Sustainability Guidance (Capital Projects Brief)

KING'S COLLEGE LONDON ENVIRONMENTAL MANAGEMENT SYSTEM			
Control of documented information			
Issue date:	On Approval	Document Number:	EF-SUS-08-PR13
Revision number:	01	Approved by:	Kat Thorne

1   Document Control

1.1 Document Information

Master Location	:	J:\PS\Estates_Rest\Capital_House_Operations_EM\Construction_Refurb\Capital_Projects\Sustainable_Design_Spec
File Name	:	Sustainability Guidance - Capital Projects Brief
Distribution	:	Approved for use by REOB - Nov-16
		Capital Projects and Tender
		As required

1.2 Document History

Version No.	Date	Overview of document	Author(s)
0.4.3	Oct-16	Initial release of Sustainability Guide	Ben Monson
0.5	Nov-16	Update integrating comments from Comments	Ben Monson
1.0	Nov-16	Approved Version	Ben Monson
2.0	July-17	Updated to include Vision 2029 and Carbon Neutrality	Ben Monson

1.3 Key Changes in Current Document

Chapter	Section	High Level Description of Change
All	All	Minor changes, including style
All	4.2	Reprioritisation of text and details for use in Briefs
0	0	Integration of EMS document control

1.4 Next Review

This document will be reviewed if any of the following occur:

Date	Trigger	Comment
	Update to Energy & Carbon Policy	BREEAM Thresholds
	Update to Environment & Sustainability Policy	
	Updates to King's sustainability targets	
	Completion of King's Project Management Handbook	If major changes
Mar-2017	KCL have now committed to being 'carbon free' by 2025 This requires additional Board sign off	All energy targets will need to be reviewed and tighten. All briefs must aspire to be 'carbon neutral'

2   Abbreviations

BIM	Building Information Modelling
BMS	Building Management System
BREEAM	Building Research Establishment's Environmental Assessment Methodology
CAD	Computer Aided Design (including BIM)
E&F	Estates and Facilities
EMS	Environmental Management System
IT/ICT	Information (Communications) Technology
LCA	Life Cycle Analysis
LCC	Life Cycle Cost(ing)
M&E	Mechanical and Electrical
PAF	Project Authorisation Form
PPM	Planned Preventative Maintenance
WLC	Whole Life Cost(ing)

Contents

3   Introduction

3.1 King's Vision and Estate Sustainability

King's College London is one of the top 25 universities in the world and one of England's oldest. Located in the heart of London, King's has an outstanding reputation for world-class research and teaching and is rated one of the world's 25 most international and outward-looking universities[1].

Founded in 1829, King's is recognised today as a world-leading university, dedicated to the advancement of knowledge, learning and understanding in the service of society. King's vision[2] is to make the world a better place...

> *King's is dedicated to the advancement of knowledge, learning & understanding in the service of society.*

Sustainability is a complex issue, from moral to financial and environmental concerns; it is considered one of the most important and challenging issues to be faced by organisations. King's aims to be exceptional in all that it does including a vision to overcome some of the world's great challenges and so, King's approach to sustainability and its estate must reflect this.

The sustainable construction or refurbishment of buildings and infrastructure is fundamental to achieving King's vision for sustainability by driving a reduction in operational impacts including costs and carbon, whilst providing enriched teaching and learning facilities.

A major concern for the Higher Education sector is climate change and the need to reduce carbon emissions. In March 2017 King's stated it will be 'carbon free' by 2025, by which time the net emissions from our use of fossil fuels will be zero.[3] As a leading University, King's has challenging, absolute carbon reduction targets which require ongoing, major improvements in the energy efficiency of its estate.

This document outlines sustainability principles that will enable the University to meet its targets and aspirations by providing a framework for the delivery of sustainable design and construction projects. It is augmented by a suite of companion documents, which include:

- Sustainability Requirements for Contracts (Contract for Works) provides clauses and requirements for Procurement of Works
- A Sustainability Checklist for auditable review of projects

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[1] QS international world rankings and Times Higher 2016.
[2] King's Strategy Vision 2029; draft until 2017.
[3] This section added since REOB approval

More specific design guidance is available for design teams including Mechanical & Electrical (M&E) specifications and should be read in conjunction with the University's Policies and other Standard Design Guides.

Assistance can be sought from:

Sustainability   sustainability@kcl.ac.uk
                    020 7848 7859
Energy   energy@kcl.ac.uk

3.2 Purpose

This document provides high level guidance and key considerations to enable decision makers and project teams to integrate sustainability into capital projects and ensure that King's vision and sustainability requirements are met.

