THE UNIVERSITY *of* EDINBURGH
Estates Department

Estates Design Guideline No. 1

Introduction and Application

Important Comment on Estates Design Guidelines, Assets & Standards

These Design Guidelines, Assets and Standards and the associated suite of documents have been produced in order to furnish external design consultants and contractors with guidance on required University standards for inclusion within their proposed project design.

These guidelines are to be used as supplementary information during project design stage, and as such, detail the minimum standards expected from the University Estates Department.

Please note, these guidelines do not absolve the project design team including, sub-consultants and sub-contractors of their legal and contractual obligations under, design liability, statutory regulations and health and safety legislation.

EDG No. 1 – Introduction and Application - Approval Procedure	
Date approved	To be confirmed
Approving authority	Estates Management Group
Reference documents in the public domain	
Impact assessment	None
Date of commencement	August 2018
Amendment dates	
Date for next review	January 2020

Version Control for Estates Design Guidelines (Assets & Standards) No. 1 – Introduction and Application

Version	Date	Nature of Revision	Author	Approved by	Signed
1.0	January 2019				

Contents

Section **Page**

1.0 Introduction and Overview: University of Edinburgh and Estate

The University of Edinburgh Estates Strategy Vision is updated approximately every 4 years and identifies the core aims and strategic objectives of the built environment that supports the world-class academic activity.

The Estates Strategy is supported by the Estates Design Guidelines (Assets and Standards) which set the UoE design principles, assets and standards that ensure the delivery of the following objectives:

- Designs shall meet the brief following detailed consultation, discussion and agreement regarding criteria, constraints, risks and process
- Designs must deliver a workable strategy for operation under future and current climatic conditions for 40 years
- Designs must be conceived as part of a multi-disciplinary approach
- Accessible to all
- Safe to build, maintain, operate and decommission
- Compliant
- Resource efficient considering all resources consumed in construction, operation and at end of life
- Reliable and avoiding complex building syndrome
- Innovative following comprehensive risk analysis
- Resulting from analysis of site specific data
- Minimising negative environmental impact and promoting positive environmental impact
- Giving value for money on a whole life cost basis
- Flexible and adaptable in consideration of the likelihood of future growth and change
- Resilient
- Able to be maintained, operated, controlled, optimised, commissioned and re-commissioned effectively; in a cost effective manner
- Able to be monitored effectively with data logging functionality

1.1 Purpose of UoE Estates Design Guidelines

This document is a part of a suite of documents that should be read in conjunction with the relevant Estates Guidelines (Assets and Standards). Please see register in Appendices.

The University of Edinburgh (UoE) Estates Design Guidelines have been developed to ensure that any future building, whether new build or refurbishment, is designed with the same sustainable development parameters and principles.

Projects and Developments will fall into one of three categories which will be identified by the Project Management Team at the outset:

- Small/Minor
- Major

This categorisation recognises the complexity, scale or importance of the project in the context of the wider strategy but all categories will require to respond to the Guidelines.

This documentation has been developed to enable Design teams and contractors to have a broad understanding of the principles that the UoE will require to be adopted for any future developments. The guide is primarily designed to follow the Royal Institute of British Architects (RIBA) stages and the actual extent and scope of the guidance to be incorporated for any future development will be based upon the specific projects requirements and agreement with the UoE project management teams.

The Estates Guidelines act as a briefing document to give designers an overview of the design requirements, constraints and challenges presented by the UoE specific needs. It applies to all new-build and refurbishment projects controlling quality in the production of designs, specifications and the subsequent performance of buildings, developed to a consistent standard.

The Estates Guidelines for Engineering Services have been prepared to indicate the University's generic engineering services requirements. The purpose of the documents is to guide and inform Design teams and contractors in the development of design solutions and equipment selection. The University of Edinburgh will strive to ensure that the highest standard of engineering services installation, operation and maintenance, is achievable, throughout its Estates portfolio.

The use of the University of Edinburgh Estates Guidelines will not take the place of, or remove, any professional responsibility from Design teams and contractors to comply with the requirements of the agreed project brief. Where derogations or exceptions from these Guidelines are being considered, they must be subject to approval by the Building Services Group and respective Project Management Teams.

