The University Of Sheffield.

University of Sheffield

Sustainable Building Standard.

Version 2.2

Contents

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Introduction

The purpose of this standard

The Sustainable Building Standard sets out sustainability requirements for the delivery of The University of Sheffield estates capital building projects, including new academic and research buildings, residential development, major refurbishments as well as smaller works. It provides guidance for all those working on projects including the University's Estates Team and external delivery partners such as consultants, contractors and suppliers.

Sustainable development is not a destination; it is an ongoing process that requires us to continually review our practices and reassess our performance requirements. As such this document is a snapshot of where we strive to be on our sustainability journey.

The structure of the standard

This standard sets out:

- A vision and framework for sustainable development on capital projects (Section 1)
- Specific sustainability design standards for capital projects (Section 2)
- Sustainability actions aligned with each RIBA stage of project delivery (Section 3)
- Key responsibilities in the delivery of projects (Section 4)

Relationship to other university policies

The table opposite lists other relevant University policies and strategies. This standard is closely aligned to the processes set out in the Estates Development Project Process Manual.

The application of this standard

This standard will be adopted as best practice guidance for all projects, and fully implemented for projects above £1 million gross value.

University of Sheffield Documents

- Vision Green Paper
- Biodiversity Action Plan
- Carbon Management Plan
- Energy Strategy
- Sustainability Strategy
- The University of Sheffield Environmental Policy
- Travel Plan
- The Campus Masterplan
- Waste and Recycling Strategy

Estates and Facilities Management Documents

- Biodiversity Guidance
- Control of Contractors
- Cooling Policy
- EFM Integrated Managed System (IMS) Manuals
- EFM Integrated Managed System (IMS) Policies
- Estates Strategy
- Heating Policy
- Metering Strategy
- Site Waste Management Plan Guidance
- Technical Specifications
- Water and Energy Plan

Glossary

Circular Economy

A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which resources are kept in use for as long as possible, and the maximum value extracted from them whilst in use. At the end of each service life products and materials are recovered and regenerated.

Demand Reduction Measures

In the context of energy consumption in buildings, demand reduction measures refer to strategies for reducing the overall carbon emissions of a building through passive design approaches and energy efficiency measures. These include enhanced building fabric performance, lower energy electrical appliances and energy efficient building services.

Design for Disassembly

A concept in which buildings and products are designed intentionally for material recovery, value retention, and meaningful next use. In other words, how can the building and all its parts and pieces be reused at the end of its first useful life?

Post Occupancy Evaluation (POE)

The process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time. POE is a valuable process in all areas of construction, where a poor performance of a building would have a negative impact on the running costs of the building, and on the health, wellbeing and productivity of its occupants.

Urban Heat Island

Many urban and suburban areas experience elevated temperatures compared to their outlying rural surroundings; this difference in temperature is what constitutes an urban heat island. The annual mean air temperature of a city with one million or more people can be 1 to 3°C warmer than its surroundings, and on a clear, calm night, this temperature difference can be as much as 12°C. Even smaller cities and towns will produce heat islands, though the effect often decreases as city size decreases.

The Ten Principles of Active Design (Sport England)

1. **Activity for all**
2. **Walkable Communities**
3. **Connected walking and cycling routes**
4. **Co-location of community facilities**
5. **Network of multifunctional open space**
6. **High quality streets and spaces**
7. **Appropriate infrastructure**
8. **Active buildings**
9. **Management, maintenance, monitoring and evaluation**
10. **Activity promotion and local champions**

For a full explanation of the principles, please see the references.

Whole Life Value

Whole life value is a building's costs over its full life span. It is important in achieving best value from both the capital costs of constructing the building, and the related ongoing costs of operating it. Knowledge of whole life value helps to make well informed design decisions, and to select the most suitable building materials, components and systems.

Green Scorecard

The Green Scorecard, was developed by AUDE, in conjunction with the Environmental Association for Universities and Colleges (EAUC), and is designed to be a comprehensive tool to help universities across the UK measure the aspects sustainability work they do, set targets and benchmark.

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Vision for a Sustainable Estate

Vision for a Sustainable Estate

The University's Strategic Vision

The University of Sheffield is a civic institution which is proud of its urban character, using it to drive growth and vibrancy for the city, the region, and the globe.

The University is at the forefront of translational research, using knowledge to transform lives for the better and exploring new routes into higher education which challenge boundaries between scholarship and the wider world.

As a publicly responsible and socially conscious institution, sustainability is one of our guiding principles, alongside excellence, ambition, engagement, collegiality, resourcefulness, resilience, agility and diversity, as set out in the University of Sheffield's Strategic Plan.


Firth Court

Vision for a Sustainable Estate

Our vision is to create a campus that is inherently sustainable and enhances the experience of students, staff and visitors to the estate. In doing so, we can ensure that investment contributes to the reputation of the University of Sheffield and attracts the best talent to its research and teaching facilities.

The University of Sheffield estate is central to the organisation's academic vision and its strategic objectives. The estate has seen significant improvement and expansion in recent years. It contains a rich mix of heritage buildings and a diverse range of academic facilities carrying out world leading research. The University is a key economic driver for the Sheffield City region.


The Diamond Building

Embedding Sustainability into Capital Projects

The University has in place a number of policies and commitments to improve the sustainability performance of the campus, including an 83% reduction in carbon emissions by 2050.

The Sustainable Buildings Standard draws these policies together to provide a comprehensive sustainability brief for all capital investment projects.


Advanced Manufacturing Research Centre

Framework and Core Objective Areas

To support the vision, we have identified a suite of supporting objectives in four key areas:

- Reducing energy and carbon emissions
- Responsible use of materials
- Healthy and productive environments
- Building long term value

This framework is illustrated in Figure 1, overleaf.

We have set out performance requirements for each objective, with the aim of stimulating creative approaches and bringing forward innovation to help the University deliver its overall aims. These are set out in Section 2 and are aligned with our reporting commitment to the Association of University Directors of Estates (AUDE) through the Green Scorecard.

