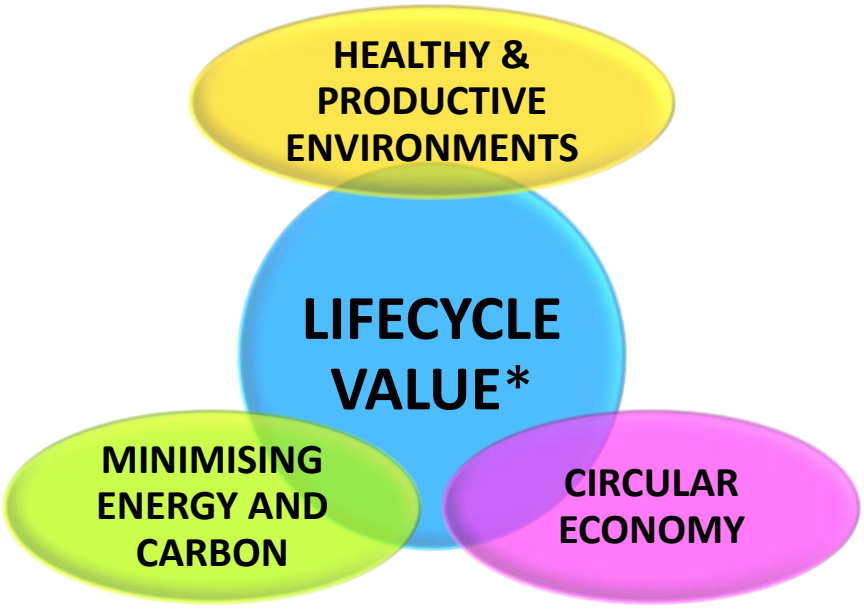
Appendix B: Sustainable Design Specifications

This section of the Sustainable Building Design Standard sets out minimum requirements for all our construction projects in support of the overarching vision and targets for sustainable development set out in the UoS Sustainability Strategic Plan. It is categorised in line with the core principles set out in Section 2 of the document:



It is the duty of the project team led by the University/ external project manager to identify which requirements are relevant to the project scope/ context, and to ensure that responsibility for delivery is clearly assigned to individual specialists.

1. Life cycle value					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
Assessing life cycle value					
1.1 Life cycle costing	Projects of all types and sizes must be able to demonstrate value throughout their projected lifecycle. Capital expenditure (capex) must be considered alongside operational and maintenance cost implications (opex) through to end of life.	**UPO/ PM/ Cost**	**2 & 4**	**Man 02**	**N/A**
1.2 Whole building solutions	As part of the business case and/ or feasibility work for all projects, opportunities for complementary work in adjacent areas/ buildings must be identified and explored with a view to highlighting potential whole building solutions. This will typically focus on the following key areas: • Building fabric performance and consistency/ effectiveness of thermal envelope (e.g. through window upgrades/ replacement, additional insulation etc) • Building services – opportunities for upgrade or replacement of wider building services where this would demonstrate clear efficiencies and value (e.g. lighting, HVAC etc) • Appropriate opportunities for the addition of on-site renewable energy technologies.	**PM UPO**	**0/1**	**N/A**	**N/A**
1.3 Recognising non-financial value	Project managers must be able to demonstrate how non-financial benefits have been considered in business cases/ feasibility studies, with reference to the environmental targets set out in the UoS EMS and Sustainability Strategic Plan, as well as the potential impacts or benefits relating to health and wellbeing.	**PM/ UPO**	**1+**	**N/A**	**N/A**

1.4 **Issue**	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
1.5 Maintainability	As far as practically possible, and without prejudicing broader UoS/ statutory requirements, buildings should be designed to be simple and easy to maintain throughout their lifecycle in close consultation with UoS Estates operational teams, and through the development of a maintenance strategy appropriate to the scope of works. This strategy should include the following considerations as a minimum: 1. Preventive maintenance requirements 2. Procurement - availability and cost of parts and materials 3. Coordination with existing UoS procedures and systems 4. Technical requirements and capabilities 5. Ability to measure ongoing performance 6. End of life considerations (i.e. following 'cradle-to-cradle' principles) This process should seek to minimise lifecycle costs in terms of both financial expenditure and carbon emissions through intelligent design and efficient operation.	**PM/ UPO**	**2 - 6**	**Man 01**	**N/A**

1.6 Space Monitoring and Performance	Monitoring the performance along with continuous optimisation of our built space is fundamental to operating the estate in an efficient and sustainable manner. This will ensure that space can be identified and adapted to new and emerging use cases as the size and shape of the university evolves. In some circumstances, this will help to reduce the need for net new space to be constructed. In the context of refurbishments and new builds, BREEAM allows for an energy prediction and post-occupancy evaluation methodology to improve energy performance and thus sustainability. Monitoring of space will support these evaluations across the life cycle of the building specifically with reference to the actions outlined in guidance note 32. As a minimum any space monitoring solution should have the capability to; 1. Capture and assess occupancy versus the capacity 2. Capture and assess frequency of use versus the overall availability 3. Capture and assess environmental conditions (Temp, humidity, C02) if no other BMS is planned or existing 4. Provide data captured in a user-friendly manner via a dashboard or have the capacity to feed into a pre-existing dashboard. Methodologies to monitor space may differ based on the type of space being assessed, especially if this is undertaken for portions of buildings or where refurbishments only impact a certain percentage of space. Where possible the most holistic cost-effective method should be applied. The recommendation is to ensure the building management system is configured to deliver the minimum capabilities outlined above, especially in the context of new buildings or complete refurbishments. The most practical options for monitoring space are listed below; 1. Holistic Building Management System (delivering against minimum requirements) 2. Standalone sensor monitoring system (Should only be considered for high value teaching, learning and research spaces due to cost) 3. Space Booking System (must include the functionality to check in to booked spaces) *N.B UoS is currently investigating options for an institution wide space booking system*	**PM/UPO**	**2-4**	**Ene 01 (tbc)**	**N/A**