The Estates Guidelines aim to discuss strategic matters and do not provide an exhaustive treatment of statutory or best practice design and compliance requirements. It is the responsibility of readers/duty holders to ensure subsequent designs are complete, compliant and able to meet the final approved brief when measured in use.

1.2 Interpretation of UoE Estates Design Guidelines

The Estates Design Guidelines are to be referenced in the design team appointment documentation (Terms & Conditions) in order for the UoE to control quality in a consistent manner across its Estate.

Glossary of Terms:

1.2.1 Enforced requirements

The use of the word(s) ‘shall’, ‘are required’, ‘is required’ ‘must’ or ‘will be’ denotes a requirement that is non-negotiable and shall be used as the basis for designs, technical submissions and/or activities. If such a statement conflicts with a statutory obligation, then a report to the respective Project Management Teams and Building Services Group shall be produced highlighting the conflict, for their final decision regarding compliance with the documentation.

1.2.2 Requirements needing confirmation

The use of the word ‘may’ denotes a negotiable requirement or indication of a solution, where innovation and further calculation, design and discussion may be required to arrive at an optimised solution.

1.2.3 Quality

The Design Guidelines aim to arrive at the UoE’s highest design aspirations and standards. It may be that, at the UoE’s sole discretion, solutions are value managed and then value engineered during subsequent design iterations. Design teams and contractors are encouraged to consider where value management and subsequent value engineering may result in an improved financial performance should funding constraints occur.

1.2.4 Assets and standards

The Design Guidelines endeavours to set out Assets and Standards that will maximise the benefits realisation for the UoE to achieve its strategic objectives and maximise value for money. This will involve coordinated and optimised planning in conjunction with Procurement, robust asset selection with particular reference to existing legacy assets and standards on the University Estate, for reasons of utilisation and continuity of maintenance, replacement of parts, renewal and ultimate disposal.

1.2.5 Currency of third party documents

Where superseded standards and regulatory documents are referred to in the text, the reader shall apply current versions.

1.2.6 Proof

Where the word ‘proof’ is used, e.g., ‘proof is required’; a written report or installation certificate must be produced for approval depending on context.

1.3 Review Design Data process (RDD)

All proposed designs shall be submitted to the Project Manager and respect Estates Teams and Building Services Group for review and comments, the response will be categorised as follows:

A. Design team to acknowledge comments and continue to develop the design to the next stage.

B. Design team to acknowledge comments and update the design in accordance with comments and resubmit for consideration before proceeding to the next stage.

C. Design team to acknowledge comments and completely review and update the design in accordance to the agreed design principles and resubmit for consideration before proceeding to the next stage.

In addition to the above, the UoE may request specific technical submission to support the RDD and may include the request setting out with proof, e.g. calculations, drawings, etc.

The purpose of the RDD is to ensure designs meet the strategic requirements of the UoE and do not compromise the future operations and maintenance provision. The obligations owed by external architects, consultants and contractors to UoE and their liabilities to UoE is not in any way diminished or otherwise reduced by the RDD.

1.4 The obligations owed

By external Design teams, consultants and contractors to UoE and their liabilities to UoE are not diminished or otherwise reduced by the approval process. Consultants and contractors will remain fully and totally responsible for the design and/or works carried out by them or on their behalf by their staff, agents, sub-consultants or sub-contractors.

1.5 Version Control and Updates

The Estates Design Guidelines will be updated annually being revised at the end of January each calendar year. The version number will, using 2018 as an example, move from 2019 V1.0 at the end of January to 2019 V1.0 for the following year. The UoE Estates respective PM teams will send e-mail notifications to the directory of current Design teams and contractors appointed, following any update or change. Any updates to the Design Guidelines, which cause significant change to a project design, should be discussed with the respective Project Management Team and application of the Change Control Process will be required.

Any new items or amended content will be highlighted in yellow to enable identification of changes from previous versions.

2.0 Design Guidelines – Principles and Application

The sections below explore each principle in detail including giving practical examples to demonstrate how the principles may be applied:

2.1 Designs shall meet the brief following a detailed discussion regarding requirements, constraints, risks and process

The requirements of buildings and projects developed at the UoE are often specialist and therefore demanding of designers. Numerous specialist systems and conditions exist that present unusual design challenges and risks. The purpose of the Estates Design Guidelines are to present an initial brief to designers and to facilitate a detailed and informed discussion regarding solutions.