Sustainability objectives are easy to write, but can be much more challenging to deliver in practice. It will require delivery teams to work collaboratively and closely with the University to identify solutions.

To support this, we have also set out a project delivery process with key actions at each project stage. This is set out in Section 3 with key responsibilities presented in Section 4.

Requirements for Different Project Types

For each objective, we have set out expectations in relation to:

1. New build projects (>£4m gross value) including extensions and major refurbishments with a significant impact on building envelope and core services; and
2. Fit-outs and other refurbishments with minimal or no impact on core building services or envelope, and 'small' projects including single room and corridor refurbishments, and maintenance works (£2m to £4m gross value).

Whilst new build and major refurbishment projects offer opportunities to significantly enhance the estate, opportunities for smaller building upgrades can also be used to improve the quality of space. It is especially important that 'like for like' approaches are challenged to ensure that buildings are brought up to best practice standards. Maintenance works also offer opportunities to improve the sustainability performance, for example by improving boiler efficiency or reducing air leakage.

The University's estate has a diverse range of space requirements from providing a 'home from home' for students, to state of the art laboratories to support ground breaking research. Each environment will have different performance requirements, which are captured in this standard where possible.

We recognise that not all developments are the same. There is an opportunity to set specific requirements, based on this standard, reflecting the development context within the project specific brief.

Accreditation

Accreditation can provide a tool to promote sustainable development, if applied correctly. It is most effective when used to promote discussion around the best way to achieve sustainable outcomes, rather than as a tick box approach. The following sets out accreditation requirements for the University:

- All new buildings should seek to achieve BREEAM Excellent, and should achieve BREEAM Very Good as a minimum.
- All major refurbishments should achieve BREEAM Very Good as a minimum.
- For smaller refurbishments, projects should follow the principles of SKA. Seeking to achieve SKA 'Gold' standard and should achieve SKA Silver as a minimum.
- For laboratory environments, follow the principles of S-Lab Guidance on Environmental Good Practice.

Vision for a Sustainable Estate

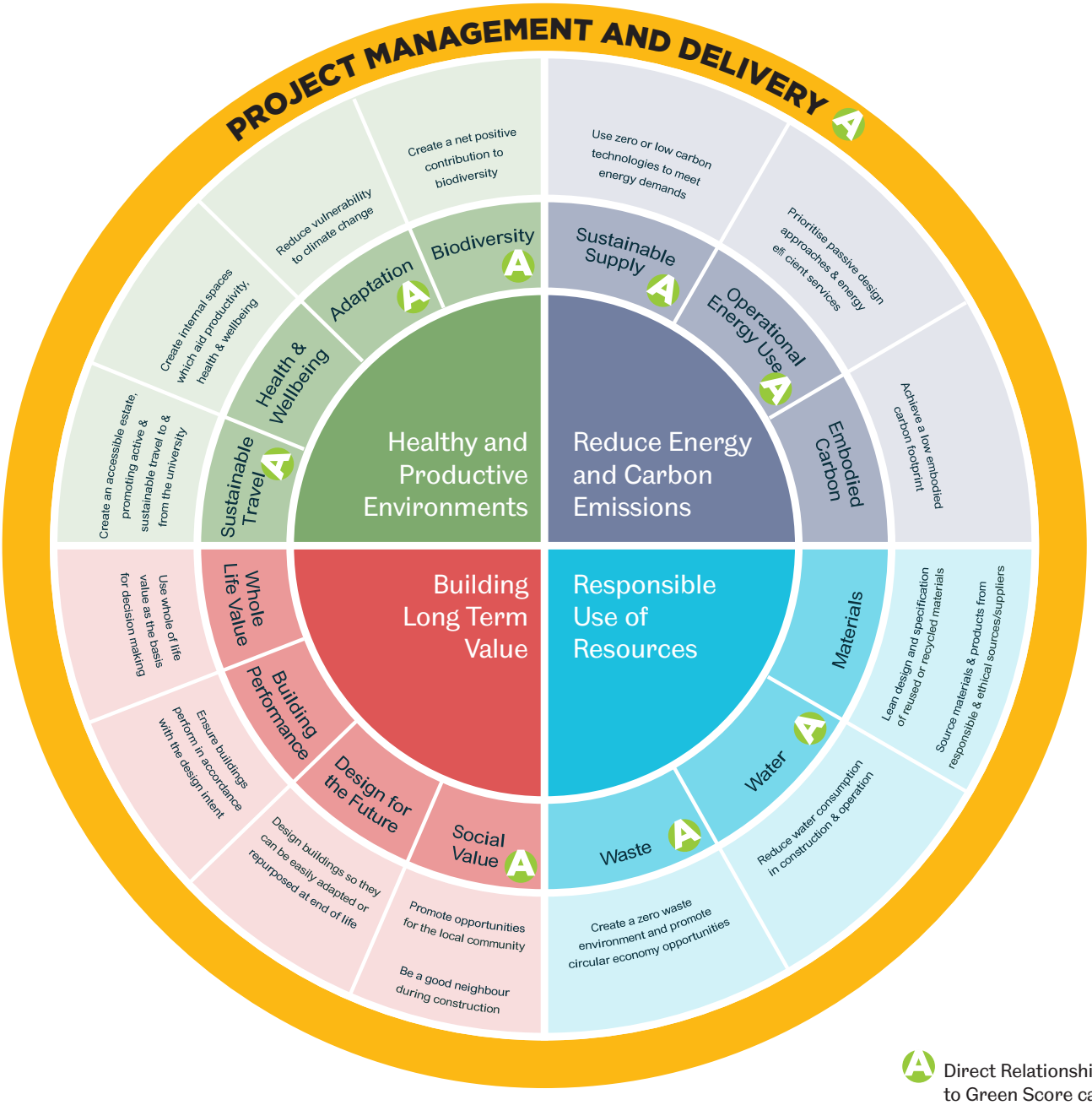

Figure 1

Sustainability themes and objectives for Capital Investment Projects

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Sustainability Objectives and Requirements

Sustainability Objectives and Requirements

The following pages set out sustainability objectives and requirements for the delivery of capital projects across four principal themes of:

- Reducing energy and carbon emissions
- Responsible use of resources
- Creating healthy and productive environments
- Building long term value

For each objective, we have set out our expectations of what should be delivered, and set specific requirements.