Carbon appraisal					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
1.7 Carbon appraisal	The carbon impact of all projects – including both regulated and unregulated loads - must be assessed as part of the early decision-making process for different design options and as part of business case preparation. It is important to take note of the University's Sustainability Strategic Plan principle of not adding to our current emission footprint. A helpful approach is the requirements by the SIG to identify Scope 1, 2 and 3 emissions footprints for projects as outlined in the document "Ensuring Strategic Decisions Align with Strategic Plan - Sustainability Goals" (see Appendix D). Project managers are advised to use the AUDE/EAUC Cost of Net Zero Calculation Tool although alternative methods may be used depending on project size and scope. Results are to be provided at Stages 2 and 3 and included in the relevant stage gate review documentation where options are being discussed, to aid informed decision making and to ensure best value. Results must be provided to the Programme Co-ordination Board and EPB via monthly reports.	**PM/ UPO**	**2 & 3**	**N/A**	**N/A**

Consultation/handover/aftercare					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
1.6 Consultation process	Early consultation must involve relevant university; project delivery; and third-party stakeholders, including specialist building users (e.g. lab managers). This must account for the potential to influence positive behaviour change, helping to facilitate the ongoing sustainable operation of our buildings. Consultation content will vary according to project scope but will typically include: 1. Soft Landings 2. Sustainability 3. Functionality, build quality and impact (including aesthetics) 4. Management and operational implications 5. Community impacts 6. Opportunities for shared use of facilities 7. Compliance with statutory (national/local) consultation requirements 8. Inclusive and accessible design 9. Impacts or opportunities relating to adjoining/ adjacent buildings/ facilities or district level services (e.g. district heating network) 10. Sizing, optimisation and integration of equipment and systems 11. Opportunities for building/grounds to facilitate learning 12. How the design can best provide a range of social spaces appropriate to the needs of students and other users The project team must be able to demonstrate how the outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the project execution plan, communication strategy, and the concept design. In addition to the above, independent 3rd party consultation is a requirement for BREEAM. (i.e. needs to be undertaken by a consultant outside the client/ project team).	**PM/ UPO**	**1**	**Man 01**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
1.7 Soft Landings and Post-Project Review	Follow Soft Landing processes, to allow for the continual assessment of the emerging design and completed building, with a particular emphasis on actual performance and user expectations. As part of Soft Landings, all registered projects are required to carry out a Post Project Review (PPR) to ensure that buildings are performing as intended and to ensure that the lessons learnt throughout the project lifecycle are documented. The scope of the PPR will vary based on project value, scope, scale and criticality. Projects >£10m (or as agreed with EPB) are required to carry out post-occupancy evaluation (POE) normally starting 11 months following building occupation/ re-occupation. The process and must include the following: a) In-use performance feedback from building users to inform operational processes b) Recommendations for maintaining or improving productivity, health, safety and comfort c) Subsequent re-commissioning activities **The individual/ organisation carrying out the POE must be able to demonstrate independence from the design process.**	**PM/ UPO**	**1 - 7**	**Man 01, Man 04, Man 05**	**D56**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
1.8 Commissioning	UoS requires comprehensive, impartial commissioning and seasonal commissioning of building services, accounting for specialist building uses where changes to/ installation of any of the following form part of the scope of works: a) Building services (including both complex and non-complex systems) b) Building services control systems (including Building Management Systems) c) Changes to the building fabric that will affect thermal performance Responsibility for monitoring and programming pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities must be clearly defined during the project design stages. A schedule of commissioning and testing must be provided to identify appropriate commissioning standards required for the scope of works (e.g. Building Regulations; CIBSE; BSRIA, BS8300). This must include a suitable timescale for commissioning and re-commissioning of all relevant works carried out. Seasonal commissioning to be carried out over a 12-month period, once the building becomes substantially occupied. All complex systems to be tested under full load conditions and high/low occupancy. Inefficiencies and areas in need of improvement to be identified and re-commissioned. **Details of UoS Commissioning requirements are set out in UoS MEP Design Guidance.**	**MEP**	**2 - 7**	**Man 04, Man 05**	**D56**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
1.9 Building User Guide	For larger and more complex projects, a building user guide must be provided prior to handover and made available to UoS Estates & Facilities for distribution to the building users. Smaller projects should also develop guidance appropriate to the project scope and the nature of operational requirements (e.g. information on heating controls, lighting, AV equipment including induction loops). These guides must be written for the non-technical building user (an O&M manual/ Log Book will not suffice) with the purpose of facilitating access and efficient operation of the building in line with the original design intent. Whilst the content of the guide will be specific to building type and user, minimum requirements must be covered as set out in the relevant version of BREEAM/ Ska.	**Contractor**	**5 - 6**	**Man 04**	**D45**
2.0 Training	For new build projects, and where works result in changes to building mechanical or electrical systems, appropriate training must be provided for the UoS Engineering, Maintenance and Infrastructure Team, UoS Facilities Managers, and external FM providers as relevant. This should be designed to provide appropriate knowledge of any controls, monitoring, and maintenance requirements; and to therefore help to achieve optimum operational efficiency. A training schedule must be provided and timed appropriately around handover and proposed occupation plans.	**Contractor**	**5**	**Man 04**	**D56**

2. Minimising energy use & carbon emissions					
Issue	**Standard to be achieved/ UoS Requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
Targeting Net Zero Carbon					
2.1 Net Zero Carbon Strategy	UoS has adopted the UKGBC framework definition for net zero carbon buildings, developed to provide clarity on how to achieve net zero carbon in construction and operation. In line with UoS strategic commitment to achieving net zero for Scope 1 and 2 by 2030, all projects must be able to demonstrate how they have approached the minimisation of life cycle carbon emissions, prioritising energy demand reduction in line with the energy hierarchy (Be Lean; Be Clean; Be Green). This must be reflected from project inception onwards and in business cases/ feasibility studies and must form an integral part of both project reporting and formal end of stage reports. For acquisitions and lease renewals/ negotiations, the following must be documented and presented to the relevant UoS committee(s) for consideration: a) Opportunities for further improvements to energy performance and carbon emissions with due regard for life cycle cost and wider value (e.g. wellbeing). For example, this may include building fabric improvements and/or rationalisation/ improvements relating to the building services strategy. b) Limitations on bringing the building up to current best practice standards – for example, relating to building type, function or heritage limitations. Where relevant, the local conservation officer and/ or conservation planning specialists should be consulted as early as possible to help understand what building envelope and wider carbon reduction measures may be achievable.	**UPO/ PM**	**0**	**N/A**	**N/A**
2.2 Building energy and emissions performance targets	All major projects, new build and refurbishment (>£10m), must present proposals to minimise energy use intensity (EUI) and operational emissions intensity (EI) in relation to best practice industry targets. It is essential that this is considered at the earliest stages (from RIBA Stage 1 onwards) before major design decisions are locked in and refined throughout the design process. Proportionate targets must be confirmed by the end of RIBA Stage 3 at the latest.	**Energy Consultant**	**1 - 6**	**Ene 01**	**D66**
2.3 Whole-building energy and emissions modelling	New build projects, and those involving major changes to building fabric or services must carry out comprehensive 'whole building' energy and emissions modelling.	**Energy Consultant**	**3 - 4**	**Ene 01, Ene 08**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.4 Embodied Carbon (materials)	UoS requires that all projects account for, and minimise, the embodied carbon emissions associated with building design and delivery, including specific products and materials.	**Architect**	**2+**	**Mat 01, Mat 02, Mat 04**	**See Ska Materials**
2.5 Scope 3 Carbon Emissions	Principal contractors will be required to measure, monitor and report energy consumption and carbon emissions associated with all on-site construction processes throughout the build programme. This information must be made available to SIG/SSB on a quarterly basis and as BREEAM/ Ska evidence on request. In addition, data on transport movements and impacts resulting from delivery of construction materials to site and construction waste from site must be recorded. As a minimum this must cover: a) Transport associated with materials used for major building elements, groundworks and landscaping - from the factory gate to the building site, including any transport, intermediate storage and distribution. b) Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan.	**Contractor**	**5 - 6**	**Man 03**	**P01**

