Sustainable Building Design Standard

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Contents

1. Introduction and Scope

The University of Southampton (UoS) recognises the importance of a sustainable estate in support of its purpose and vision as a research-intensive university and founding member of the Russell Group. Sustainability is specifically identified as central goal of the University Strategy.

The construction, operation and maintenance of buildings is central to the delivery of the UoS Sustainability Strategic Plan. This Design Standard is intended to ensure measurable progress against our Goal 1 commitment to reach net zero for Scope 1 and 2 emissions by 2030, and our Goal 2 commitment to measure and reduce Scope 3 emissions.

UoS Strategic Plan – Sustainability 2020-2025 Goals

The UoS Sustainability Strategic Plan is underpinned by the potential for measurable, value-driven outcomes.

This document is divided into four sections:

- **Our Vision for a Sustainable Estate**: Sets out our main objectives and core principles for the delivery of a sustainable built environment.
- **Appendix A: Managing Sustainable Projects**: This appendix is principally for UoS project managers and teams involved in the management of design, construction and maintenance projects. It aims to ensure that relevant sustainability requirements are effectively incorporated from the earliest project stages. This helps to minimise administrative burden; avoid the need for potentially costly design changes later on; and maximise the value that can be achieved.
- **Appendix B**: Sustainable Design Specifications: Sets out detailed and specific design requirements for project teams, contractors and suppliers, by discipline and RIBA stage, which support the implementation of our Sustainability Strategy, as well as environmental assessments.

- **Appendix C** provides a summary of non-UoS standards and guidance referred to in this document.
- **Appendix D** describes the Sustainability Implementation Group's proposed approach to embedding sustainability in all strategic decision-making. The Sustainable Building Design Standard represents a specific implementation of this approach to university building projects.

1.1. Scope and purpose of this document

This design standard is applicable to all University building projects, including new builds, refurbishment and maintenance projects on all University-owned campuses and residential sites (UK and abroad). It also applies to building works on sites occupied but not owned by the University (such as the Science Park, Chilworth and Southampton General Hospital) where it should be applied in conjunction with guidance and requirements of the landowner.

This standard sets the minimum standards across sustainability topics that should be achieved by projects, and the reporting routes/accountability through each project phase.

1.2. Relationship with UoS documents and procedures

This document is designed to complement University of Southampton (UoS) policies, procedures, specifications, guidance and templates. Links to the following documents are embedded below and available via the UoS Estates website:

- UoS Environment & Sustainability Policy
- UoS Sustainability Strategic Plan
- UoS Estates & Facilities Standard Specifications
- UoS Environmental Management System (accredited to ISO 14001:2015)
- UoS Energy Management System (under development to ISO 50001)
- UoS Travel Plan
- Waste & Recycling
- Biodiversity Policy
- Cost & Carbon Tool (under review, EAUC Cost of Net Zero Calculator tool)
- Rules for Contractors

1.3. External documents

The following external documents have also been used to inform specific targets and requirements relating to net zero carbon buildings:

- Southampton City Council Supplementary Planning Documents
- Southampton City Council Sustainability Checklist
- CIBSE Engineering Guidance
- UKGBC – Net Zero Carbon Buildings: A Framework Definition
- LETI – Climate Emergency Design Guide
- RIBA 2030 Climate Challenge

- RIBA Plan of Work 2020
- RIBA Sustainable Outcomes Guide
- BREEAM New Construction 2018
- Ska Higher Education
- RICS whole life carbon assessment for the built environment
- Understanding biodiversity net gain - GOV.UK (www.gov.uk)
- Government Soft Landings Guidance
- PAS 2080 – Carbon Management in Infrastructure

1.4. Compliance and assurance

Deviation from the requirements in this document must be agreed with the Executive Director of Estates and Facilities, and the Associate Director of Environment and Sustainability, with any agreement clearly documented and reported to Estates Programme Board (EPB), Sustainability Implementation Group (SIG) and Sustainability Strategy Board (SSB). EPB, SSB and SIG undertake regular project reviews and are required to report and comment on progress against sustainability targets and goals.

Failure to comply with the requirements of the Standard may result in the withholding of payments based on:

a) recovery of costs associated with regulatory non-compliance; and/ or

b) increased life cycle cost implications (e.g. energy or maintenance costs).

Project teams are required to report performance against specific sustainability KPIs (including BREEAM, Ska etc.) to EPB as part of monthly reporting.

In addition, project reviews at the UoS Programme Co-ordination Board must include reporting and relevant data detailing sustainability performance. This should include risks of non-compliance; life cycle cost and carbon impacts; and justification for any derogations. This will allow project boards to make informed decisions relating to potential variations/ mitigating actions, escalating to EPB as required.