At the start of each project, the project manager will work with the University's Estates & Facilities Management (EFM) environment manager (and project sustainability advisor where appropriate) to develop a project specific sustainability brief. This will enable the University to identify specific targets within the context of the scale and location of investment, over and above this standard.

Project managers will work with the delivery team to review these sustainability objectives and identify project specific opportunities for delivering them.

Reducing Carbon and Energy Emissions

Objectives	Requirements	
Demonstrate sustainability leadership by making a significant contribution to the reduction of carbon emissions, in accordance with estate wide targets.	**Requirements for new buildings and major refurbishments (>£4m)**	**Refurbishments, Minor Works and Maintenance (£2m to £4m)**
Operational Energy Use **Prioritise passive design approaches and energy efficient services.**	**Operational Energy Use** • Carry out whole building modelling in accordance with CIBSE TM54 and agree operational energy and carbon benchmarks (per m^2) with the UoS energy manager at RIBA Stage 3. • Exceed building regulations Part L (2013) CO2 Emission Rate (Target Emission Rate) requirements by 20% for new build and 10% for major refurbishment projects. • Achieve at least 60% of BREEAM energy credits. • All energy technology to be specified from the Energy Technology List (ETL) criteria for high efficiency. • New buildings to be designed to be DEC A in operational energy performance (excluding equipment). • For laboratories, follow S-Lab principles for energy efficiency. • Metering in accordance with CIBSE TM 39 and shall be capable of monitoring energy performance (energy use and area) in accordance with TM 54.	**Operational Energy Use** • Achieve a 10% net improvement in operational energy performance (per m^2) as agreed with the UoS energy manager. • All energy technology specified from the Energy Technology List (ETL) criteria for high efficiency. • For laboratories, follow S-Lab Principles for energy efficiency. • Comply with the UoS Metering Strategy.
Sustainable Supply **Use zero or low carbon technologies to meet energy demands.**	**Sustainable Supply** • Carry out a whole life cost and carbon appraisal of alternative supply solutions, such as renewables and heat networks. Agree provisions with UoS energy manager at RIBA stage 2.	**Sustainable Supply** • Review opportunities to connect to sustainable supply sources, where appropriate. Agree provisions with UoS energy manager at RIBA Stage 2.
Embodied Carbon **Achieve a low embodied carbon footprint.**	**Embodied Carbon** • Undertake a pre-refurbishment audit and ensure that existing materials are reused where practical and reduce the need for new fixtures, finishes, furniture, partitions etc.	**Embodied Carbon** • Undertake a pre-refurbishment audit and ensure that existing materials are reused where practical and reduce the need for new fixtures, finishes, furniture, partitions etc.

Responsible Use of Resources

Objectives	Requirements	
Adopt circular economy principles to reduce consumption of virgin materials and mitigate associated environmental impacts.	**New Buildings and Major Refurbishments (>£4m)**	**Refurbishments, Minor Works and Maintenance (£2m to £4m)**
Water **Reduce water consumption in construction and operation.**	**Water** • Achieve at least 60% of BREEAM water credits. • Water consumption less than 0.50m³/year/m² NIA in academic buildings and less than 100l/person/day in residential buildings. • For laboratories, follow S-Lab Principles for water efficiency. • Reduce demand for irrigation through careful design of external landscaping.	**Water** • All new water fittings to meet minimum efficiency standards as per SKA.
Waste **Create a zero waste environment during operation and promote circular economy opportunities.**	**Waste** • Zero waste to landfill (excluding hazardous waste) during demolition and construction with 10% reuse, 70% recycling and 20% other (incineration, anaerobic digestion etc.). • Achieve ≤ 2 tonnes waste/100m² during design and construction. • Enable zero waste to landfill in operation (excluding hazardous waste). • For laboratories, follow S-Lab Principles for waste management. • Comply with University of Sheffield Site Waste Management Plans, Recycled Content and Environmentally Preferable Materials Design Guidance.	**Waste** • Zero waste to landfill (excluding hazardous waste) during demolition and construction with 10% reuse, 70% recycling and 20% other (incineration, anaerobic digestion etc.). • Achieve ≤ 2 tonnes waste/100m² during design and construction. • Comply with University of Sheffield Site Waste Management Plans, Recycled Content and Environmentally Preferable Materials Design Guidance.
Materials **Lean design and specification of reused or recycled materials.** **Source materials and products from responsible and ethical sources / suppliers.**	**Materials** • 90% of materials with a responsible sourcing certification and 100% FSC/PEFC or equivalent timber, in line with BES 6001. • Less than 25% virgin fill material imported to site. • At least 10% of the total value of materials used must be derived from recycled and re-used content. • All refrigerants and insulants with Global Warming Potential (GWP) ≤100. • Achieve at least 40% of BREEAM materials credits. • All new materials have an A or A+ rating in the BRE Green Guide, or equivalent. • Comply with BES 6001 Responsible Sourcing of Construction Products and A Manifesto for Ethical Sourcing In The Construction Industry.	**Materials** • 90% of materials with a responsible sourcing certification and 100% FSC/PEFC or equivalent timber, in line with BES 6001. • At least 10% of the total value of materials used must be derived from recycled and re-used content. • All refrigerants and insulants with Global Warming Potential (GWP) ≤100. • All new materials have an A or A+ rating in the BRE Green Guide, or equivalent.

Healthy and Productive Environments

Objectives	Requirements	
Provide a healthy, comfortable, inclusive and safe campus that supports students' and staff wellbeing, and provides the best possible environment for learning and research.	**New Buildings and Major Refurbishments (>£4m)**	**Refurbishments, Minor Works and Maintenance (£2m to £4m)**
Sustainable Travel **Create an accessible estate, promoting active and sustainable travel to, from and across the University.**	**Sustainable Travel** All provisions to be agreed with the UoS sustainable travel manager during RIBA Stage 1: • At least one secure cycle parking space per 10 staff and one per 20 students. • Provision of one shower and locker per 100 building users. • No provision of car parking (with the exception of blue badge provision and deliveries). • Develop travel plan for building users and provide travel information boards. • Provide clear and safe access to pedestrians avoiding delivery access.	**Sustainable Travel** • Seek opportunities to increase cycle parking and agree with the UoS sustainable travel manager during RIBA Stage 1.
Health and Wellbeing **Create internal spaces which aid productivity, health and wellbeing.**	**Health and Wellbeing** • Minimum daylight factor of 2% of 80% of occupied area or an average 300-500 lux for 2000 hours per year or more (in offices and teaching spaces). • All work stations within 7m of a window or an internal biophilic feature. • Summer and winter comfort temperatures to be adaptive to climate and CIBSE Guide A. • Achieve external noise levels set out in BS8233. • Outdoor sunlight criteria as set out in BRE209 guidelines. • Acoustic levels in offices and teaching spaces to be below a maximum noise rating of 35 and meet standards in Building Bulletin 93. • CO_2 levels below 800ppm, minimum ventilations rate of 12l/s/p and total volatile organic compounds (TVOC) below 500µg/m3. • Net improvement in air quality standards within the development • Follow Sport England Ten Principles of Active Design. • All new builds must be accredited through Secured By Design / All refurbishment projects should be assessed by Secured By Design.	**Health and Wellbeing** • All paints and sealants with low volatile organic compound emissions. • Implement secured by design principles with the UoS Architectural liaison officer.
Adaptation **Reduce vulnerability to climate change.**	**Adaptation** • Overheating limited to CIBSE TM52 criteria for new buildings and maybe derogated, with university approval for refurbishments. • Planting strategy resilient to climate change. • Assess and mitigate flood risk including climate change impacts on rainfall intensities and flood levels during RIBA stage 2. • Reduce surface runoff water relative to existing runoff from site and follow Sustainable Urban Drainage Principles (SUDS) during RIBA stage 2. • Create a net improvement in the external microclimate taking into account heat island impacts.	**Adaptation** • Any planting specified must be resilient to climate change.
Biodiversity **Create a net positive contribution to biodiversity.**	**Biodiversity** • Where applicable take a restorative approach to habitat creation providing a net increase in the quality of green space using the Green Space Factor as a measure. • Comply with UoS guidance on Requirements for the selection of plants for new schemes and Designing Development for Biodiversity. • Biodiversity measures to be agreed with UoS EFM environment manager at RIBA Stage 2.	**Biodiversity** • Measures to be agreed with UoS EFM environment manager at RIBA Stage 2.

Building Long Term Value

Objectives	Requirements	
Develop a resilient and future proofed estate by designing and delivering buildings that perform well over their lifetime.	**New Buildings and Major Refurbishments (>£4m)**	**Refurbishments, Minor Works and Maintenance (£2m to £4m)**
Whole Life Value **Use whole of life value as the basis for decision making.**	**Whole Life Value** • Use lifecycle cost and value appraisals to inform decision making through consultation with Facilities Management, Engineering and Maintenance and the Energy Team in EFM. • During design development, design team to demonstrate how their design influences reduced maintenance budgets, using a whole life cost approach.	**Whole Life Value** • At RIBA stage 3 appraise whole life operation, maintenance and refurbishment costs through consultation with Facilities Management, Engineering and Maintenance and the Energy Team in EFM.
Building Performance **Ensure buildings perform in accordance with the design intent (performance gap).**	**Building Performance** • Deliver Soft Landings in accordance with BSRIA. • Undertake a full Post Occupancy Evaluation (POE) using AUDE methodology for all new build capital projects over £7.5m gross value. • For smaller projects, carry out simple POE comprising user satisfaction/customer survey and, where appropriate, review of building performance against key targets. • Provide a building user guide and appropriate training. • Ensure that space is designed to meet University Space Standards (set out in the UoS Space Management Policy). From RIBA stage 1 consult with building users to understand departmental requirements to ensure that their needs are met whilst optimising the use of space. Complete a Space Occupancy Audit 18 months post project completion. • Energy consumption no more than 10% greater than predicted design (in accordance with TM54).	**Building Performance** • Carry out a user satisfaction/customer survey post occupancy. • Provide a building user guide and appropriate training.
Design for the Future **Design buildings that have 'layers' so they can be easily reconfigured or re-purposed at the end of life, in accordance with circular economy principles.**	**Design for the Future** Design team to demonstrate at RIBA stage 3 that the building and systems can be easily adapted for future uses.	**Design for the Future** • Design team to demonstrate at RIBA stage 3 that the building and systems can be easily adapted for future uses.
Social Value **Promote opportunities for the local community.** **Be a good neighbour throughout construction.**	**Social Value** • Ensure that apprentices make up part of the workforce used on University Projects. • Create opportunities / facilities for outreach programmes and to invite the wider community into the University. • Spend within the local area (Sheffield City Region) to be 40% of construction value. • Zero complaints from external stakeholders during construction. • Considerate Constructors Scheme – Score 7 or more points in each of the five sections, with a target overall score of 40+.	**Social Value** • Register with Considerate Constructors Scheme for projects over 6 weeks in duration.

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Delivery Process

Delivery process

To support the delivery of our sustainability vision for the estate, we have identified key actions that need to be undertaken by the design and delivery team at each RIBA Stage. These have been embedded into the EFM integrated management process.

The concept design stage will be particularly important for exploring opportunities for innovation. The design and delivery team must allocate time within RIBA Stage 2 to carry out research, engage with key stakeholders and community representatives, and to engage with the supply chain.

The design and delivery team should report progress against sustainability goals through RIBA Stage Reports, highlighting results of feasibility studies and lifecycle appraisal of options. These will be required for stage gate approvals by the Project Executive Group.