Passive design					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
2.6 Passive design analysis	Where relevant to the project scope (e.g. projects involving new build elements or changes/ upgrade to the building envelope), project teams must carry out an analysis of the proposed building design/ development to identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services (i.e. lighting, heating, cooling, mechanical ventilation, lighting loads and other energy consumption). Results/ recommendations must be documented accordingly. This must include clearly assigned responsibilities for taking forward the chosen solutions to detailed design and implementation stages. Overheating and daylight studies should also be carried out in tandem to ensure an optimum balance between: size of glazing; natural daylight; natural ventilation; and active cooling needs.	**Energy Consultant**	**2**	**Ene 04**	**D66**
2.7 Building orientation and massing	In order to optimise the passive performance of new buildings, orientation and massing must be considered from the project inception stage. This should include consideration of daylight availability/ provision; sun path analysis; opportunities for natural ventilation; wind analysis; acoustics and impact on microclimate. Consideration of the position/ orientation of buildings in relation to the wider site, as well as potential interaction of MEP systems with existing and future buildings should also be considered at this stage.	**Architect**	**1**	**Ene 04**	**N/A**
2.8 Building and Thermal Mass	Design teams must explore the potential to exploit the thermal mass of building structures to help moderate internal environmental conditions and minimise/ level out heating and cooling requirements, reducing reliance on mechanical systems (including plant and system size) and optimising energy performance. This analysis must be linked to thermal comfort/ overheating studies being carried out for the project.	**Architect**	**2**	**Ene 04**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.9 Insulation/ U-values	Opportunities for improved building fabric performance must be considered on all projects which impact on the building envelope (i.e. walls, windows, roofs, floors, doors etc.). Target design parameters for new buildings and major refurbishments are set out in the Energy Modelling section of the Sustainable Building Design Standard (Appendix A). UoS recognises the challenges of meeting some of these performance requirements on existing buildings due to the range of building types and functions across our estate. However, design teams must be able to demonstrate how heat loss through the building envelope has been reduced *below* the requirements for regulatory compliance for all relevant aspects of the building envelope.	**Architect**	**2**	**Ene 04**	**N/A**
2.10 Air leakage/ integrity of building fabric (design)	The amount of air leakage shall be minimised through design detailing to minimise air leakage paths and thermal bridging, with a view to reducing the building heating/ cooling loads. Target design parameters for new buildings and major refurbishments are set out in the Energy Modelling section of the Sustainable Building Design Standard (Appendix A).	**Architect**	**3+**	**Ene 04, Man 04**	**N/A**
2.11 Air leakage/ integrity of building fabric (construction)	The construction process must be planned to optimise building air tightness through: a) Strict adherence to design detail with particular attention to sealing of joints, avoidance of penetrations, use of infiltration barriers, continuity of insulation etc. b) Identification of additional opportunities to improve air leakage paths and thermal bridging. In addition to basic airtightness testing required for statutory compliance, principal contractors on new build and major refurbishment projects involving extensive changes to building envelope will be required to carry out a full thermographic survey. **Any defects identified must be rectified prior to handover and close out.** This must be carried out as per best practice in CIBSE TM23 - Testing Buildings for Air Leakage.	**Contractor**	**5**	**Ene 04, Man 04**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.12 Natural Day Lighting	See also: Health & Productivity: Visual Comfort In addition to the health & productivity benefits, optimising natural daylight will also help to reduce reliance on artificial lighting and lower energy consumption/ carbon emissions. Ensure that analysis is linked to thermal comfort and energy studies.	Architect	2	Hea 01	D04, P10