1.5. Key targets and commitments

UoS has committed to achieving net zero for Scope 1 and 2 emissions by 2030 (Sustainability Strategic Plan Goal 1), with net zero targets for Scope 3 emissions by 2045 (Sustainability Strategic Plan Goal 2). To support these commitments, this Design Standard sets the following requirements:

- All projects must identify opportunities for emission reductions and climate change mitigation, resilience and adaptation
- All major projects, new build and refurbishment (>£10m), must present proposals to minimise energy use intensity (EUI) in relation to best practice industry targets and emissions kWh/m^2/yr:

1. Develop a building energy strategy, including EUI targets, from RIBA Stage 0/1, prioritising energy demand reduction over low carbon supply
2. Confirm proportionate EUI targets no later than RIBA Stage 3.
3. Undertake and maintain operational energy and emissions modelling from RIBA Stage 3 to confirm or refine the EUI target.

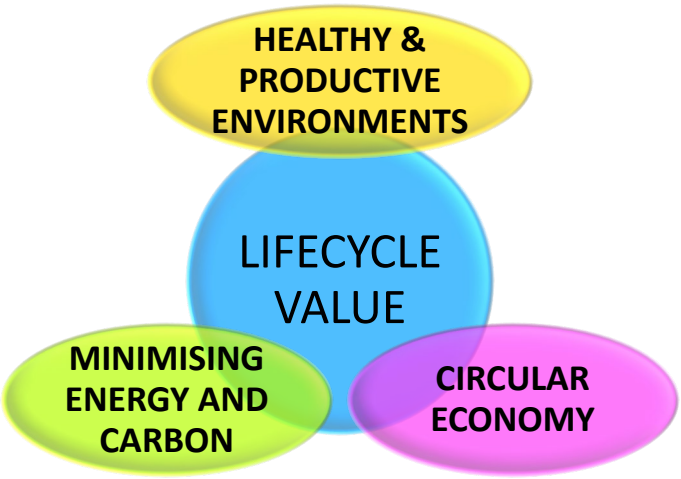
In addition, the following is required for all relevant projects:

4. Soft Landings guidance (RIBA Stages 1 – 7; projects >£2m) requires a technical reality check no later than RIBA Stage 4 which should be used to de-risk any energy performance gap.
5. The Contractor will work with the design team to deliver against the operational energy and emissions performance targets, highlighting any additional risks or opportunities.

- Major refurbishments- adopt Part L2B principles for all building envelope treatment as far as reasonably practical.
- Major projects- provide a circular economy statement covering embodied carbon and opportunities to retain existing materials for superstructure and substructure.
- Major projects- reduce embodied carbon of superstructure and substructure by 40% and/or to <500 $kgCO_2/m^2$ (see RIBA Sustainable Outcomes Guide, modules A, B & C).
- BREEAM Excellent or above must be achieved on all new build and major refurbishment projects, with due regard for life cycle value (defined below).
- Smaller refurbishment or fit out projects – must achieve Ska 'Gold' certification; or comply with all relevant Mini-Ska requirements, as agreed with EPB.
- All construction projects will target zero construction waste to landfill and provide clear documentation to demonstrate how this has been approached and achieved.
- For new build projects with standard facilities at least 40% improvement over baseline water consumption must be targeted (calculated in the BREEAM Wat 01 Calculator).
- All projects involving external landscaping must adhere to the requirement for 10% biodiversity net gain. Off-site solutions may be agreed where onsite solutions are not feasible. Accurate ecological survey data must be taken prior to works starting, through the life cycle of the project to ensure targets are achievable and prior to project completion.
- All projects that have an impact on the Eastern and Western watercourses must put in measures to minimise a negative impact on biodiversity and watercourse habitats. Measures for watercourse improvement should be considered where applicable.
- All built environment projects will demonstrate a balanced approach to sustainable design that includes staff and student health, well-being, accessibility and inclusion.
- A Post Project Review will take place on all projects to capture lessons learned. For major and or business critical projects (typically >£10m), Post Occupancy Evaluation will be carried out by an independent third party.

2. Our Vision for a Sustainable Estate

Achieving our objectives means addressing the following core principles on all projects:



LIFE CYCLE VALUE[1]

We need to future-proof our built assets, ensuring that they are robust and flexible to stand the test of time within the context of a changing environment.