Monitoring and reporting should continue throughout construction, commissioning and into operation. It will be especially important for design principles and sustainability objectives to be embedded in the procurement process. Soft Landings has been highlighted as a key approach to ensuring sustainability objectives are secured throughout the construction and commissioning programme.

The key actions against RIBA Stages are illustrated on the following page.

While process and clear assignment of responsibility is important, it is equally important to establish a culture of collaboration to help develop creative approaches.

	RIBA STAGES							
	0: Strategic Definition	**1: Preparation of Brief**	**2:Concept Design**	**3: Developed Design**	**4: Technical Design**	**5: Construction**	**6: Handover**	**7: In Use**
Key Actions	Define project specific sustainability vision and priority objectives. Prepare project specific Sustainability Brief (SB).	Share SB with the design team and contractors. Commission feasibility studies to evaluate options.	Test design concepts against sustainability vision and agree KPIs and targets. On larger projects: develop sustainability strategy.	Present designs to UoS and demonstrate how they meet sustainability brief and targets.	Embed sustainability requirements into procurement documents and contractual terms. Appoint delivery partners with shared commitment to sustainability.	Embed sustainability requirements within contractors' supply chain. Contractor to report on sustainability progress. Monitor sustainability KPIs and report against targets throughout construction period.	Ensure a smooth handover to tenants by adopting Soft Landings principles. Carry out full and seasonal commissioning of systems.	Provide ongoing support to ensure buildings and spaces perform as per the design intent and sustainability vision. Report performance against sustainability targets and capture lessons learnt.
Soft Landings	Engage stakeholders. Define roles and responsibilities.	Review past project experience. Set performance targets. Programme soft landings evaluations.	Regular reality checks.	Regular reality checks. Review design for commissionability, maintainability, usability and manageability.	Regular reality checks.	Operational readiness: preparing for move in. Agree protocol for environmental and energy logging. Prepare building user guide and compile O&M manuals.	Fine tuning building systems. Building user training workshops.	Site walkabout with building users and FM teams. Structured Post Occupancy Evaluation (POE). Energy and occupant surveys.
Key Deliverables	Project specific sustainability brief.	Sustainability actions integrated within the programme. Scope of feasibility and options studies. Community and stakeholder engagement programme developed.	Results of options studies and agreed performance targets.	Sustainability statement setting out how design meets overall objectives.	Tender documents which clearly set out sustainability expectations and associated scoring criteria.	Regular reporting against sustainability brief and targets. Site Waste and Resources Management Plan, Construction Management Plan. Handover and commissioning plan. Draft Building User Guide.	Handover Report. Building User Guide. Commissioning report and certificates.	Regular performance updates and POE report 12-18 months post completion.
Responsibility	University of Sheffield Project Manager	University of Sheffield Project Manager	Lead Designer	Lead Designer	Lead Designer, External Project Manager	External Project Manager, Contractor	Contractor	University of Sheffield Project Manager

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Roles and responsibilities

Roles and responsibilities

We have identified the following key roles and responsibilities for delivering the University of Sheffield's Sustainability Building Standard.

University of Sheffield

University of Sheffield Project Review Group (PRG)

- Review all requests for work to ensure they align with the Estates Strategy and sustainability objectives as set out in this Standard.

Project Executive Group (PEG)

- Ensure project is delivered according to the Sustainable Buildings Standard.

Senior Management Group / Building User Group

- Ensure key sustainability measures are embedded into the building design, are based on whole life value and are not removed during value engineering process.

Estates Capital Sub Group (ECSG)

- Ensure sustainability and whole life value of investment is considered in development of full business cases.

UoS Project Managers

- Ensure consultant scopes are aligned with this Standard.
- Ensure sustainability requirements are embedded in the project management processes and approved at each RIBA Stage.
- Ensure that the procurement approach will support the delivery of sustainability objectives.
- Assign responsibility for soft landings champion (and sustainability advisor role when applicable)

UoS Sustainability professionals

- Input into the project specific sustainability brief.
- Provide advice and feedback at key project stages.

External Consultants

Project Design Team

- Proactively seek opportunities to meet targets and objectives as set out in this standard.
- Report back to project managers at each of the key stages on progress against objectives and targets, with supporting evidence.
- Identify any key risks that sustainability objectives will not be met and proactively manage.
- Consult with the UoS EFM Professional Services at the beginning and end of each design phase.
- Engage with key UoS stakeholders including academic partners, end users and commissioning team.

External Project Managers

- Manage and implement the Sustainable Building Standard in collaboration with Project Design Team.
- Assurance role in seeing major projects delivered according to this standard.
- Proactively engage the design team to develop opportunities.
- Work with client team to ensure sustainability objectives are embedded within the programme. Report against the same.
- Carry out additional research as required to support the design team.

Cost Consultant

- Ensure lifecycle costing approaches used to inform design and procurement decisions.
- Take a proactive approach to identifying the whole of life value in opportunities.
- Champion whole life value appraisal.

Procurement

- Work with the UoS Project Manager in the evaluation of procurement options.
- Ensure that sustainability objectives are embedded within the procurement process.

Contractors and their Supply Chain

- Proactively engage with the design team to bring forward innovation and approaches to delivering sustainability objectives.
- Responsible for ensuring development is built to highest quality standards and ensuring that construction approaches do not compromise meeting sustainability objectives and ensure delivery of the project sustainability brief.
- Engage with UoS sustainability professionals at the beginning of construction and at key milestones throughout the delivery process.
- Deliver the building in a state of operational readiness in line with soft landings requirements and by engaging with Facilities Management teams during commissioning and handover.