Efficient systems					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
2.13 Plant Sizing and Energy Usage	Regulated loads need to accurately respond to intended operation of the building, for example: hours of operation; occupancy, cooling/ heating set points; etc. Modular plant and equipment such as boilers, pumps etc. shall be sized to operate at maximum efficiency and installed to enable plant to be turned down to match building loads in and out of season – specifically, oversizing should be avoided. For refurbishment projects, the priority should be to connect to existing building services wherever feasible. Check historic metered head consumption to inform plant sizing. Plant equipment and engineering systems must be specified and designed to operate efficiently under part loads - i.e. modulating systems that retain efficient operation at maximum turndown. Where appropriate, zoning of the environmental building systems is to be maximised such that small areas of the building can operate efficiently. Ensure that ongoing maintenance requirements are fully accounted for (e.g. access to filters, replacement of parts etc).	**MEP**	**3**	**Ene 01**	**D03, D05, E11, E22**
2.14 On-site CHP/ District Heating Networks	Buildings on the UoS Highfield Campus are served by on-site district heating and CHP, whilst city centre buildings (Sir James Matthews and Mayflower Halls) are connected to the Southampton district system. Projects involving provision or upgrades to heating plant must connect to these systems over additional/ new plant installation (where a local connection exists), also enabling future reductions in network temperatures. On other sites, the potential for district heating should be considered as part of an energy/ low carbon feasibility study taking into account carbon reduction, cost/benefit and lifecycle improvements. Consideration must be given to ambient loops for the recovery of waste heat. Where relevant, the feasibility test should align with local authority requirements and systems are expected to comply with UoS design requirements and align with Sustainability Strategic Plan targets.	**MEP/ Energy Consultant**	**2**	**Ene 04**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.15 Low or zero carbon technology (i.e. including renewables)	Design teams are expected to actively investigate the feasibility of incorporating or extending low or zero carbon (LZC) energy technologies as part of the building/ site energy strategy. For new build and major refurbishment projects this should include a technical analysis of potential solutions focussing on life cycle benefits, and including the following elements: 1. Energy generated from LZC energy source per year 2. Emissions savings from LZC energy source per year 3. Life cycle cost assessment of the potential specification, accounting for NPV 4. Life cycle assessment to also account for embodied carbon emissions. 5. Potential for immediate or future energy storage NOTE: Additional elements will be required where a BREEAM assessment is being carried out. Where opportunities for LZC technologies exist, but fall outside the scope of the project, these should be highlighted to EPB/SSB/SIG for consideration and kept under review by the design team to account for new technologies.	**MEP/ Energy Consultant**	**2**	**Ene 04**	**N/A**
2.16 Ventilation Efficiency	<u>The most efficient ventilation solution should be determined as appropriate to the building type/ space function.</u> This must be considered as part of a combined strategy also addressing air-quality, noise and overheating needs, accounting for future climate change scenarios (see also 3.3 below). The type of ventilation used will ultimately be based on the results of thermal modelling and any specialist/ lab uses, and aim to achieve the best balance between comfort and low energy consumption. CIBSE TM52 will be applied for new build and major refurbishments projects to ensure appropriate ventilation of the space/ minimise risk of overheating. It is recognised that mechanical ventilation with heat recovery may be preferable during winter seasons to optimise efficiency and achieve EUI targets. Where this is the case, supply and extract air ventilation systems shall incorporate high efficiency air to air heat recovery methods through both passive and mechanical means (≥90% efficiency). HVAC systems are expected to fully integrate with building management systems on existing buildings.	**MEP**	**2**	**Hea 02, Ene 01**	**D03**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.17 Refrigerants	Building energy strategies should seek to avoid specifying new/ additional cooling wherever possible, and only in accordance with UoS heating and cooling policies. Where specified, refrigerants should be zero ozone depleting with minimal global warming potential (GWP). Where this is not possible due to technical/ functional considerations, leak detection connected to the BMS system should be provided with consideration given to automatic pump down where feasible. Consideration of the consequences of equipment failure is essential. At design Stages 2 and 3 considerations should be given to the appropriate refrigeration specification, including differentiation between process loads and environmental requirements. Advantages and disadvantages of each refrigerant must be documented as part of options appraisal. Note: Improving and connecting to existing systems takes priority over additional standalone plant.	**MEP**	**3**	**Pol 01**	**D23**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.18 Artificial Lighting	The need for artificial lighting should be reduced as far as possible through design, and through use of lighting controls, for both internal and external areas (subject to safety and accessibility requirements (BS8300). Natural daylighting must be optimised for internal areas, including separate consideration of core and perimeter areas, complemented by daylight dimming technology (i.e. to automatically dim lights according to ambient light level). Due consideration must also be given to the potential for glare. Internal lighting designs must seek to minimise energy usage and use dedicated; easily maintainable energy-efficient fittings selected using criteria on the ECA Energy Technology List. LED options are the UoS default standard unless operational requirements dictate otherwise. Automatic lighting controls, suitable for building function, must be used in all areas (timed, daylight and/ or presence) with manual override switches for staff/ students where appropriate - manual-on: auto-off (i.e. absence detection). Where appropriate, task lighting should be specified to minimise background lighting requirements. (see also Heath & Productivity: Zoning & User Control). External space lighting shall only use energy efficient fittings selected from the ECA Energy Technology List, and with average initial luminous efficacy not less than 70 luminaire lumens per circuit Watt. Subject to security considerations, light fittings must be automatically controlled for prevention of operation during daylight hours and with presence detection in areas of intermittent pedestrian traffic. Lighting design should seek to minimise, or ideally eliminate, light pollution without adversely affecting the safety and security of the site and its users.	**MEP**	**4**	**Hea 01, Ene 01, Ene 03**	**P10**
2.19 External funding	The design and choice of equipment shall be selected with due regard for the availability of any external funding/ discounts. Grant funding may be available during the course of development, design and construction from such sources as Enhanced Capital Allowances, BEIS, Innovate UK, Salix etc. Where relevant, the project team shall provide information and submissions to support the application process. Registration for the Feed in Tariff or Renewable Heat Incentive should be actioned where relevant.	**PM/ UPO**	**1**	**N/A**	**N/A**

Monitoring & Management					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
2.20 Building Management System	Where appropriate to the scope of works being undertaken, a fully tested and commissioned Building Management System (BMS) shall be provided to ensure that building systems can be closely controlled and monitored. All plant and equipment should be controlled by the BMS where available – separate interfaces must be avoided wherever possible*. Alternatives which provide remote monitoring and control capability without a full BMS may be acceptable for simple buildings – however, this is to be agreed on a project-by-project basis. Systems will be commissioned in both the heating and cooling seasons and on an annual basis to further improve performance. Zones shall be generally based on a floor-by-floor basis (or by department as appropriate). AHUs with packaged controls are generally not acceptable. Further details of BMS requirements are set out in UoS MEP Design Guidance and BMS Specification (ES-008-BEMS Briefing Notes). * *Particular attention needs to be paid to AC controls on standalone split systems to avoid inefficient operation, including conflicts between heating and cooling.*	**MEP**	**4**	**Ene 02**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
2.21 Energy Metering	Energy metering provision must be planned in accordance with UoS MEP Design Guidance and relevant environmental assessments (e.g. BREEAM, Ska) to support detailed and transparent measurement and monitoring of energy use and emissions reporting, and highlight ongoing opportunities to reduce consumption/emissions in conjunction with effective management procedures. All meters shall have a volt free pulse or other open protocol communications output compatible with UoS BMS system digital inputs. Outputs must be linked to the BMS energy dashboard to track live energy performance, unless otherwise agreed with the UoS Energy Manager. Metering provision must be specified with reference to CIBSE TM39: Building energy metering, and capable of monitoring energy use by building system AND functional area/ department, as relevant (the following list is not exhaustive): Building Systems: space heating, domestic hot water, humidification, cooling, ventilation, pumps, lighting, small power, renewable or low carbon systems, controls. Other major energy consuming systems/ plant must also be covered (e.g. kitchen plant, cold storage, laboratory plant, sterile services, lifts, dedicated computer rooms, ovens/ furnaces etc) Functional area/ department: the following area types are provided as a guide but this list is not exhaustive: kitchens, computer suites, workshops, lecture halls, conference rooms, drama studios, sports halls, process areas, labs (high containment suites should be separate), data centres. Where there is zone control each zone will have a meter including heat meters. Note that Heat Network Metering and Billing Regulations may also need to be complied with depending on project scope.	**MEP**	**4**	**Ene 02**	**E08, E09**