The UoE is promoting Compliance and Performance in Use (PIU) and so designers must ensure that actual performance criteria can be delivered in practice. Key performance indicators and the scope of post occupancy evaluation and building performance review exercises must be determined and agreed as part of the development of the brief and subsequent designs and specifications.

2.2 Designs must deliver a workable strategy of operation for 40 years

Designs must produce a workable strategy for operating under current climatic conditions and for 40 years from the date of commissioning in consideration of the UKCIP02 climate change scenarios. CIBSE's Future TRY/DSY Hourly Weather Data set – Edinburgh shall be used in dynamic simulation applications to determine future weather related risk - the 2050's high scenario shall be used.

The purpose of this exercise is to understand how buildings or systems will behave in the future and to understand the level of risk, if the design comfort criteria is not achieved or met. It is not necessary to ensure future comfort criteria can be met on the day of commissioning, but it is important to have a workable strategy for the future, which must be included in the design strategy.

As examples - a workable strategy might describe, how additional solar shading can be used to reduce the potential building heat gain load, or it might detail the location of additional cooling plant required in the future. Where chilled water pipes run through inaccessible risers, it would be a requirement of the design to size the pipes for the 2050 capacity requirement, in order to mitigate future fabric modifications.

2.3 Multidisciplinary approach

Successful buildings and systems result from a cohesive/collaborative approach between all stakeholders and contributors throughout the development briefing.

A multidisciplinary approach will ensure that the built environment satisfies key criteria across capital cost economy, design aspiration, user needs and architectural response. The operational control and ease of maintenance of a building is essential, this will require the involvement of a wide range of Estates contributors via the consultation process and iterative design process. The UoE advocates a collaborative approach with a shared ethos to ensure delivery of the deliveries to the stated principles.

2.4 Inclusive Design - accessibility and egress for all

The UoE requires a campus of equal opportunity with accessibility and egress to all. Ensuring equitable access and ease of use ensures a high quality user experience for people with diverse abilities and needs.

The collaborative approach ensures the input of the UoE Disability, Access and Equality Manager's office and design teams are encouraged to think across a spectrum of needs.

2.5 Safe to build, maintain, operate and decommission

All designs must be risk assessed by the respective competent of Design teams and contractors. Design teams and contractors must acknowledge and accept their responsibilities as 'duty holders' under the CDM Regulations 2015 and are required to eliminate, reduce or control foreseeable risks that may arise during construction, maintenance, use and decommissioning of the project. Duty holders acting on behalf of the University of Edinburgh Court, also have a responsibility to provide information to other members of the client and project team to help them fulfil their duties.

Duty holders are advised to seek guidance such as the HSE's 'Policy and Guidance on Reducing Risks as Low as Reasonably Practicable in Design' or from similar publications and ensure a clear identification of risk across all elements of design and construction throughout the building's lifecycle.

2.6 Compliant

Compliance with national, regional and local regulation must be ensured as well as the application of best practice guidance published by chartering and other recognised industry bodies. Design teams and contractors are encouraged to identify occasions where regulations become outdated and inhibit innovation to the Project Management Team and offer alternative solutions.

2.7 Resource efficiency in considering all resources consumed in construction, operation and at end of life

Resource efficiency criteria is assessed by sustainability methodologies and principles as set out in BREEAM, LEED and UoE T46 template, amongst others. This is a key umbrella concept for developing buildings that have a low embodied and operational environmental footprint. The UoE welcomes innovation with regards resource efficiency, particularly where it accompanies capital and revenue cost savings.

2.8 Reliability and avoidance of complex and over-engineered buildings

Reliability can be borne out of innovation by careful analysis of risk, by the application of careful design and by studying existing similar and relevant cases. Reliability often results from simplicity, using components that are "tried and tested" and supplied with robust warranties from companies able, in commercial terms, to honour their warranties and long-term replacement components. The UoE procurement framework aims to ensure that reliable components are purchased from companies with established records of accomplishment, to provide a consistent approach and basis for coordinated operation and maintenance across the estate.

Overly complex buildings can result from the integration of multiple M&E systems or poor coordination across the design disciplines. A multidisciplinary approach pursued throughout the design of a project should be adopted and the coordination of M&E design with architecture, should aim to eradicate overly complex controls or maintenance regimes. These design principles aim to ensure that projects avoid this problem by the application of good practice and processes.

2.9 Innovation following comprehensive risk analysis

In order to meet challenging carbon targets and to develop exemplar buildings, the UoE encourages innovation through any number of forms such as in administrative process development, the built form, data analysis, the use of advanced technological materials or components, or the way that common components and materials are configured and applied.

When innovative solutions are proposed, a comprehensive risk analysis process **must** be provided to the respective Project Management Team. Risks relating to health and environmental safety, commercial loss, reputational damage and technical failure require to be considered and potentially a feasibility study will be required to scope the nature and level of risk and to determine how this be effectively controlled and managed.

2.10 Analysis of site specific data

Efficient solutions result from the comprehensive collection of projection of data and its analysis to determine accurate design parameters.

The UoE seeks design solutions based on advanced modelling/simulation techniques using inputs agreed at the start of the design stage. Inputs may be, for example, building orientation and envelope solution, the pattern of varying occupancy of a building, the limits of comfort conditions on the hottest design day and such like.

Following the initial concept design and modelling process, a set of energy targets will be agreed between the UoE and the design team. Actual performance of the new system is to be measured, so that a full in-use modelling and monitoring programme can be established.

2.11 Sustainability to minimize negative environmental impact

In recent years, measures to minimise environmental impact have become embedded in the City of Edinburgh Council Technical Handbook Part 6 as well as some local authority planning application processes. As an innovator, the UoE may require impact mitigation exceeding that imposed by existing regulatory frameworks.

The impact of constructing, operating and decommissioning buildings will be assessed using the ethos and principles contained within the UoE Estates template, T46, however in general, a ‘fabric first’ approach is the preferred strategy to reducing operational impacts, combined with the use of low embodied energy construction materials.

In the ‘fabric first’ scenario reliance on mechanical HVAC systems can be reduced but a detailed understanding of their operating conditions becomes more critical. A further challenge is the integration of renewable energy technologies, which often require high annual loads to be commercially feasible and reliable.

The energy challenge is partly achieved by the centralisation of energy supply at the UoE in the form of district heating and cooling systems and the onsite generation of low carbon electricity. Connection to these systems is required of all new buildings and refurbishments. However, this should not dissuade designers from offering innovative ways to integrate renewable technologies that configure well with centralised energy systems. Solutions should be presented in order that a comprehensive risk and resilience analysis can be undertaken.

Designers shall consider the risks and opportunities relating to biodiversity for all projects. Designers must protect important wildlife habitats that exist at the UoE and find innovative ways to promote biodiversity through changes to the built environment.

2.12 Value for money on a whole life cost basis

The UoE is responsible for public funds and applies a business centred methodology to all capital expenditure. Value for money is defined on a whole life cost basis, not only on the minimum purchase price (economy) but also on the maximum efficiency and effectiveness.

As part of the modelling processes, a cost model is to be developed to determine solutions that are optimised for minimum life cycle cost.

2.13 Resilient

Building systems shall be resilient by design and able to maintain critical service provision during planned maintenance procedures.

2.14 Adaptable in consideration of the likelihood of future growth and change

All new build and refurbishment designs should consider the need for future flexibility.

This flexibility requires to encompass the building structural solution, envelope design and consideration given to the building systems in order that they can be expanded or modified as far as practicable. Designs should consider the use of modular and expandable systems that can be adapted at minimum cost.

2.15 Maintained, Control Optimisation and Commissioning

Designs shall inherently minimise the need for ongoing maintenance and carefully consider how implemented systems and buildings will be serviced and maintained. Accessibility is paramount and it is a UoE requirement that all designs consider all elements that require any level of maintenance or replacement access in the future. The design team are required to inspect the works to ensure that the delivered buildings encompass the specified level of access.

Designs shall provide for sufficient measurement and control points to allow systems to be accurately set-up to meet their design requirements. This approach allows systems to be set-up correctly and then adjusted and optimised for changing conditions over time. All systems shall be open protocol.

2.16 Monitoring effectively with data logging functionality

Monitoring has a number of functions including:

- Ensuring systems are optimised for efficient operation
- Post occupancy evaluation
- Enabling energy billing of consumers
- Enabling government incentives for low carbon systems to be claimed

It is important that systems can be monitored effectively according to the needs of the project. For example, comparing lighting energy consumption in a building with industry benchmarks can only be achieved if lighting circuits are separated from other types of consumption. For energy billing it is important that meters of sufficient accuracy are used that can also communicate via the correct bus protocol for centralised functionality.

Most monitoring and data logging will be achieved by means of the BMS system and it is important to establish the monitoring and data logging needs of a project as part of the design brief at an early stage.

2.17 Contractor Design Portions (CDP Items)

It is a requirement and condition of appointment by the University of Edinburgh that appointed design teams carry out a full and complete design on all building specific elements to the best of their knowledge and capabilities at RIBA stages 1-4, with further input as required during further stages 5-7.

Whilst the University of Edinburgh recognises that Contractor Design Portions (CDP) are commonly utilised within contract documentation for specialist elements of system design, it should be noted that this does not and will not absolve the relevant member of the design team of their legal and contractual obligation to ensure that a system has been fully designed, ensuring full compliance with statutory guidelines has been achieved.

CDP items on all UoE projects shall be kept to a minimum, with the use of such methods, reserved exclusively for specialist items of system design that can only be achieved utilising specialist manufacturer data/software design packages.

A CDP item shall be based on the performance and design intent of the project design team.

It is the responsibility of the project Contract Administrator/Lead Consultant to provide the UoE Project Manager with a schedule of proposed CDP items for liaison with the wider UoE Estates Team. The schedule should be developed as part of RIBA Stage 3 design submittal. This schedule should be provided at RIBA Stage 3 design. It is vital that on review of a Contractor's CDP technical submittal, the design team carry out an extensive review to ensure that the overall University Estates Employers Requirements have been met.

All CDP technical submittals shall be sent to the UoE Project Manager, complete with a full list of design team comments for review by UoE Estates Team.

2.18 Estates Design Guidelines (Assets and Standards) Principles – Summary

UoE Buildings and systems designed in the 21st century must address the urgent need to mitigate environmental deterioration as well as ever increasing resource constraints in an affordable way with controlled risk. The UoE seeks designs that meet all current and proposed best practice standards as a minimum and promotes the development of exemplar buildings and systems.

3.0 Appendices

3.1 Appendix No. 1: Estates Design Guidelines (Assets & Standards) – Document Register

No	Proposed Design Guidelines and Standards Name	Existing Relevant Guide
1	General Introduction to Design Guidelines, Assets & Standards Principles and Application	New
2	Mechanical, Electrical and Plumbing (MEP) Testing & Commissioning	2.0 Testing and Commissioning
3	Mechanical Engineering Services (including Specialist Installations)	3.0 Mechanical Engineering Guidelines
4	Building Energy Management Systems (BEMS)	4.0 Controls
5	Metering of Utilities & Energy	New
6	Electrical Engineering Services	6.0 Electrical Engineering Guidelines
7	Lift Installations	7.0 Lift Installations
8	Security Services	New
9	Fire Safety Management	9.0 Fire Safety
10	Building Fabric (including generic room data sheets and standard finishes)	New
11	Sustainable Design Standards for Buildings and Infrastructure Works	New
12	Inclusive Design	Accessibility Access Standards Dec 2015
13	Wayfinding and Signage	Leading the Way - Signage Protocol Document - Dec 2015
14	Landscaping	New
15	Space Management Standards (including room numbering)	New
16	Asset Management (including asset tagging)	New
17	Teaching and Learning Space (including AV standards & pedagogy)	New
18	CAD Drawing Specifications for External Organisations	New
19	Building Maintenance and Operations Manuals, Log Book and Handover Procedures	New
20	Contractor's working on the University Estate (including Asbestos Management)	New
21	Building Information Management (BIM) Protocol	New
22	Decommissioning University Buildings and Facilities	New

3.2 Appendix No. 2: The Role of the Designer

Please Note that the definition of a designer in the Construction (Design and Management) Regulations 2015 is very wide:

A designer is an organisation or individual, who:

a) prepares or modifies a design for a construction project (including the design of temporary works); or
b) arranges for, or instructs someone else to do so.

The term 'design' includes drawings, design details, specifications, bills of quantity and calculations prepared for the purpose of a design.

Designers include architects, architectural technologists, consulting engineers, quantity surveyors, interior designers, temporary work engineers, chartered surveyors, technicians or anyone who specifies or alters a design.

They can include others if they carry out design work, such as principal contractors, and specialist contractors, e.g. an engineering contractor providing design, procurement and construction management services. Where commercial clients become actively involved in designing in relation to their project, they may also be considered to be designers.

A designer has a strong influence during the concept and feasibility stage of a project. The earliest decisions can fundamentally affect the health and safety of those who will construct, maintain, repair, clean, refurbish and eventually demolish a building.

The health and safety of those who use a building as a workplace may also be affected.

Decisions such as selecting materials that are lighter to handle or windows that can be cleaned from the inside can avoid or reduce the risks involved in constructing the building and maintaining it after construction. Although it is understood that residual risks may well remain, decisions such as these have an important influence on the overall health and safety performance of the project and the use and maintenance of the building once it is built.

A designer MUST address health and safety issues from the very start. Where issues are not addressed early on, projects can be delayed and it can become significantly harder for contractors to devise safe ways of working once they are on site. The client may also be forced to make costly late changes, so the building can be used and maintained safely once it is built.

When preparing or modifying designs, a designer must take account of the general principles of prevention, and the pre-construction information provided to them, with the aim, as far as reasonably practicable, of eliminating foreseeable risks. Where this is not possible they must take reasonably practicable steps to reduce the risks or control them through the design process, and provide information about the remaining risks to other duty-holders.

The general principles of prevention provide a framework within which designers must consider their designs and any potential risks which may affect:

a) workers or anyone else (e.g. members of the public) who may be affected during construction;
b) those who may maintain or clean the building once it is built; or
c) those who use the building as a workplace.

Designs prepared for places of work also need to comply with the Workplace (Health, Safety and Welfare) Regulations 1992 (the Workplace Regulations), 4 taking account of factors such as lighting and the layout of traffic routes. Imitating, reducing or controlling foreseeable risks through design.

When designing for the University of Edinburgh, a designer must consider the risks people may be exposed to through the course of both constructing a building and using it once it is constructed. Designing is a process that often continues throughout the project and the following questions should be considered when design is carried out:

a) Can I get rid of the problem (or hazard) altogether? For example, can air conditioning plant on a roof be moved to ground level, so work at height is not required for either installation or maintenance?
b) If not, how can I reduce or control the risks, so that harm is unlikely or the potential consequences less serious? For example, can I place the plant within a building on the roof, or provide a barrier around the roof?

If risks cannot be eliminated altogether, a designer should apply the principles below in deciding how to reduce or control the remaining risks – if possible, in the following order:

a) provide a less risky option, eg switch to using paving lighter in weight, to reduce musculoskeletal disorders such as back problems;
b) make provisions so the work can be organised to reduce exposure to hazards, eg make provision for traffic routes so barriers can be provided between pedestrians and traffic;
c) ensure that those responsible for planning and managing the work are given the information they will need to manage remaining risks, eg tell them about loads that will be particularly heavy or elements of the building that could become unstable. This can be achieved through providing key information on drawings.

The general principles of prevention

1. These principles are a requirement of the Management Regulations and apply to all industries, including construction. They provide a framework to identify and implement measures to control risks on a construction project.

2. The general principles of prevention are to:

a) avoid risks;
b) evaluate the risks which cannot be avoided;
c) combat the risks at source;
d) adapt the work to the individual, especially regarding the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work, work at a predetermined work rate and to reducing their effect on health;
e) adapt to technical progress;

f) replace the dangerous by the non-dangerous or the less dangerous;

g) develop a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment;

h) give collective protective measures priority over individual protective measures; and

i) give appropriate instructions to employees.

3.3 Appendix No. 3: Reviewable Design Data (RDD) Template - refer to location for templates

3.3.1 Appendix 3A: Clarification/Deviation/Derogation (sign-off) Schedule

Duplicate for various Estates Design Guidelines, Standards and Asset documents as required.

ESTATES DESIGN GUIDELINES, ASSETS & STANDARDS (Name)
CLARIFICATION / DEVIATION / EXCEPTIONS
SIGN-OFF TEMPLATE

Project Name:				**Date:**
Project No:				**Doc. No:**
Ref	**Design Guide Ref**	**Existing Wording**	**Proposed Wording**	**Proposed & Agreed By**
001				Lead Designer/Contractor: Date: Client/representative: Date:
002				

Additional comments:

Note:
Lead Designer/Consultants confirmation that proposed derogations to ESTATES DESIGN GUIDELINES (ASSETS & STANDARDS) (Name), have given due consideration to performance standards and quality of proposed assets and systems offered, in the best long-term interests of the Operation and Maintenance of the University Estate and Estates Legislative Compliance.

Lead Designer/ Contractor proposed to above amendments:	**Print name:** **Signature:**	**Date:**
Client Representative agreement to above amendments:	**Print name:** **Signature:**	**Date:**

3.3.2 Appendix 3B: Standards and Legislation/Regulations Conflict (sign-off) Schedule

	ESTATES DESIGN GUIDELINES (ASSETS & STANDARDS) (Name) STANDARDS AND LEGISLATION / REGULATIONS CONFLICT (SIGN-OFF) TEMPLATE

Project Name:			**Date:**
Project No:			**Doc. No:**
Ref	**Existing Clause - Wording**	**Proposed Clause - Wording**	**Proposed & Agreed By**
001			Lead Designer/Contractor: Date: Client/representative: Date:
002			
003			

Additional comments:

Note :
Lead Designer/Consultants confirmation that proposed clause amendments to ESTATES DESIGN GUIDELINES (ASSETS & STANDARDS) (Name), have given due consideration to the best long-term interests of the Operation and Maintenance of the University Estate and Estates Legislative Compliance.

Lead Designer/ Contractor proposed to above clause amendments:	**Print name:** **Signature:**	**Date:**
Client Representative agreement to above clause amendments:	**Print name:** **Signature:**	**Date:**

3.3.3 Appendix 3C: Reviewable Design Data (sign-off) Schedule

	ESTATES DESIGN GUIDELINES (ASSETS & STANDARDS) (Name) **Reviewable Design Data (RDD) sign-off of Summary Schedule**

Project Name:	
Project No:	**Doc. No:**
Item Title:	**Item Ref No:**
Submitted By:	**Date:**
Submitted To:	

No:	**Clause Ref No:**	**CLARIFICATION / DEVIATION / DEROGATION / EXCEPTION Sign Off Template No:**	**Agreed By and Date:**

Print name:

Signature:

Note :
Lead Designer/Consultants confirmation that proposed derogations to ESTATES DESIGN GUIDELINES (ASSETS & STANDARDS) (Name), have given due consideration to performance standards and quality of proposed assets and systems offered, in the best long-term interests of the Operation and Maintenance of the University Estate and Estates Legislative Compliance.

Client comments:

Approval status (highlight appropriate box)	**A**	**B**	**C**
A – Approved B - Approved with comments C - to be resubmitted	Next review date:		00-00-2018

Client RDD approval	**Print name:**	**Date:**
	Signature:	

Distribute to:

3.4 Appendix No. 4: RIBA PLAN OF WORK – Project Review Documentation

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

Drawing Checklist - Building Services Review (Mechanical/Electrical)

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Production drawings and builders' work information and details for engineering services systems		Building Information Models							Arrangement and schematic drawings									Builders' work		
																		Structurally Significant		Not Structurally Significant
Ref	Works (delete or add others as necessary)	Concept	Developed design	Technical design (proforma 4A)	Technical design (proforma 4B)	Technical design (proforma 4C)	Installation	As built	Concept sketch	Concept schematic	Developed design	Developed schematic	Technical design	Co-ordinated working	Installation	Manufacturers'	Record	Information	Details	Details
Mechanical services																				
	Acoustics (engineering services)																			
	Air conditioning and comfort cooling																			
	Automatic controls – BMS and EMS																			
	Compressed air																			
	Cooling water installations																			
	Cold water systems (domestic)																			
	Exhaust gas treatment and flues																			
	Fuel oil storage and distribution																			
	Gas distribution																			
	Heating systems including boilers																			
	Hot water systems (domestic)																			
	Humidity control																			
	Mechanical services to window cleaning equipment																			
	Mechanical services to kitchen and cafeteria equipment																			
	Mechanical services to vending equipment																			
	Mechanical ventilation systems (list systems)																			
	Natural ventilation																			
	Pneumatic systems																			
	Potable water system																			
	Refrigeration and cold store installations																			
	Steam and condensate																			
	Vibration control (engineering services)																			
	Water treatment and filtration systems																			

Production drawings and builders' work information and details for engineering services systems		Building Information Models							Arrangement and schematic drawings									Builders' work		
																		Structurally Significant		Not Structurally Significant
Ref	Works (delete or add others as necessary)	Concept	Developed design	Technical design (proforma 4A)	Technical design (proforma 4B)	Technical design (proforma 4C)	Installation	As built	Concept sketch	Concept schematic	Developed design	Developed schematic	Technical design	Co-ordinated working	Installation	Manufacturers'	Record	Information	Details	Details
Public health services																				
	Drainage above ground – foul																			
	Drainage below ground – foul																			
	Drainage – surface water																			
	Rainwater systems above ground																			
	Water retention systems																			
	Other works (specify)																			
Fire engineering services																				
	External hydrants																			
	Fire telephone and radio systems																			
	Fire detection and alarm systems																			
	Gaseous fire extinguishing systems																			
	Hose reels, wet and dry risers																			
	Smoke ventilation systems																			
	Sprinkler system																			
	Staircase pressurisation																			
	Other works (specify)																			

Production drawings and builders' work information and details for engineering services systems		Building Information Models							Arrangement and schematic drawings									Builders' work		
																		Structurally Significant		Not Structurally Significant
Ref	Works (delete or add others as necessary)	Concept	Developed design	Technical design (proforma 4A)	Technical design (proforma 4B)	Technical design (proforma 4C)	Installation	As built	Concept sketch	Concept schematic	Developed design	Developed schematic	Technical design	Co-ordinated working	Installation	Manufacturers'	Record	Information	Details	Details
Electrical services																				
	Access control systems																			
	Cable containment for:																			
	• Data and IT systems																			
	• Radio and TV																			
	• Telephone systems																			
	CCTV																			
	Clock installations																			
	Data and IT systems																			
	Earthing and bonding																			
	Electrical generation plant																			
	Electrical substations and switchgear																			
	Energy metering and monitoring systems																			
	High voltage switchgear and distribution																			
	Low voltage switchgear and distribution																			
	Lighting circuits and control (use sub-divisions if necessary):																			
	• Emergency and escape lighting																			
	• External lighting																			
	• Display and feature lighting and signage																			
	• Internal lighting																			
	• Street lighting																			
	Lighting Protection System																			

Production drawings and builders' work information and details for engineering services systems		Building Information Models							Arrangement and schematic drawings									Builders' work		
																		Structurally Significant		Not Structurally Significant
Ref	Works (delete or add others as necessary)	Concept	Developed design	Technical design (proforma 4A)	Technical design (proforma 4B)	Technical design (proforma 4C)	Installation	As built	Concept sketch	Concept schematic	Developed design	Developed schematic	Technical design	Co-ordinated working	Installation	Manufacturers'	Record	Information	Details	Details
Power circuits and control:																				
	• External small power																			
	• Internal small power																			
	• Lifts, escalators and travelators																			
	• Mechanical equipment and control panels																			
Power and containment for mechanical and public health systems:																				
	• Incinerators, compactors and refuse collection systems																			
	• Information screens																			
	• Kitchen and cafeteria equipment																			
	• Power operated blinds, louvers and shutters																			
	• Vending equipment																			
	• Window cleaning equipment																			
	Public address and voice evacuation																			
	Radio, TV and entertainment systems																			
	Security - intruder detection and alarm																			
	Telephone systems																			
	Uninterruptible power supplies																			
	Other works (specify)																			

Production drawings and builders' work information and details for engineering services systems		Building Information Models							Arrangement and schematic drawings									Builders' work		
																		Structurally Significant		Not Structurally Significant
Ref	Works (delete or add others as necessary)	Concept	Developed design	Technical design (proforma 4A)	Technical design (proforma 4B)	Technical design (proforma 4C)	Installation	As built	Concept sketch	Concept schematic	Developed design	Developed schematic	Technical design	Co-ordinated working	Installation	Manufacturers'	Record	Information	Details	Details
Utilities:																				
	Diversions of existing infrastructure																			
	Incoming communications services																			
	Incoming electricity																			
	Incoming gas																			
	Incoming mains water																			
Other services and systems not specified above:																				
	Laundry equipment																			
	Medical gas and vacuum services																			
	Swimming pool water treatment																			

3.4.1 Appendix 4A: RIBA PLAN OF WORK – Project Review Documentation – