site CHP system is specified with the potential to export excess heat or power via a local community energy scheme or
 - a source of waste heat or power is specified with the potential to export excess heat or power via a local community energy scheme
- Energy storage

Ene 07 Energy efficient laboratory systems – design specification (buildings with labs only)

1. Engage with the client during the preparation of the initial project brief (**RIBA Stage 1**) to determine occupant requirements and define laboratory performance criteria. Performance criteria will include, but not be limited to the following aspects:
 - Description of purpose
 - Occupant or process activities
 - Containment requirements and standards
 - Interaction between systems
 - Flexibility and adaptability of laboratory facilities.
 - Any other specific requirements (for example, requirements relevant to ventilation, heating or cooling).
2. Size the services system equipment (including ventilation supply and extract) correctly.
3. Demonstrate the minimised energy demand of the laboratory facilities resulting from the achievement of the defined design performance criteria.

Tra 01 Transport assessment and travel plan

No later than Concept Design stage (**RIBA 2**), undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form.

The site specific travel assessment (or statement) shall cover the following as a minimum:

- a) If relevant, travel patterns and attitudes of existing building or site users towards cycling, walking and public transport, to identify constraints and opportunities
- b) Predicted travel patterns and transport impact of future building or site users
- c) Current local environment for pedestrians and cyclists, accounting for any age related requirements of occupants or visitors
- d) Reporting of the number and type of existing accessible amenities within 500m of the site
- e) Disabled access accounting for varying levels of disability, including visual impairment
- f) Calculation of the existing public transport Accessibility Index (AI)
- g) Current facilities for cyclists

Mat 01 Environmental impacts from construction products- building life cycle assessment (LCA)

For all building types identify opportunities for reducing environmental impacts as follows:

- a) Carry out building LCA options appraisal of four significantly different superstructure design options at Concept Design (**RIBA Stage 2**)
- b) Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design)
- c) For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency).
- d) Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document.
- e) Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.
- f) Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).

For all building types identify opportunities for reducing environmental impacts as follows:

- a) Carry out building LCA options appraisal of a combined total of at least six significantly different substructure or hard landscaping design options (at least two shall be substructure and at least two shall be hard landscaping) Concept Design (**RIBA Stage 2**).
- b) Using a building LCA tool that is recognised by BREEAM (as suitable for assessing substructure and hard landscaping during Concept Design)
- c) For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency).
- d) Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document.
- e) Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.
- f) Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications).

One further credit, as above, but for building services.

Mat 03 Responsible sourcing of construction products

A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must:

- a) Be in place before Concept Design (**RIBA Stage 2**).
- b) Include sustainability aims, objectives and strategic targets to guide procurement activities.
- c) Include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible.
- d) Include details of procedures in place to check and verify the effective implementation of the sustainable procurement plan.

In addition, if the plan is applied to several sites or adopted at an organisational level it must:

- e) Identify the risks and opportunities of procurement against a broad range of social, environmental and economic issues following the process set out in BS ISO 20400:2017

Mat 06 Material efficiency

1. At the Preparation and Brief (**RIBA Stage 1**) and Concept Design (**RIBA Stage 2**) stages, set targets and report on opportunities and methods to optimise the use of materials. These must be done for each of the following stages:
 - a) Preparation and Brief
 - b) Concept Design
 - c) Developed Design
 - d) Technical Design
 - e) Construction.
2. Develop and record the implementation of material efficiency (see table below) during:
 - a) Developed Design
 - b) Technical Design
 - c) Construction.
3. Report the targets and actual efficiencies achieved.

Workstages and efficiencies	
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.
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.
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:
Workstages and efficiencies	
	– 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.
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.
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.
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.
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.

Wst 01 Construction waste management

1. Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must:
 - a) Be carried out at Concept Design stage (**RIBA Stage 2**) by a competent person prior to strip-out or demolition works.
 - b) Guide the design, consider materials for reuse and set targets for waste management.
 - c) Engage all contractors in the process of maximising high grade reuse and recycling opportunities
2. Make reference to the audit in the resource management plan (RMP)
3. Compare actual waste arising and waste management routes used with those forecast and investigate significant deviations from planned targets.

Wst 06 Design for disassembly and adaptability

1. Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of Concept Design (**RIBA Stage 2**).
2. Develop recommendations or solutions based on the study, during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.
3. Provide an update, during Technical Design (**RIBA Stage 4**), on:
 - a) How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor.
 - b) Changes to the recommendations and solutions during the development of the Technical Design.

LE02 Ecological risks and opportunities

1. The client or contactor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.
2. A Suitably Qualified Ecologist (SQE) carried out a survey and evaluation for the site early enough to influence site preparation works, layout and, where necessary, strategic planning decisions (typically Preparation and brief stage **RIBA Stage 1**)
3. The SQE's survey and evaluation determines the site's ecological baseline, including:
 - a) Current and potential ecological value and condition of the site related areas within the Zone of Influence.
 - b) Direct and indirect risks to current ecological value
 - c) Capacity and feasibility for enhancement of the site's ecological value and, where relevant, areas within the Zone of Influence.
4. Recommendations and data collated from the survey and evaluation are shared with appropriate project team members to influence decisions made for activities during site preparation, design and construction works, which can support ecological features