3. Healthy & Productive Environments					
Issue	**Standard to be achieved/ UoS Requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
Internal Environment					
3.1 Visual comfort	New build and major refurbishment projects (where windows or rooflights are replaced/ upgraded) must consider the optimisation of natural daylight as part of the design process including, as appropriate, a daylight design study/ modelling to help maximise useful daylight levels. The window and glazing design are to deliver optimum daylighting to the occupied areas, whilst reducing solar gain through the use of appropriate solar shading - with due consideration for planning/ heritage issues. Glare control and reflections from other buildings must also be taken into account. Consideration should be given to the introduction of biophilic design elements on glass partitions/ doors where appropriate, with due regard for visually impaired and neurodiverse users. New build projects should aim to achieve the following: a) Minimum daylight factors of 2% (target 3%) over 80% of occupied space, with a uniformity ratio of at least 0.3. OR b) Minimum average daylight illuminance, averaged over the entire space, of at least 300 lux for 2000 (target 2650) hours per year or more with at least 90 lux for 2000 (target 2650) hours at the worst lit point. Whilst opportunities to improve natural daylight levels may be more limited for refurbishment and smaller/ fit-out projects, design teams must be able to demonstrate how this has been approached and optimised. Simple measures may include changes to room layout or window upgrades.	**Architect**	**2**	**Hea 01**	**D04, D30, D31**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.2 Air quality	Projects of all sizes and scopes are required to implement design measures to optimise indoor air quality by minimising pollutant levels, and through the provision of clean/ filtered outdoor air. New build and major refurbishment projects (generally >£5m) should provide an indoor air quality plan to influence design, specification and installation decisions that minimise indoor air pollution through the building lifecycle. Typically, fresh air rates of 12l/s/person and CO_2 of 800ppm are expected to be targeted for office type spaces. a) With due regard for the functional and technical constraints of the building/ project, design teams must prioritise the provision of fresh air using a natural ventilation strategy as far as reasonably practicable. Mechanical ventilation with heat recovery may be preferable during the winter season as it is more energy efficient. b) For buildings with clear mechanical ventilation requirements, zoning should be considered to allow for natural ventilation in areas with lower requirements for environmental control (e.g. offices; recreation areas etc). c) Extracts from fume/safety cabinets or boiler flues must be designed to respond to the recommendations in the air quality plan with a view to minimising air quality impacts. d) The balance between comfort, air quality and low carbon design is to be taken into account. e) Low or zero formaldehyde and low VOC products shall be specified with reference to relevant standards (e.g. as set out by BREEAM/ Ska); PVC products shall be avoided where suitable alternatives exist. f) Additional consideration may also be required when designing ventilation systems to prevent/ minimise the risk of internal spread of infections during normal building use (i.e. COVID-19 and beyond).	**Architect**	**2**	**Hea 02**	**D40, D63, D64, P12**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.3 Thermal comfort	New build projects, or any major refurbishments involving significant changes to thermal elements or HVAC, must carry out thermal modelling appropriate to the complexity of the building. Smaller projects, including works to parts of a building, are expected to consider adjacent spaces and the potential for whole building solutions/ upgrades. Operative temperature ranges for both mechanically and naturally ventilated buildings, must be in accordance with the criteria set out in CIBSE Guide A: Environmental Design. For buildings which provide some degree of occupant control, risk of overheating must be limited in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings. Consideration should also be given to disabled people who may have specific temperature requirements. The following probabilistic DSY weather data files should be used to establish the projected climate change environment against which the design is evaluated: <u>Naturally ventilated buildings</u> • Time period: 2050s • Emissions scenario: Medium (A1B) • 50th percentile DSY 2 and DSY 3 <u>Mechanically ventilated or mixed mode buildings</u> • Time period: 2020s • Emissions scenario: High (A1F1) Any risk of future non-compliance must be mitigated through design changes, or potential for future adaptation using passive design solutions.	**MEP**	**2**	**Hea 04**	**D28**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.4 Zoning and user control	The design should allow for non-transient building users to have some control over their internal environment, subject to functional and planning requirements. This may be via opening windows in summer, or user controls for heating, mechanical ventilation and/ or lighting. Due regard must be given to the consequences of any user controls, particularly in relation to energy conservation and out of hours operation. As a general guide, non-transient users should be able to control their internal environment as set out below. a) Thermal zoning: Temperature control strategy should be informed by the thermal model with zoning planned to maximise efficiency of heating and cooling, including consideration of systems interaction, including natural ventilation. Where relevant, interlocking must be provided to prevent simultaneous heating and cooling. Degree of occupant control will need to account for building/ area function; occupancy type and patterns; and user expectations. As a guide, this should typically be: Temperature: +/- 2°C either side of the BMS set point b) Lighting zoning: Internal lighting should be zoned to allow an appropriate level of occupant control for the type of area/ function, and generally in accordance with the requirements of the relevant version of BREEAM/ Ska. Lights should be dimmable to meet the need of specific building users. Specify 'manual on - automatic off' (i.e. absence detection) as standard/ where daylight is available. Areas that are likely to have different use patterns must be zoned separately, e.g. lab and write up areas.	**MEP**	**2**	**Hea 01, Hea 04**	**D02, E06**