RIBA Stage	Key Documents and Deliverables	Project Manager (UoS and external)	Cost Consultant	Design Team	Energy Consultant	Contractor	POE Consultant
0	Project Specific Brief	■					
	Programme which has sustainability actions embedded	■					
1	Project Specific Brief Issued to Design Team	■					
	Scope of feasibility studies to be undertaken	■					
	Building user group programme aligned with key project stages	■					
	Programme which has sustainability actions embedded	■					
2	Review of design against sustainability performance targets	■					
	Whole lifecycle costing and value appraisal		■				
	RIBA Stage 2 Report: Identify approach to achieving sustainability objectives and performance targets for each theme.						
	Preferred of whole life cost, carbon and wider sustainability value options reviewed. solutions should be supported by appraisal			■			
	BREEAM Pre-assessment			■			
3	RIBA Stage Report stating how design meets sustainability objectives and performance targets including any further options	■					
	Design Stage BREEAM Pre-assessment			■			
	Whole Building Energy Model (TM54)				■		
	Energy Strategy				■		
	Sustainability Statement	■					
4	Site Waste management Plan/Resource Management Plan	■					
	Draft Construction Management Plan with sustainability embedded, and Environmental Management Plan with performance targets for construction delivery (energy/CO^2, waste, water etc.).	■					
	Tender and specification documentation incorporating sustainability standards and requirements for contractors, and which includes sustainability in scoring criteria.		■				
	Contract for construction including Sustainability Performance Targets		■				
	Draft Commissioning, Handover and Maintenance Plan	■				■	
	RIBA Stage Report stating how design meets sustainability objectives and performance targets including any further options			■			
5	Final Construction Management Plan	■				■	■
	Site Waste Management Plan (SWMP)/ Resource Management Plan (RMP)	■				■	■
	Handover and commissioning plan	■				■	■
	Building User Guide (draft)	■				■	■
	Contractor Reporting against sustainability objectives and construction environmental performance	■				■	■
	Construction Stage BREEAM Assessment			■			
6	Commissioning reports and certificates	■				■	
	Building User Guide (final)	■				■	
	Confirmation of BREEAM rating			■			
	Handover stage report of project outcomes against this brief	■					
7	POE report and lessons learnt						■
	Operation stage report of project outcomes against this brief						■

Appendix A /

Project Specific Sustainability Brief Template

Project Specific Sustainability Brief Template

The following template can be used as a guide for preparation of the project specific sustainability brief.

The project specific brief should be no more than 2 pages and must be developed with input from the University's EFM Environment Manager.

	Major Project	Minor Project
Project Name	University Library Project	Refectory
Project Description	Provision of xm^2 of learning space, coffee shop...	Ground floor refectory refurbishment
Total Project Budget	£10m	£2m
Sustainability/Project Vision	To develop an inspiring learning environment which uses technology to support new ways of accessing knowledge. Includes a mix of spaces to support different learning styles and is flexible and adaptable to changing needs. Opportunity to create an exemplar building for sustainable development.	To demonstrate sustainable fit-out and trial the implementation of SKA.
Specific Opportunities	Sets out options to be explored in the context of the wider estate vision, e.g.: • Reduce need for materials through a paired back approach. • Revitalise the square adjacent to the building providing opportunities for green infrastructure • Cycle parking provision to support model shift	Sets out options to be explored to morph buildings to perform more sustainably, e.g.: • Remove finishes and replace with more durable products with low VOC rating. • Replace boilers for hot water for low carbon alternative, consider use of heat pumps. • Replace T8 lighting with LED.
Sustainability Targets	Set specific targets relating to energy, biodiversity or BREEAM, e.g.: • Aspiration to achieve BREEAM outstanding • Provision of cycle parking hub for 5 spaces	Set specific targets relating to energy, biodiversity or SKA, e.g.: • Achieve SKA Gold. • Reduce energy consumption and associated carbon emissions by 15%.
Roles and Responsibilities	Specific responsibility for sustainability, e.g.: • Sustainability advisor to be appointed on client side to drive sustainability. • Soft landings consultant to be appointed.	Specific responsibility for sustainability, e.g: • Sustainability advisor role to be carried out by UoS PM. • SKA advisor to be appointed to deliver accreditation.

Appendix B /

Soft Landings Delivery Process

Soft Landings Delivery Process

What is soft landing?

Soft landings is the process of integrating the way buildings are used, managed and maintained into the design process. Many buildings do not achieve the environmental targets set and do not meet user requirements and aspirations. Soft landings bridges this "performance gap" by enabling an understanding of how buildings are used; this information is used to better inform the design.

Soft landings shifts the emphasis of good performance away from just the physical design aspirations and emphasises the importance of also assessing the functionality of building. It also places greater emphasis on commissioning and handover, so that building users understand how the building operates. Incorporated in this is the energy performance of the building.

The Soft Landings Framework is an open source, available from BRSIA (see Appendix D). There is currently no formal certification or assessment method; however following the soft landings principles can contribute towards BREEAM and SKA credits.

How to achieve a soft landings project?

The key to achieving a soft landings project is early engagement from those using the building including occupiers, maintenance staff and facilities management. The design team must ensure that they fully understand the requirements from users and give sufficient consideration as to how the building will be maintained.

The soft landings process uses a number of different techniques to eliminate the performance gap. A critical component of soft landings is the appointment of a soft landings champion, to act as a liaison between the building users and the design team. Early stage design reviews and technical 'pitstops' (where designs are reviewed from the perspective of the building operators and users) are used to identify risks and opportunities relating to the operation and maintenance of the building. The effect of late design changes on the functionality is also considered.

The design team are required to take an active role in the pre-handover and handover stages, and must also provide support throughout the initial aftercare period. The aim is to smooth the transition and ensure that the building systems are understood and used correctly. Environmental and energy performance targets are set at the outset and a protocol for monitoring and reviewing progress agreed. Post occupancy evaluation is carried out after occupation and lessons learnt captured, benefitting future projects, as well as enabling fine tuning of the building and its systems.

The table overleaf sets out the key soft landings stages, actions and participants, aligned with the RIBA stages.