Life cycle costing	All our projects will prioritise long-term value, not just the initial budget/capital cost. Specifically, whole-life financial costs and benefits need to be considered alongside environmental and social aspects.
Life cycle carbon	UoS has clear targets to achieve net zero carbon emissions as set out in our Sustainability Strategic Plan. All relevant projects must set out how they will contribute towards this target by minimising carbon emissions and costs throughout the building lifecycle, given the Sustainability Strategic Plan principle of 'no new carbon'.
Life cycle design	Future proofing our built assets requires design for durability and adaptability whilst minimising maintenance requirements. This includes allowance for (or resilience against) climate change impacts, with particular emphasis on projected temperature and rainfall patterns.
Soft Landings	Involving the right stakeholders is fundamental to minimising running costs, resource consumption and increasing user satisfaction. UoS refers to CIBSE Soft Landings guidance, including a clear, documented post-project review process.

[1] Our definition of lifecycle value goes beyond financial savings and payback. We are committed to accounting for the wider environmental, social and community impacts of our buildings.

ENERGY USE AND CARBON EMISSIONS

Deep cuts to energy use and carbon emissions are required to help minimise our environmental impacts, manage operational costs and achieve our targets. We are committed to net zero for Scope 1 and 2 carbon by 2030 as part of our Sustainability Strategy.

Fabric first	We expect all our project teams to adopt a 'fabric first' approach to building design – prioritising passive solutions such as natural ventilation, improved insulation and airtightness, whilst minimising the need for mechanical and electrical services.
Efficient systems and renewable energy	All of our plant and equipment should be as efficient as possible, and we will specify renewable technologies to provide zero carbon energy and resilience wherever feasible.
Energy & Emissions modelling and performance	To better understand and minimise operational energy consumption, emissions and costs, modelling needs to go beyond basic regulatory requirements, accounting for detailed energy profiles, unregulated energy uses and potential fugitive emissions.
Embodied carbon	We will quantify, disclose and minimise the carbon emissions associated with manufacture, transport and construction of building materials – as well as end of life emissions.
Ongoing monitoring and management	It is vital that we can measure and understand the energy consumption and emissions associated with individual areas, systems and equipment to help identify opportunities for improved management and efficiencies. Comprehensive metering is required to manage our buildings and support our drive to achieve ISO50001 certification.

HEALTHY AND PRODUCTIVE ENVIRONMENTS

Simple design measures can have a major impact on user satisfaction and productivity. The comfort and wellbeing of all building users will be considered alongside functional and technical requirements.

Internal environment	The design of internal spaces should improve health, wellbeing, productivity, access and inclusivity for all building users. This requires a focus in areas such as lighting, air quality, thermal comfort, interior design, acoustics, ventilation, biophilia and layout.
External environment	External environments must be planned to optimise personal safety and accessibility, as well as enhancing site ecology and opportunities to improve mental health.
Inclusive Design	All our buildings will be designed, built and maintained to optimise access and inclusion as far as possible – regardless of (a) age; (b) disability; (c) ethnic or national origin;

	(d) gender; (e) gender reassignment; (f) marital or civil partner status; (g) race, colour, nationality; (h) religion or belief; and (i) sexual orientation
Pollution	We require all projects to demonstrate how they have minimised pollution to air, land and water – as well as light and noise pollution. This should encompass design, construction and operational phases.
Sustainable travel	Facilities should help to minimise the need for motorised transport – particularly where powered by fossil fuels - including the provision of remote working/ conferencing technology and enhancing the environment for pedestrians and cyclists.
Construction site management	Contractors are required to implement best practice site management procedures to reduce their impact on staff and students, as well as our neighbours and the wider environment.

CIRCULAR ECONOMY

Resource efficient design can result in significant cost savings whilst also minimising environmental impacts. We will follow circular economy[2] principles, using material and water resources as efficiently as possible, whilst also conserving natural capital.

Design for material resource efficiency	We expect design teams and contractors to minimise resource use, avoiding the need for new products and materials as far as possible, and through specification of reused or recycled alternatives. Major projects require life cycle analysis (LCA).
Minimising construction waste	We require all of our contractors to provide detailed plans to manage and minimise construction and demolition waste to the lowest possible level, whilst also targeting zero waste to landfill. Providing waste data periodically is required throughout the duration of the project.
Operational waste	We will provide facilities and adopt management strategies which help to minimise operational waste and maximise our recycling rates with a focus on eliminating single-use, disposable items.
Materials with low environmental impacts	The materials used in our buildings should have the lowest possible impact on the environment. In addition to circular economy principles, this requires responsible and sustainable procurement decisions.
Reducing water consumption	We expect to reduce water consumption associated with our buildings and facilities through the use of efficient fittings and equipment as well as careful management. Where practical, we will

[2] A **circular economy** is an alternative to a traditional **linear economy** (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

use alternatives to potable water such as rainwater harvesting and greywater recycling.

It is the responsibility of project managers to ensure these principles are applied to all development projects undertaken on the UoS estate, utilising the guidance provided in the report appendices to brief project teams.