External environment					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
3.5 External lighting levels	All external lighting associated with the development must be designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, including during hours of darkness, as well as optimising personal safety. The following standards should be complied with, as relevant: • BS 5489-1:2013 Lighting of roads and public amenity areas • BS EN 12464-2:2014 Light and lighting - Lighting of workplaces - Part 2: Outdoor work places. • BS8300-1: 2018 Design of an accessible and inclusive built environment. Buildings – code of practice Due regard must be given to impacts on light pollution, including any relevant planning requirements.	**MEP**	**3**	**Hea 01**	**N/A**
3.6 Light pollution	The external lighting strategy must be designed to minimise, or ideally eliminate, external light pollution as follows: a) Minimise the need for external lighting through good design of site layout, and without compromising requirements for safety and security of the site and its users. b) Ensure lighting strategy complies with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011. c) Install automatic controls to switch off/ reduce lighting at night/ outside operational hours (not including safety and security lighting)	**MEP**	**3**	**Pol 04**	**N/A**
3.7 Minimising flood risk	All developments must seek to minimise, and preferably reduce, any impacts associated with surface water runoff to minimise local flood risk/ surface water pollution. Where relevant, this should include the use of sustainable drainage principles (SUDS) in the design of all surface water storage and discharges. Risk assessments must identify any sources of surface or ground water pollution, including potential future changes in use, and provide appropriate mitigation measures. The feasibility and benefits of incorporating green, brown or blue roofs as part of a broader drainage strategy should be considered and documented, where relevant.	**Structures/ Civils**	**2+**	**Pol 03**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.8 Security	Buildings and associated external spaces (e.g. car parks, amenity spaces) must be planned, designed and specified to minimise security risks associated with property and personal safety. UoS Security must be engaged on all projects that involve provision, replacement or upgrade of buildings and relevant services/ infrastructure. UoS Security will support the assessment of security risks and facilitate the process for recommending appropriate design solutions. Projects which require a BREEAM assessment may also need to engage an external Security Specialist to develop recommendations in accordance with the principles of 'Secured by Design'.	**Architect**	**2**	**Hea 06**	**N/A**

Access & Inclusion					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
3.9 Accessibility	The inclusive design guidance set out in the RIBA Plan of Work should be used to inform all relevant projects. UoS require the following as a minimum: 1) All works should meet the requirements set out in BS8300 as the minimum level of accessibility to be achieved. 2) Access audits must be carried out for all projects with the scope for improvements in accessibility and inclusion and potential measures allowed for in the Business Case and PID. This includes both new build and, in particular, refurbishment projects where existing provision is less likely to comply with current standards. 3) Major projects should have a registered access consultant on the design team.	**Architect**	**1**	**N/A**	**N/A**
Sustainable Travel Arrangements					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
3.10 Reduce the need for travel	The design of internal spaces and facilities should include measures to reduce or eliminate the need for staff/ student travel through the provision of adequate networking, audio and video conferencing provision, allowing for both current and likely future requirements. Consultation with the UoS ISolutions Team will be required.	**PM/ UPO**	**1+**	**Tra 01**	**N/A**
3.11 Travel Plan	New build, refurbishment and major fit out projects must account for the targets and requirements set out in the UoS Travel Plan and the Sustainability Strategic Plan. Separate Travel Plans or additional content may be required on a project-by-project basis and depending on location, or where additional guidance is required (e.g. due to local planning requirements or where BREEAM/ Ska assessments are being carried out). These should always link to the overarching UoS Travel Plan for monitoring and evaluation.	**PM/ UPO**	**2**	**Tra 01**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.12 Optimise environment for pedestrians	The design of external areas and building/ site entrances and exits should promote low risk, safe and secure access. Potential microclimate impacts should also be accounted for; this may include the use of planting to provide shade and cool in the summer or minimising wind tunnel effects. Lighting to be in accordance with 'External Lighting Levels', above. In addition, design teams should be able to demonstrate how the external environment has been planned and designed to encourage walking to and from the site, including good wayfinding and signage. This should include aesthetic considerations, use of materials for hard and soft landscaping, segregation of footpaths from other forms of transport, safe pedestrian crossings, disabled access (accounting for different types of disability and visual impairment) etc.	**Architect**	**2+**	**Hea 07**	**N/A**
3.13 Cycling facilities	Adequate cycling facilities must be provided accounting for both current and anticipated future demand and planned with a view to encouraging more building users to cycle. Provision will depend on building location and function; however, the following is expected as standard: a) Secure short stay and covered long stay cycle racks. Include pumps and tool kits where appropriate b) Clear signage for cycle parking facilities c) Showers with changing areas and lockers (accessible to all relevant building users) d) Drying facilities (where possible) This requirement may be addressed for individual buildings or based on shared, centralised facilities depending on the nature of the project, with reference to Southampton City Council supplementary planning guidance and input from the UoS Transport Team.	**Architect**	**2+**	**Tra 02**	**D41, D42, D43**

Construction Site Management					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
3.14 Considerate Constructor Scheme	Construction projects over 6 weeks in duration are required to register with the Considerate Constructors Scheme (CCS). The contractor will be required to take all reasonably practicable steps to achieve a minimum overall score of 40 and meet or exceed the "excellent" standard of 8 in each of the 5 sections.	**Contractor**	**5**	**Man 03**	**D44**

Ecology & Biodiversity					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
3.15 Biodiversity net gain	All projects including work to external areas should be approached in accordance with the UoS Biodiversity Policy. This includes projects with areas of hard or soft landscaping, as well as opportunities within or on the buildings themselves (e.g. green roofs or walls if appropriate). All projects involving external landscaping are expected to implement measures to achieve a net biodiversity gain (not just providing 'green' space for purely aesthetic purposes). Initiatives may involve a net increase in planting area, plant species and/ or provision of additional features to increase biodiversity of flora and fauna. When not feasible on-site, off-site solutions should be agreed with the UoS Biodiversity Working Group. The feasibility of green or brown roofs and/or green walls should be considered on a project-by-project basis, including potential additional advantages for micro-climate and building thermal performance. The potential for enhancing wildlife connectivity or corridors should also be assessed. A net negative ecological impact will only be allowable in exceptional cases and once all technically and economically viable solutions have been considered. This must be agreed with EPB, the Biodiversity Working Group and, where appointed, the project ecologist.	**Ecologist**	**2**	**LE 02, LE 03, LE 04**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
3.16 Ecological management and maintenance	For major projects involving external works (generally >£10m), principal contractors are required to nominate a Biodiversity Champion with the authority to influence site activities to manage and maintain ecology throughout the project. The contractor's site induction must promote awareness of any ecological features relevant to the site, and measures required to protect them. Where available, this should take into account the findings of a formal ecology survey/ report. Records must be kept, and made available on request, detailing actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. Where flora and/or fauna habitats exist on-site, the contractor must work with UoS, the ecologist and the wider project team to programme site works with a view to minimising disturbance to wildlife. This includes site preparation, ground works, and soft landscape works which should be scheduled at an appropriate time of year. A section on ecology and biodiversity is to be included as part of the building user guide.	**Contractor**	**5**	**LE 05**	**N/A**