Soft Landings Framework	1. Inception and Briefing		2: Design development and review	3. Construction	4: Pre-handover	5: Initial aftercare	6: Extended aftercare
RIBA Stage	**0: Strategic Definition**	**1: Preparation of Brief**	**2: Concept Design** **3: Developed Design** **4: Technical Design**	**5: Construction**	**6: Handover**	**7: In Use**	
Key Actions	**RIBA Stage 0:** • Engage stakeholders • Define roles and responsibilities **RIBA Stage 1:** • Review past experience • Understand operational energy and user requirements • Set environmental and other performance targets • Develop programme for Soft Landings		**RIBA Stage 2:** • Create operational risk register • Review past experience • Tender documentation and evaluation • Check relevant participants are appointed **RIBA Stage 3:** • Pitstop 1: Scheme Design **RIBA Stage 4:** • Pitstop 2: Technical Review • Review and update performance targets	**Pitstop 3: Construction stage** • Plan environmental and energy logging • Plan/draft technical guide • Plan/draft Building User Guide • Plan/draft O&M Manual • Prepare for building management • Systems demonstration • Plan a training programme	• Environmental and energy logging review • Check commissioning records • Compile and review technical guide • Compile and review Building User Guide • Commissioning and fine-tuning • Compile and review the O&M Manual • Building management systems; • Interface completion and integration • Provide sufficient training • Migration planning • Aftercare team • Maintenance contract	• Provide workplace for aftercare team and data comms links • Resident on-site attendance • Introductory guidance for building users • Technical guidance • Communications • Walkabouts • Post construction review • Environmental/Energy logging • Finalise and issue all Building User Guides • Seasonal commissioning	• Aftercare review meetings • Logging environmental and/or energy performance • Systems and energy review • Ongoing fine tuning of systems and seasonal commissioning • Record fine-tuning and usage change • Communications • Walkabouts • Review of KPI Reports • Post occupancy evaluation • End of year review
Participants	• Estates Leadership Team • Project Manager • Soft Landings Champion • Soft Landings Sponsor • Facilities Manager • User Representative • Design Team Project Manager • EFM Environment Manager		• Estates Leadership team • Project Manager, Lead Designer, Contractor • M&E contractor/designer, Key subcontractors • Facilities Manager, Commissioning Manager • Maintenance Team User Representative • User Representative	• Contractor Project Manager • Quantity Surveyor, Facilities Manager • Commissioning Manager • Design Team • Soft Landings Champion • Soft Landings Sponsor • User Representative • Maintenance Team	• Contractor Project Manager • Facilities Manager • Commissioning Manager • Design Team • Soft Landings Champion • Soft Landings Sponsor • User Representative • Maintenance Team Estates Team	• Contractor • Facilities Manager • Design Team • Soft Landings Champion • User Representative • Maintenance Team • Estates Team	• Contractor • Facilities Manager • Design Team • Soft Landings Champion • User Representative • Maintenance Team • Estates Team

BREEAM and SKA

BREEAM and SKA are third party assessment methodologies and are the main frameworks used to implement sustainability on a project-by-project basis. Overall responsibility for the day to day delivery and certification of BREEAM and SKA assessments lies with the external or internal project managers, as relevant to the project.

The table below sets out the key BREEAM and SKA actions to be carried out at each RIBA stage.

RIBA Stage	BREEAM	SKA
	New Buildings and Major Refurbishments Including new build extensions, and refurbishments	**Refurbishments and Minor Works** Fit-out works, with minimal or no impact on core building services or envelope including maintenance upgrades
0	**Project Brief** Include agreed environmental assessment method and targets specific to sustainability, e.g. all new buildings and major refurbishments should achieve BREEAM Excellent rating as a minimum	**Project Brief** Include agreed environmental assessment method and targets specific to sustainability, e.g. small projects should follow SKA principles and should consider accreditation
1	**Pre-Assessment** Appoint BREEAM Assessor; hold pre-assessment workshop; identify early actions and responsibilities	**Scoping** Initial scoping, and pre-assessment exercise
2 3 4	**Design Stage Assessment** Design team reviews; prepare evidence; include BREEAM requirements in tender docs; interim certification	**Design Stage Assessment** Appoint assessor (if required); design team reviews; prepare evidence; include SKA in tender docs
5	**Construction Stage** Contractor reviews; site audits; prepare and collate project performance data	**Construction Stage** Contractor reviews; site audits; prepare and collate project performance data
6 7	**Post-Construction Assessment** Finalise project performance data and provide 'as built' evidence; final certification	**Handover Stage Assessment** Finalise project performance data and provide 'as built' evidence

BREEAM

BREEAM (BRE Environmental Assessment Method) is a sustainability assessment method for masterplanning, infrastructure and buildings. The assessment covers environmental, social and economic sustainability performance. When completed effectively and strategically it brings benefits to design projects, including improved health and wellbeing and financially resilient property investments.

BREEAM looks at the building fabric and lifecycle. It aims to reduce the impact of buildings on the environment by raising awareness of the full lifecycle impacts.

BREEAM is a product administered by BRE. There are numerous versions of the scheme for different project types, including infrastructure, housing and non-domestic buildings. Most higher education buildings would be covered by BREEAM New Construction 2018 1.0.

SKA

A SKA assessment is a tool for assessing sustainable fit-outs. The rating helps organisations make informed decisions; it also provides 'good practice' measures that can be implemented to improve the SKA rating and the overall sustainability of the project. It covers energy, waste, water, materials, wellbeing and transport. Three levels of accreditation can be achieved: gold, silver or bronze.

The system is flexible, allowing the scope to be altered to suit each project, according to the areas that are materially altered. Areas that cannot be influenced in a particular project can be removed from the scope and are therefore excluded from the rating calculation. For example, a classroom refurbishment comprising replacement of floor finishes and furniture will not have to incorporate upgrades lighting and other M&E systems, unless these are being altered as part of the proposed programme.

SKA is a RICS product. There are several versions of the tool, including a specific assessment for higher education buildings (SKA Higher Education 1.0).

The topics covered by BREEAM and SKA are summarised in the table below.

BREEAM	SKA
Waste	**Waste**
Energy	**Energy and CO2**
Materials	**Materials**
Land Use and Ecology	**Ecology**
Pollution	**Pollution**
Transport	**Transport**
Water	**Water**
Health and wellbeing	**Wellbeing**
Management	**Project Delivery**

Appendix C /

References and Resources

References and Resources

GENERAL

RIBA Plan of Work: https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba- plan-of-work

SKA Good Practice Measures for Higher Education: http://www.rics.org/Global/SKA%20rating%20HE%20GPMs%20V1.0.pdf

S-Lab Environmental Good Practice Guide for Laboratories: https://www.ed.ac.uk/files/imports/fileManager/S-Lab_Good_Practice_Guide.pdf

Definition of Design for Disassembly: https://www.c2ccertified.org/news/article/what-is-design-for- disassembly

Urban Heat Island Definition: https://www.epa.gov/sites/production/files/2014-06/documents/basicscompendium.pdf

WRAP Definition of Circular Economy: http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy

Whole Life Value Definition: https://www.bre.co.uk/page.jsp?id=48

Cost of Operation: http://www.buildersassociation.com/ docs/Education/Estimating%20Academy/Mark%20Gardner%20Total%20Cost%20of%20Ownership.pdf

ENERGY AND CARBON

CIBSE TM54 Evaluating Operational Energy Performance of Buildings at the Design Stage: http://www.cibse.org/Knowledge/knowledge-items/ detail?id=a0q20000008I7f7AAC

Green Construction Board guidance on reducing CO2 on construction sites: http://www.greenconstructionboard. org/otherdocs/CO2%20Construction%20sites%20 master.pdf

Conservation of Fuel and Power: Approved Document L (Building Regulations Part L: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l

TFL guide to travel plan content: https://tfl.gov.uk/info- for/urban-planning-and-construction/travel-plans/travel- plan-content

TM39: Building Energy Metering: http://www. cibse.org/Knowledge/knowledge-items/ detail?id=a0q20000008I7ewAAC

Energy Technology List: https://www.gov.uk/guidance/energy-technology-list

HEALTHY AND PRODUCTIVE ENVIRONMENTS

WELL Building Standard: http://standard.wellcertified. com/features

CIBSE Guide A: Environmental Design: http://www.cibse.org/knowledge/knowledge-items/detail?id=a0q20000008I79JAAS

CIBSE TM52: The Limits of Thermal Comfort: Avoiding Overheating in European Buildings: http:// www.cibse.org/Knowledge/knowledge-items/ detail?id=a0q20000008I7f5AAC

SLL Code for Lighting: http://www.cibse.org/knowledge/knowledge-items/detail?id=a0q20000008I6xiAAC

Considerate Constructors Scheme Site Registration Monitors' Checklist: https://www.ccscheme.org.uk/site-registration/registered-site-checklist-site-reg/

The SuDS Manual (C753): http://www.ciria.org/ProductExcerpts/C698.aspx

Green Space Factor: https://www.southampton.gov. uk/policies/green-space-factor-guidance-notes-2015_ tcm63-371696.pdf

Ten Principles of Active Design: https://www. sportengland.org/media/3426/spe003-active-design- published-october-2015-email-2.pdf

RESPONSIBLE RESOURCES

WRAP Guidance on resource efficiency in demolition: http://www.wrapni.org.uk/sites/files/wrap/BM_cs_Demolition_breifing_note.13b7b4d7.11046.pdf

WRAP Guidance on cutting embodied carbon in construction projects: http://www.wrap.org.uk/sites/ files/wrap/FINAL%20PRO095-009%20Embodied%20 Carbon%20Annex.pdf

Green Construction Board Top Tips for Embedding Circular Economy Principles in the Construction Industry: http://cetoptips.com/

CIRA Resource Efficiency Knowledgebase (requires account, free): http://www.ciria.org/CIRIA/Resources/Resource_Efficiency_Knowledgebase/Resources/REK/Resource_Efficiency_Knowledgebase_.aspx

WRAP guide to site waste management plan (SWMP): http://www.wrap.org.uk/sites/files/wrap/GG899.pdf

BES 6001:2008 Responsible sourcing of construction products: http://www.greenbooklive.com/filelibrary/responsible_sourcing/BES-6001-Issue-3-Final.pdf

A Manifesto for Ethical Sourcing in the Construction Industry: https://www.sustainabilityexchange.ac.uk/files/manifesto-ethical-sourcing.pdf

LONG TERM VALUE

Constructing Excellence Guide to Whole Life Costing: http://constructingexcellence.org.uk/wp-content/uploads/2015/03/wholelife.pdf

BRE guide to whole life costing and life-cycle assessment for sustainable building design (subscription/fee): https://www.brebookshop.com/details. jsp?id=32991

The Usable Buildings Trust: http://www.usablebuildings.co.uk/

Soft Landings Guidance: https://www.bsria.co.uk/ services/design/soft-landings/free-guidance/

RIBA Post Occupancy Evaluation Primer: https:// www.architecture.com/-/media/gathercontent/ post-occupancy-evaluation/additional-documents/ ribapoebpeprimerpdf.pdf

Building Knowledge; Pathways to POE (RIBA report): https://www.architecture.com/-/media/gathercontent/post-occupancy-evaluation/additional-documents/buildingknowledgepathwaystopoepdf.pdf

BSRIA Building User Guide Template: https://www.bsria.co.uk/goto/bug

BRE; What is BREEAM?: https://www.breeam.com/

Addendum

15th December 2021

The core changes that will be made to this document at its next revision are as proposed below. Projects that are to be designed leading up to 2025 are to follow the 2025 target column requirements.

	2025 Targets	2030 Targets
Energy Consumption - New Build (kwh/m2/yr)	110	65
Energy Consumption - Full Refurb (kwh/m2/yr)	110	90
Embodied Carbon (kgCO2e/m2)	700	600
Space Heating (kwh/m2/yr)	<20	<15
Mechanical Heat Recovery (%)	>80	>90
U Value (W/m2.k) - Wall	0.15	0.13
- Floor	0.12	0.10
- Roof	0.12	0.10
- Windows	1.00	1.00
G Value of Glass	0.5 to 0.4	0.5 to 0.4
Air Tightness (m3/hr/m2 at 50pa)	3	1