The purpose of this document is to:

- Outline King's sustainability requirements for (capital) projects
- Provide a framework of general principles and guidance
- Provide set text for inclusion in documentation

As capital projects include minor works through to large new developments, this guidance is designed to be incremental, starting from general principles through to detailed requirements and specifications.

The Appendix includes set text for use in documentation and design team briefs.

A Checklist has been produced to provide an auditable review of sustainability considerations. This is available from the Sustainability Team.

Sustainability Requirements for Works (Contracts for Works) outlines specific sustainability requirement for contracts (NEC and JCT contract for works) and considerations for Procurement.

3.3 Core Principles/Objectives

King's College London is a world-leading university, dedicated to the advancement of knowledge, learning and understanding in the service of society. King's vision[4] is to make the world a better place by being exceptional in all that it does.

King's recognises the significant impact that operation of its estate has on the environment. As such, the University is committed to managing construction, refurbishment and post completion occupancy of its

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[4] King's Strategy Vision 2029; draft until 2017.

buildings (including those owned/managed by others) in order to reduce environmental impact, enhance the wellbeing of staff and students and minimise operating costs.

King's College London's policy is to:

> *Manage its activities, buildings and estates to promote environmental sustainability, to conserve natural resources and prevent environmental pollution to bring about a continual improvement in its environmental performance.*
>
> *Environment and Sustainability Policy; Approved 14 June 2015.*

All capital projects should seek to enhance King's infrastructure in line with the University's strategic plan (*King's Futures*); this requires looking beyond the boundaries of the immediate project to ensure holistic fit and that opportunities for improvement are not missed. King's owns and operate a significant proportion of its estate and has the ability to influence the areas it occupies that are controlled by others and this is, by far, the greatest cost element of a capital project. Understanding and reducing operating and maintenance costs should be a consideration in design. Stakeholder engagement is integral to successful projects as this enables projects to meet and manage the requirements (or needs) of the interested parties and reduces the risks of costly late design changes, and to engage with the wider community.

King's College London aims to:

> *Design, operate and maintain environmentally sustainable facilities to ensure the greatest energy and water efficiency and lowest carbon emissions that are reasonable in the circumstances[5]*

Fundamental to achieving this objective is the adoption of whole life cost, or life cycle cost methodology including carbon, to demonstrate value over the building's life span and ensure that the estate is cost effective to operate.

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[5] Environment and Sustainability Policy; Approved 14 June 2015.

Projects should seek by holistic design and sustainable construction principles to:

- Be Fit for Kings, demonstrating excellence and support the academic mission
- Reduce whole life cost and carbon associated with buildings using life cycle cost analysis and modelling to ensure value for money
- Be efficient and minimise the use of resources[6] and transport
- Use sustainably sourced low impact materials/resources
- Minimise waste creation and pollution (in operation as well as construction)
- Be resilient to the impact of climate change[7]
- Create world-class facilities that enable King's activities by providing healthy spaces that inspire excellence, improve performance and connect with the community
- Protect and enhance biodiversity and green infrastructure

3.4 Key Targets/Requirements

King's College London is in the process of adopting a campus wide ISO 14001 Environmental Management System (EMS) as the basis of its environmental sustainability compliance regime. This requires the University to adopt a process of continual improvement for defined environmental aspects, including construction and estate management.

King's has a challenging absolute carbon emission reduction target; projects, particularly major capital projects will need to demonstrate, ideally through whole life costing and modelling, how they will assist the University meet this target. Although this target will provide an important design focus, all projects must address wider sustainability considerations, including water use, resource use and waste (in construction, operation and decommissioning), in balance with creating healthy and inspiring places to live, learn and work.

Each project should aim to make a positive contribution towards achieving these targets. New projects should not be developed in isolation; a review of the existing systems and infrastructure[8] should be undertaken to identify connections or interfaces and incorporate sustainability improvements. This should include considering if a project should form a wider programme of works.

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[6] Resources includes energy, water, etc... The aim being to reduce impact on the planet particularly biodiversity, ecosystems, and demand on natural resources.

[7] Understanding and mitigating against the potential impacts of increases in temperature, flooding, extreme weather events, etc...

[8] For example, District Heating or local heat networks, adjacent buildings with excess capacity, etc...

3.4.1 Current targets

King's College London's current[9] sustainability targets and objectives are outlined in the table below.