4. Circular Economy					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
Minimising resource use					
4.1 Circular economy principles	In order to maximise opportunities for using materials as efficiently as possible, circular economy principles must be specified in the project brief (i.e. RIBA Stage 1) and approached by the design team on the following basis: 1. Prioritise reuse (including refurbishment and repurposing) 2. Design for optimisation (i.e. longevity, flexibility, adaptability and disassembly) 3. Standardisation or modularisation 4. Servitisation and leasing (where available) 5. Responsible sourcing of products and materials Overall quantities of materials required, and waste generated should be optimised through an iterative process which considers building design, procurement, construction, maintenance and end of life. For new build and major refurbishment projects, this should take the form of a documented plan covering each design stage separately (RIBA 1-5). The plan must set out relevant targets, as well as reporting on opportunities and methods to optimise the use of materials. To facilitate this process, UoS recommends the UKGBC 'Circular Economy Guidance for Construction Clients'. https://www.ukgbc.org/ukgbc-work/circular-economy/	**Architect**	**1+**	**Mat 06, Wst 01**	**D60**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
4.2 Robust and durable building fabric	To maximise the life expectancy of building fabric, project teams must demonstrate how design solutions and materials specification optimise durability in relation to the building lifecycle. This is to be documented in design team meeting minutes and drawings and include the following elements, as applicable: 1. Foundation/substructure/lowest floor/retaining walls 2. External walls 3. Roof/balconies 4. Glazing: windows, skylight 5. External doors 6. Railings/balusters (where exposed to external environment) 7. Cladding (where exposed to external environment) 8. Staircase/ramps (where exposed to external environment) 9. Hard landscaping Key exposed building elements must meet appropriate quality / durability standards or BS 7543:2015 as the default appropriate standard All new builds are expected to include convenient access to the roof and façade for cost-effective cleaning, replacement and repair, as well as roof and façade design to prevent water damage, ingress and detrimental ponding.	**Architect**	**2+**	**Mat 05**	**N/A**
4.3 Single-use plastics	All projects are expected to adopt measures to eliminate single-use plastics as far as possible, and subject to procurement and logistics considerations. This should form part of design development; construction management; and operational planning and include the following areas: • Procurement, including packaging and protection (acknowledging that it may not currently be feasible to source some materials/ products without single-use plastic) • Equipment purchasing • Provision of building facilities (e.g. catering) All major new build and refurbishment projects must seek to provide permanent water fountains to help minimise the need for bottled water. Smaller projects should also investigate the feasibility of providing such facilities.	**UPO/ PM**	**3+**	**N/A**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
4.4 Furniture & Fittings	Where furniture and fittings are to be provided or replaced: 1. All reasonable options for reuse/ repair in situ must have been exhausted 2. Raise a request with UoS Estates & Facilities (at least 2 weeks in advance of any planned moves) to ensure: a) Adequate arrangements are made for the storage or reuse of any redundant, but reusable, items b) Existing UoS inventory must be checked with a view to reusing items from storage/ other projects 3. Any new items must meet at least one of the following criteria: • the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme; • items are manufactured with at least 80% recycled content (measured by mass) and 100% recycyclable content, designed for deconstruction with components that can be recycled. • have been awarded the EU Ecolabel 4. In addition, ALL timber, must meet the requirements for responsible sourcing, as set out in section 4.12, below (i.e. FSC/ PEFC certified).	**Architect/ PM**	**4+**	**N/A**	**Multiple measures in Materials and Waste sections**

Adaptable design					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
4.5 Environmental adaptability	New build and major refurbishment projects are expected to be planned to ensure efficient and comfortable conditions in a changing climate, with particular emphasis on projected temperature and rainfall patterns. This likely to include building fabric & insulation; design for natural ventilation; risk of overheating; HVAC provision/ upgrades; impact on energy consumption; water management; soft landscaping and biodiversity. A balance between comfort and low carbon design solutions must be determined on a project-by-project basis, taking into account building type, function and design life. As such, an early, documented risk assessment must be used to identify and evaluate potential impacts on the building over its projected life cycle and, where feasible, appropriate mitigation measures. The following aspects are to be included, as relevant: a) Structural stability b) Structural robustness c) Weather proofing and detailing d) Material durability e) Health and safety of building occupants and others f) Impacts on building contents and business continuity.	**Architect**	**1+**	**Wst 05**	**N/A**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
4.6 Disassembly and adaptability	Design teams are expected to explore the potential and ease of disassembly and the functional adaptation for different design scenarios by the end of stage. Recommendations to are to be provided to facilitate future adaptation/ disassembly allowing for changes in functional requirements, working practices or user profiles - either by UoS or other potential occupiers. This should aim to minimise future material changes (particularly wastage) and/ or reconfiguration costs. This should cover to following as a minimum: • Feasibility • Accessibility • Versatility • Adaptability • Convertibility • Expandability • Refurbishment potential Solutions and recommendations to be implemented where practical and cost effective. A high-level approach must be developed from the concept stage and, for new build and major refurbishments, documented (including in Stage 2 reports). The following aspects are to be included, as relevant: a) Internal layouts/ partitions, including modular solutions b) Furniture, fittings and internal decoration c) Facilitating the replacement or upgrade of major plant d) Accessibility of local services including power, data infrastructure, specialist services, distribution routes etc. e) Potential for future extension - either horizontally or vertically	**Architect**	**2+**	**Wst 06**	**N/A**

Minimising construction waste					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
4.7 Construction waste management	All projects should have a documented plan for the management of material resources on the site and tailored according to the project scope (i.e. Site Waste Management Plan/ Resource Management Plan or equivalent). This must be produced during the design stages and shall include reduce/reuse/recycling targets that meet/ exceed best practice benchmarks. The plan must include the following, as relevant: 1. Target benchmark for resource efficiency (tonnes/ 100m²) 2. Procedures/commitments to minimise non-hazardous waste in line with the target benchmark 3. Procedures for minimising hazardous waste, where present 4. A waste minimisation target and details of waste minimisation actions to be undertaken 5. Procedures for estimating, monitoring, measuring and reporting hazardous and non-hazardous site waste. 6. Procedures for sorting, reusing and recycling construction waste into defined waste groups, either on-site or through a licensed external contractor 7. The name/ job title of the individual responsible for implementing the above The plan must be updated at relevant stages of project planning and construction process to account for changes likely to affect waste quantities and management (e.g. changes to design, construction methods, suppliers, waste management contractors etc). Contractors are required to review opportunities for the reuse/ recycling of demolition, excavation and construction materials throughout the project works, including on other current UoS projects where possible. Accurate and verifiable waste data is to be made available to UoS/ the project sustainability consultant on request (e.g. using data from approved EA Waste Return Forms).	**Contractor**	**4/ 5**	**Wst 01**	**See Ska Waste category**

Issue	Standard to be achieved/ UoS minimum requirement	Lead	RIBA	BREEAM	Ska
4.8 Demolition/ Refurbishment Audit	For all projects involving demolition works, including internal strip out, the design team and contractor must be able demonstrate how materials have been actively and directly used in construction (on or off site) or provide evidence of closed loop recycling. For existing buildings, structures or hard surfaces, a documented pre-demolition audit should be completed to maximise the recovery of material for subsequent high grade/value applications, if possible, on other UoS projects. Basic requirements are as follows: a) Identification of the key refurbishment/demolition materials. b) Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials in accordance with the waste hierarchy.	**Contractor**	**2**	**Wst 01**	**See Ska Waste category**
4.9 Diverting Waste from Landfill	UoS requires that all construction projects can demonstrate how they have approached a target of zero waste to landfill. Where adequate justification can be provided for not reaching this target, the following diversion from landfill figures are expected to be achieved as a minimum: • Non demolition: 85% (volume) OR 90% (tonnage) • Demolition 85% (volume) OR 95% (tonnage) • Excavation 95% (volume) OR 95% (tonnage) Waste materials will be sorted into separate key waste groups (according to the waste streams generated by the scope of the works) either on-site or through a licensed contractor for recovery.	**Contractor**	**4/ 5**	**Wst 01**	**See Ska waste category**

Operational waste planning					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
4.10 Recycling infrastructure	The UoS Sustainability Strategic Plan aims to achieve an 85% operational recycling rate with 100% diverted from landfill. Project teams are expected to provide internal and external recycling facilities in support of this target. This should include, as relevant: • Provision of space for waste storage and dedicated recycling areas • Locating waste facilities to maximise accessibility for relevant building users (staff, students, FM and waste management contractors). • Liaising with UoS Facilities Services to determine the appropriate approach. • No individual office bins shall be supplied • All bins must be clearly labelled, to assist with segregation of the recyclable waste streams • All outside bin storage facilities shall enable waste segregation as determined by the current UoS Waste Strategy, be secure and provide adequate access for waste collection vehicles • No paper towel systems shall be supplied to washroom and toilet areas. Options for paper towel alternatives should be explored for kitchen areas. For campus-located buildings, centralised recycling infrastructure may be provided as long as it provides adequate capacity (or adaptability) for current and potential future operational waste streams.	**Architect**	**3**	**Wst 03**	**D08**

Materials with low environmental impact					
Issue	**Standard to be achieved/ UoS minimum requirement**	**Lead**	**RIBA**	**BREEAM**	**Ska**
4.11 Environmental Impact of Materials	All project teams must account for and minimise environmental impacts associated with materials selection. This should include: • The reuse of existing materials should be prioritised where practical • Use of materials with higher levels of recycled content (e.g. with reference to WRAP best practice recycled content benchmarks) • Use of materials certified to schemes recognising their lower environmental impact (e.g. FSC timber) Materials used for all main building elements are expected to achieve a minimum A rating from the BRE Green Guide to Specification. This includes: roofs, external walls, internal walls and partitions, floors, windows, external surfacing, boundary protection and insulation. Where products can be procured, those with an EPD (Environmental Product Declaration) should be prioritised. All contractors/ suppliers shall aim to minimise emissions associated with the transport of construction materials. Contractors shall keep a comprehensive record of where all materials are sourced to enable the calculation of scope 3 emissions associated with construction (water, waste, procurement, and transport).	**Architect**	**3+**	**Mat 01**	**See Ska Materials category**
4.12 Responsible sourcing of building materials	Construction materials must be responsibly sourced, with due regard for practices that are environmentally responsible, ethical and fair. Consideration should be given to local sourcing as part of selection criteria. Wherever available, suppliers with at least one of the following recognised, certified environmental management systems must be used*: • FSC/ PEFC (all timber must be certified to one of these standards) • BES 6001 • ISO 14001 (this should ideally cover both manufacturing/ production and supply chain processes such as raw material extraction/ cement production etc) *This requirement may be relaxed in exceptional cases where it can be demonstrated that supply chain options are severely restricted and/ or no suitable products with such certification exist.	**Contractor**	**3+**	**Mat 03**	**See Ska Materials category**

Reducing water consumption					
4.13 Improving water efficiency	All projects involving the provision, upgrade or replacement of domestic water consuming components are expected to carry out an analysis of the potential for water efficiency improvements. Potential water savings will be dependent on the scope of works; type and location of facilities involved; and local drainage infrastructure. However, typical measures will include low/ dual flush WCs; push-button/ water-efficient urinals; push-button, low flow taps and showers; automatic flow regulators. Products from the ECA Water Technology List shall be used wherever appropriate. Use solenoid valves linked to occupancy PIR sensors to isolate the local cold-water supply to washrooms with a view to minimising localised flooding and water waste. For new build projects with standard facilities a minimum 40% improvement over baseline water consumption is expected, as calculated using the BREEAM Wat 01 Calculator. For labs and other specialist applications, project teams should demonstrate how the design of water-consuming systems has incorporated waterless and low water-consuming technologies and equipment and/ or how operational management procedures can reduce water consumption.	**MEP**	**3**	**Wat 01, Wat 03, Wat 04**	**E12, E14, E16, E19, E20, E23, P08**
4.14 Rainwater harvesting/ Greywater recycling	Where appropriate to the project scope, the feasibility of incorporating a rainwater harvesting or greywater recycling system is to be explored to further reduce potable water consumption.	**MEP**	**2**	**Wat 01**	**N/A**
4.15 Water monitoring	In addition to mains supply water meters, sub-meters are to be installed to monitor individual water consuming plant or building areas responsible for a significant proportion of overall consumption (typically >10%). Where available, all meters must be connected to the building management system to facilitate ongoing monitoring and to inform the campus water management strategy.	**MEP**	**3**	**Wat 02**	**E17, E18**