Aspect	Current Targets/Objectives	Source
Management	All projects with a value of £1m [10]to undertake a BREEAM assessment[11] ▪ New builds to achieve at least Excellent ▪ Major refurbishments to achieve at least Very Good	Energy and Carbon Management Policy, 2016
	Achieve and maintain an ISO14001 environmental management system.	REOB
	Undertake Life Cycle Cost analysis on all major elements.	REOB
Energy and Carbon	Be carbon free by 2025. Reduce carbon emissions by 43% by 2020; 2005/06 baseline[12]: ▪ New builds to achieve EPC rating less than or equal to 40 ▪ Major refurbishments to be at least 20% less, against relevant benchmarks[13]	Carbon Management Plan 2010-2020; Environment & Sustainability Policy, 2015
	▪ 35% reduction against Part L 2013 ▪ Demonstrated by energy modelling	The London Plan (MoL) EMRC1516-15c
	Design to enable energy management (metering/zoning).	Carbon Management Plan 2010-2020; Environment & Sustainability Policy, 2015.
	Reduce energy costs & increase efficiency.	Environment and Sustainability Policy, 2015.
Transport	Minimise core business transport deliveries.	Green Transport Policy, 2005; Energy and Carbon Management Policy, 2016; Environment and Sustainability Policy, 2015
	Promote the use of public transport.	
	Promote cycling through the provision of more facilities.	
Water	Reduce water usage by 2% per year.	Environment and Sustainability Policy, 2015; ISO 14001 EMS Objective 3
Waste	Develop Site Waste Management Plans and provide monthly reports on waste arisings.	Waste Management Policy, 2006.[14]

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[9] Correct as of November 2016.

[10] This threshold will be changed (to £4.3m) in the forthcoming policy revision.

[11] Special requirements exist for listed buildings.

[12] This is the HEFC adjusted target designed to comply with the requirements of the Climate Change Act, 2008 of a 34% reduction by 2020 and an 80% reduction by 2050 from a 1990 baseline.

[13] From Carbon Management Plan.

[14] For projects over £300k.

Aspect	Current Targets/Objectives	Source
	Operational Recycling to be at least 70%.	ISO 14001 EMS Objective 4.
	Construction Waste Recycling to be at least 80%.	
Climate Change Adaption	Mitigate by risk assessments.	AUDE; Vision 2029
Procurement and Materials	Suppliers help King's meet sustainability aspirations and data/reporting criteria.	Environment and Sustainability Policy, 2015
	Prioritise low impact materials and ethical sourcing.	Environment and Sustainability Policy, 2015
Biodiversity and Landscape	Cultivate biodiversity.	Environment and Sustainability Policy, 2015
Health and Wellbeing Social Impacts/Student Views	Provide and maintain world-class facilities that inspire excellence and connect with the community.	King's Futures
	Inclusive environments where all individuals are valued and able to succeed.	King's Vision 2029
	Healthy spaces that maximise quality daylight, acoustics and air quality.	BREEAM
Pollution	Minimise unavoidable pollution and control harmful substances.	Environment and Sustainability Policy, 2015

3.4.2 King's Requirements

Key considerations for all projects are shown in the table below. When developing projects the project manager and design teams must consider the following requirements:

Aspect	King's Requirements

Management	Establish clear responsibility for holistic sustainable design including 'soft landings', considering the campus and University.
	Decisions based on Whole Life Cost (WLC)/Life Cycle Costing (LCC)[15] and modelling to prove, reduce and meet demand efficiently.
	Undertake stakeholder engagement to assure the project meets needs.
	Design for manageability, maintainability, operability and flexibility.
	▪ Use of appropriate standards to drive and reward sustainability, including:
	   ○ King's Standard Design Guides
	   ○ BREEAM
	▪ Supporting operational decisions and King's Environmental Management System (EMS)16

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[15] Or Building Information Modelling – aiming at Level 2 compliance. Whole Life Costing applicable for New Construction/Major projects as this includes land acquisition.
[16] ISO 14001; 2015 compliant

Aspect	King's Requirements
Energy and Carbon	Low carbon, energy efficient design that enables empirical management decisions including metering/zoning. Consider improvements to building fabric. Reduced operational costs and performance. Consideration of Low and Zero Carbon technology including energy security and future technology.
Transport	Minimise core business transport deliveries. Suitable cycling facilities.
Water	Reduce water usage by integrating water efficient plant and fittings. Consideration of grey water systems, including rainwater collection and water recycling.
Waste	Enable waste management and recycling (waste hierarchy). Reduce waste in construction and operation.
Climate Change Adaption	Consideration of future use/adaptability (future proofing). Enable building to function under demanding conditions (including the ability to handle more extreme weather).
Procurement and Materials	Frameworks and supply chain analysis with contractors meet minimum standards and assist in reporting. Prioritise low impact, sustainably sourced materials that can be recycled/re-used. Procurement of high efficiency/low energy products
Biodiversity and Landscape	Greening buildings to improve species diversity. Integration of SUDS.
Health and Wellbeing Social Impacts/Student Views	Healthy, accessible and safe environments that enable King's activities and improve performance and connect with the community. Improved levels of natural light, reduced glare supplemented by the minimum electric light required for safe occupation with task lighting as required and intelligent lighting/controls. Suitable acoustic performance and air quality.
Pollution	Reduce unavoidable pollution. Control and minimise harmful substances.

4 Managing Sustainable Projects

Project management is a critical factor in the delivery of sustainable projects but traditional project management definitions/systems can seem to be at odds with sustainable development as they are generally specific, task orientated and focused on short-term goals rather than holistic, life-cycle orientated and focused on long-term value.

King's College London uses an Agile Project Management approach outlined in the Project Management Handbook[17].

Project managers can drive sustainability by:

- Acting as, or assuring that a sustainability champion implements an audit system to review sustainability at key points of the design
- Considering whole life performance and the wider environment
- Assuring the design team/stakeholders are aware of King's sustainability requirements including:
  - King's Environmental Management System
  - Policies
  - Relevant Standard Design Guides
- Managing projects through to operations[18], using soft landings principles, ensuring that:
  - Design team and contractors are clear on the design intent throughout the process
  - Value engineering/cost management measures do not compromise the performance of the project
- Challenging the Design Team to demonstrate how the design is meeting sustainability objectives

4.1 Project Manager's Handbook

King's College London is developing a Project Manager's Handbook (PMH) that aligns with the 2013 RIBA Plan of Work system and the King's Operating Model[19]. The PMH outlines the requirement to engage with sustainability at the various stages and the must be done to pass the stage Gateway.

This guidance document outlines King's sustainability aspirations and core project requirements, codifies existing minimum standards included in current policies and providing text for inclusion in project documentation designed to focus design teams on key issues that should lead the creation of sustainable projects.

To enable sustainable design and to make the greatest, cost effective impact, it is critical that sustainability issues are considered at the earliest stages and that sustainable design principles including King's requirements are used to guide the design team and/or contractor's decisions.

King's basic sustainability requirement and principles should be included in all documentation from project inception, feasibility, design, construction and commissioning stages. The Appendix includes a selection of set text that can be copied into project documentation.

4.2 Brief

King's College London aims to be exceptional in all that it does; creating inclusive environments where all individuals are valued and able to succeed, and that connects with the community. Decisions should be made on the best available evidence to deliver King's strategic vision to make the world a better place.

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[17] Under development, please contact the Estates & Facilities Capital Projects Teams.
[18] Design Teams should consider deconstruction and reuse of the building/materials.
[19] Currently KOM version 4, under review.

4.2.1 User Requirements

King's College London aims to originate, design, deliver, operate and maintain environmentally sustainable facilities that support its core objectives. To achieve this, the University requires that design teams:

- Use a holistic approach that is Fit for King's allowing us to be exceptional at what we do[20]
- Use sustainable design principles, integrate Passive Design and performance modelling
- Consider the whole life cost of the project/building
- Contribute to achieving King's targets
- Achieve or exceed required BREEAM ratings

A table outlining King's detailed user requirements is available in the Appendix – King's Requirements

4.2.2 Demonstration of Need[21]

An appropriate whole project risk assessment is required to consider the proposed approach, and ensure that the project is worthwhile and contributes to King's strategic/organisational objectives.

4.2.3 Strategic/Outline Brief

King's College London requires all projects to consider sustainability and contribute to meeting sustainability targets and strategic objectives.

- Create world-class facilities that inspire excellence, providing healthy spaces that connect with the community
- Use sustainable design principles and integrate Passive Design to minimise resource consumption and provide high quality environments
- Use of Whole Life Cost/Life Cycle Cost Analysis and modelling to demonstrate compliance and value
- Achieve or exceed relevant BREEAM rating

4.2.4 Initial Project Brief/Design Brief

King's College London is a world-leading University, dedicated to the advancement of knowledge, learning and understanding in the service of society. King's vision is to make the world a better place by being exceptional in all that it does. [22]

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[20] The Fit for King's programme aims to help King's 'provide a world class service for a world class university'. Exceptional at what we do is part of the King's 2029 vision.

[21] Section to be reviewed following update of Project Management process documentation.

[22] King's Strategy Vision 2029; draft until 2017.

Design Teams must demonstrate how projects contribute to King's sustainability objectives and targets, and refer to standard documents (policies, standard design guides and requirements).

King's desired outcomes include:

- Provision of world-class facilities that create a safe and sustainable estate that inspires excellence and connects with the community
- Creation of inclusive, healthy environments that enable King's activities that attract outstanding people enabling them to succeed
- Improvement of operational efficiency and enablement management
- Reduction the whole life carbon associated with works and operations
- Enables the circular economy by responsible procurement and use of environmental preferable materials and products
- Minimisation of impacts and enhancement of positive characteristics associated with works

To achieve these, King's require the use of sustainable design and construction; projects should demonstrate how they address the following key issues:

- Be Fit for Kings, demonstrating excellence and support the academic mission
    - Holistic design that considers the wider (project) environment
    - Commissioning and soft landings
- Use of Whole Life Costing/Life Cycle Cost analysis and performance modelling
    - Reduction on operational costs by demonstration of long term value
        - Operational and maintenance costs
    - Future-proofing and resilience to the impact of climate change
        - Ability of the building to function under demanding conditions to mitigate for climate change
        - Risk Assessments (Climate Change and extreme weather, including heat stress/flood/etc...)
    - Fit for purpose and provide flexibility and adaptability, allowing future modification of use or layout, facilitating future refurbishment and retrofitting
- Use sustainable design principles, integrate Passive Design
    - Reduce demand (for materials, energy, water and other resources)
        - Maximising resource (energy, water, etc.) efficiency
        - Improving fabric performance to reduce the whole life carbon
    - Meeting demand efficiently
        - Efficient Fittings and Equipment
        - Energy security and integration of renewable and low to zero carbon energy
        - heat, cooling, power and water from an on-site source
    - Reduce impact
        - Resource management (including selection of appropriate materials that minimise embodied lifetime and environmental impact)
        - Waste management
        - Minimise (unavoidable) pollution

- o Enhancing positive characteristics
  - ▪ Provision of safe, inclusive environments that connect with the community
  - ▪ Healthy, comfortable spaces that improve performance
  - ▪ Incorporate measures which enhance the biodiversity and green infrastructure
- ▪ Enabling empirical decision making and better management
  - o Metering
- ▪ Achieving or exceeding relevant BREEAM rating
  - o King's minimum core credit requirements considered

Design Teams must refer to King's Needs/Requirements

4.2.5 Background Information for Briefs and Design Teams

King's College London is committed to sustainable development and minimising the effects of its operations on the environment by prioritising the procurement of projects and services that reduce King's environmental impacts locally and globally.

King's operates an Environmental Management System (ISO14001; 2015 compliant[23]) to achieve its aim of a safe and sustainable estate. For further information regarding the University's Sustainability commitments, please visit the web site at the following URL:
http://www.kcl.ac.uk/aboutkings/strategy/Sustainability/index.aspx

Further information for contractors can be found on the University's website (http://www.kcl.ac.uk/aboutkings/orgstructure/ps/estates/contractors/index.aspx) and includes information on Construction Design Management (CDM) and asbestos management.

4.3 Business Case / PAF requirements

Business cases should consider major sustainability aspects and show projects will meet King's targets and requirements. The initial aims and ambitions should include the University's requirement to meet sustainability targets and objectives with 'the need' expanded to show the project addresses these.

When completing the Project Authorisation Form (PAF)[24], the core sustainability targets should be considered in the risks section when considering how the proposal affects the University. Although full detail may not be available at this stage, headline energy/carbon, water, waste and life cycle cost elements should be considered.

Clear stakeholder engagement is important to understand needs and address wider issues including the local community.

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[23] Currently the Strand Campus is certified.
[24] Formally a PAR

4.4 Assessment Standards and Tools

It is King's policy[25] to use BREEAM to drive best practice and help the University deliver sustainable buildings however, this standard must be applied robustly with regard to King's objectives to deliver projects that meet King's requirements.

Whilst targets can help focus endeavours, specific issues should not derail the whole project and the objective of a better building. Core elements that enable better management and operation of the building must not be neglected over other concerns, or credits. The University has core credit requirements (available from the Sustainability Team[26]) to focus the design team's efforts on key policy requirements particularly carbon emissions and energy performance in use.

King's College London requires that all construction works **must** meet or exceed minimum standards and for works over the value of £1m[27]:

- All new buildings to achieve at least a BREEAM **Excellent** rating[28]
- All major refurbishments projects to achieve at least BREEAM **Very Good** rating
- All 'Listed Building' projects to achieve at least a BREEAM **Excellent** rating
- All BREEAM projects must include a Post Contract Assessment

For projects under £1m other standards can be used, all projects must consider the use Life Cycle Costs analysis of major elements and consider SKA Rating tailored to King's.

Assessment standards provide a validated framework across the construction industry to consider all areas of sustainability and to help ensure that best environmental practises (that normally exceed current regulations) are incorporated in the planning, design, construction and operation of buildings; as well as rewarding by recognition when these requirements are met.

Achieving BREEAM Excellent is challenging but as it is often a planning requirement and has become mainstream, the construction industry is becoming better at meeting this challenge. To meet King's sustainability targets, the University has specified a number of mandatory credits, however, design teams should refer to the King's requirements and not 'chase points' or neglect aspects solely on the basis of BREEAM credits. To minimise the uplift in capital costs, an experienced BREEAM assessor should be included early in the process and track design changes.

It should be noted that making changes later in the project increases both the risk of being able to meet the required rating and budget by significantly increasing costs.

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[25] Energy and Carbon Management Policy, 2016
[26] As currently in draft and will require
[27] This threshold will be changed in the new policy to £4.3m
[28] As well as meeting the King's minimum credit requirements, as set out in the BREEAM Guidance

4.5 Modelling and WLC or BIM

All projects should undertake a level of modelling and whole life costing/life cycle analysis to aid informed decisions and ensure best value by considering operating expenditure and carbon emissions. This information should be considered at PAF stage and be integrated into the business case.

A range of energy modelling methods and computer models are available to test designs, from the notional building to the thermal model. Appropriate use of these tools will enable the design to be optimised to minimise energy demand and use services efficiently.

> **We make decisions on the best available evidence and critical inquiry, learn from our successes and failures and we are prepared for the future**
>
> **King's Vision 2029**[29]

For new constructions, Whole Life Costs (which include land acquisition) are considered a better way of assessing value for money than construction costs, which can result in lower short-term costs but higher ongoing costs through the life of the building.

Life Cycle Costs focus on the construction, maintenance, operation and disposal of the asset. Analysis should include energy use and carbon emissions and be used to demonstrate that elements will have a reasonable life cycle performance and will be robust in use. Information used should allow development of Planned Preventative Maintenance (PPM) schedule and operational costs.

Many 'low carbon buildings' suffer from a design/performance gap and this can often be attributed to energy use not considered at design stage (including IT/catering/small power) and differences between design intention and building use. Due to the nature of university buildings, particularly those with research facilities, energy demand may be high; therefore, core services need to be as efficient as possible. Additionally, better estimates of operational energy use and where this may be higher than a typical building(/model) will allow the design team to consider this at initial stages.

The design team should use modelling techniques to minimise the energy requirements of the building with models accurately reflecting the design. This requirement will form part of the audit process and design teams will be challenged if significant, unexpected performance gaps arise during performance reviews (including the Soft Landings process). As information improves full Building Information Modelling will enable design and space teams to make better decisions.

Design models must be reviewed following significant design changes that are considered to have a material effect on the project.

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[29] Draft text – Vision 2029 is due for publication in 2017.

5   Commissioning, Soft Landings (Aftercare), Operations and Decommissioning

University buildings frequently involve very complex systems and require careful design and management if they are to work as intended. Commissioning is, therefore, crucial to ensuring the correct operation and optimisation of the building.

> *A holistic design approach is key for delivering sustainability, with success dependent on understanding the interactions between people, building fabric and services.*

From laboratory requirements to 'Low to Zero Carbon '(LZC) energy sources, often required as part of planning to provide power, heating or cooling, there is potential for a large degree of complexity which, if not appropriately controlled and realised, can lead to buildings' performance falling short of expectations.

Soft Landings offers a process to manage the performance of the building from initial stages through to operations. As the University occupies the spaces it creates, forging links between the Capital Projects, Operations and Space teams is critical in understanding and reducing costs, as well as creating better spaces and experiences. A review of performance including energy usage should be undertaken within a 12 month period to ensure that energy performance meets design requirements across the four seasons.

Project Teams must consider King's Capital Projects Soft-landings Workplan[30] and plan to the decommissioning stage.

6   Procurement

King's College London uses various procurement methods including a range of procurement frameworks with suppliers prequalified to deliver goods and services however, compliance with King's sustainability requirements should not be taken for granted.

Project Manager's issuing ITTs or selecting a contractor from a framework shortlist should review the Tenderer's responses and/or confirm that they are aware of King's sustainability requirements.

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[30] Version, available on SharePoint

6.1 Specifications/Tender/Contractual Information

Sustainable design principles are to be incorporated in to all projects from conception to operation, with tender documents and contracts to have clearly worded requirements refer to King's sustainability targets and/or requirements as outlined above.

King's Procurement is managed using the InTend system and standard tender documentation contains University's sustainability requirements.[31] Supplementary Guidance for Contracts for Works is available from Sustainability or Procurement.[32]

6.2 E&F Assurance (Contractor's Information)

All contractors should be aware of the University's sustainability requirements and be able to work within the University's ISO 140001; 2015 compliant environmental management plan.

Assurance requires that all contactors acknowledge and comply with the University's policies, including sustainability as well as Health & Safety (using Form FO00003[33]).

Contractors must acknowledge the University's commitment to sustainability and their responsibility to work within King's systems to assist in meeting its statutory obligations and targets. If they are found to be operating in breach of these requirements, they may be held liable to a penalty appropriate to the nature of the breach/contract or the cost of making good.

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[31] Procurement documentation is currently under review (2016)

[32] Currently in development.

[33] This process is currently being reviewed and updated. Once approved, it will be rolled out and all contractors will be required to comply with the new processes over the period of a year.

Appendices

7   Background

7.1.1   A Sustainable Building

A holistically designed, well-constructed, fit for purpose building that provides a high quality academic (teaching/learning) space and healthy environment which is resource efficient throughout its life-cycle; meaning that it is well designed from materials with low environmental impact/embodied energy, efficient to operate and maintain, minimising its costs and impact on the environment.

8   Suggested Text

The core message is that King's College London aims to be exceptional in all that it does; creating inclusive environments where all individuals are valued and able to succeed that connects with the community. King's requirement is to achieve a low cost, maintainable estate and to meet its targets.

The text below can be cut and pasted into documents/briefs as required.

8.1 User Requirements

King's aims to originate, design, operate and maintain safe and (environmentally) sustainable facilities. To achieve this, the University requires that design teams:

- Use sustainable design principles, integrate Passive Design and performance modelling
- Consider the whole life cost of the building/project
- Contribute to achieving King's targets
- Achieve or exceed required BREEAM ratings

8.1.1 Sustainability Targets

King's College London's sustainability targets as of 2015 are being revised and are included for information only. Design Teams should refer to King's Requirements.

- Achieve and maintain an ISO14001 environmental management system (EMS)
    - All projects to work within King's EMS framework
    - All projects to comply with King's reporting requirements
- All projects over a value of £4.3m to undertake a BREEAM assessment
    - New builds to achieve at least "Excellent"
    - Major refurbishments to achieve at least "Very Good"[34]
- Undertake Life Cycle Cost analysis on all major elements
- Reduce carbon emission by 43% by 2020; 2005/06 baseline :
    - Use energy modelling
    - New builds to achieve EPC rating less than or equal to 40
    - Major refurbishments to be at least 20% less, against relevant benchmarks
    - 35% reduction against Part L 2013
- Design to enable energy management (metering/zoning).
- Reduce energy costs & increase efficiency.

- Reduce core business transport deliveries.
- Promote the use of public transport.
- Promote cycling through the provision of more facilities.

- Reduce water usage by 2% per year.

- Develop Site Waste Management Plans and provide monthly reports on waste arisings.
    - Operational Recycling rate to be at least 70%
    - Construction Waste rate to be at least 80%

- Mitigate climate change risks by risk assessments.

- Suppliers help King's meet sustainability aspirations and data/reporting criteria.
- Prioritise low impact materials and ethical sourcing.

- Cultivate biodiversity.

- Provide and maintain world-class facilities that inspire excellence and connect with the community
- Create inclusive, safe and healthy environments that enable King's activities by being inspiring places that attract outstanding people enabling them to succeed

- Minimise unavoidable pollution and control harmful substances.

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[34] Special requirements exist for listed buildings

8.1.2 King's Requirements

Aspect	King's Requirements
Management	Establish clear responsibility for holistic sustainable design including 'soft landings', considering the campus and university. Decisions based on Whole Life Cost (WLC)/Life Cycle Costing (LCC)[35] and modelling to prove, reduce and meet demand efficiently. Undertake stakeholder engagement to assure the project meets needs. Design for manageability, maintainability, operability and flexibility. - Use of appropriate standards to drive and reward sustainability, including: - King's Standard Design Guides - BREEAM - Supporting operational decisions and King's Environmental Management System (EMS)36
Energy and Carbon	Low carbon, energy efficient design that enables empirical management decisions including metering/zoning. Consider improvements to building fabric. Reduced operational costs and performance. Consideration of Low and Zero Carbon technology including energy security and future technology.
Transport	Minimise core business transport deliveries. Suitable cycling facilities.
Water	Reduce water usage by integrating water efficient plant and fittings. Consideration of grey water systems, including rainwater collection and water recycling.
Waste	Enable waste management and recycling (waste hierarchy). Reduce waste in construction and operation.
Climate Change Adaption	Consideration of future use/adaptability (future proofing). Enable building to function under demanding conditions (including the ability to handle more extreme weather).
Procurement and Materials	Frameworks and supply chain analysis with contractors meet minimum standards and assist in reporting. Prioritise low impact, sustainably sourced materials that can be recycled/re-used. Procurement of high efficiency/low energy products
Biodiversity and Landscape	Greening buildings to improve species diversity. Integration of SUDS.
Health and Wellbeing Social Impacts/Student Views	Healthy, accessible and safe environments that enable King's activities and improve performance and connect with the community. Improved levels of natural light, reduced glare supplemented by the minimum electric light required for safe occupation with task lighting as required and intelligent lighting/controls. Suitable acoustic performance and air quality.

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[35] Or Building Information Modelling – aiming at Level 2 compliance. Whole Life Costing applicable for New Construction/Major projects as this includes land acquisition.
[36] ISO 14001; 2015 compliant

Aspect	King's Requirements
Pollution	Reduce unavoidable pollution. Control and minimise harmful substances.

8.1.3 Sustainability and Environmental Issues for Tender Documents

King's College London recognises the significant impact that operation of its estate has on the environment. As such, King's is committed to managing construction, refurbishment and post completion occupancy of its buildings in order to reduce environmental impact, enhance the wellbeing of staff and students and minimise operating costs. The University's aim is to originate, design, operate and maintain environmentally sustainable facilities.

To achieve this, the University requires that design teams:

- Use sustainable design principles, integrate Passive Design and performance modelling
- Consider the whole life cost of the building/project
- Contribute to achieving King's targets
- Achieve or exceed required BREEAM ratings

The Tenderer shall provide a professionally managed, high quality service. The Tenderer should actively seek to prevent environmental harm and minimise environmental impacts. The Tenderer shall have in place an environmental management plan applicable to aspects and impacts associated to the size and scale of their business/organisation. For works[37]:

- Over the value of £4.3m the Tenderer must have[38] ISO14001 compliant or equivalent environmental management system
- Under the value of £4.3m the Tenderer must be able to demonstrate an environmental management plan applicable to the project

The Tenderer should show how this can be applied to their work with the Authority and align to Authority's ISO 14001 protocols.

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[37] Text and thresholds in process of approval and may be subject to change.
[38] Or be in the process of attaining an…

8.1.4 Potential Clauses

Supplementary guidance is available from King's Procurement – Sustainability Guidance: Contract for Works however, if using a short form contract you may wish to consider adding clauses from the text below.

The Contractor/Tenderer shall:

- Utilise effective management systems to provide the greatest energy and water efficiency and lowest carbon emissions that are reasonable in the circumstances and report to the Project Manager any significant opportunities to improve the operational performance of the building
- Use Life Cycle Cost analysis on major elements to consider operational and maintenance costs over the projects life span
- At a minimum report monthly to the Authority in line with the requirements of BREEAM credit "Man 03 – Monitoring of refurbishment or fit-out construction site impacts"
- Report any alterations/additions/removals of main utility supply points (MPAN/MPRN) to the Energy Team, KCL Operations
- Prepare a site waste management plan in line with the requirements [of BREEAM] and the Authority's waste management policy to minimise waste by applying the waste hierarchy, and/or utilising the WARPit (reuse) scheme
    - Contractors are responsible for removing and disposing of their own refuse. The Authority's refuse collection and disposal system must not be used for the Contractor's waste, unless agreed by the Contract Manager
    - Contractors should reuse or recycle materials wherever possible, or dispose of in an environmentally sensitive way

9   Project Managers Handbook

> **Additional Sustainability Considerations for PM Process**
> The project team must implement an auditable management system to prompt and track sustainability throughout the design and development process.
> This next section should be integrated in the Project Manager's Handbook guidance.

9.1.1 Stage 0

Stakeholders should be aware of the University's sustainability targets and how these link with both King's Vision and with their departmental/project requirements.

The business case should consider major sustainability aspects and show that the project will meet King's targets and requirements. The initial aims and ambitions should include the University's requirement to meet sustainability targets and objectives with 'the need' expanded to show how the project addresses these.

When completing the PAF form, the core sustainability targets should be considered in the risks section when considering how the proposal affects the University. Although not all detail may be available, consideration should be given to headline energy/carbon, water, waste and life cycle cost.

9.1.2 Stage 1

When providing the brief to the design team, King's sustainability targets should prompt design teams with specific targets for the projects to be developed around the core principles. Design Teams should show how the project will contribute to the University's overall targets.

9.1.3 Stage 2

Design team to provide a sustainability strategy which can be reviewed against the core principles and project specific targets.

The design team should use models to show how the design performs, with life cycle costs methodology used to show value for money over the project life. Operational impacts (including utilities and maintenance costs) should be clearly considered. The design team should review these estimates against the final design and as part of the 'soft landings' process.

New projects should not be developed in isolation; a review of the existing systems[39] should be conducted to identify connections or interfaces and incorporate sustainability improvements where appropriate.

9.1.4 Stage 6

Design team to provide support through soft landings process demonstrating commissioning.

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[39] Existing systems include M&E, BMS, etc...

Newly commissioned projects must interface correctly with existing systems, so a full integration/ cause and effect plan should be developed and tested, integrated system testing (IST).

Decommissioning to be considered.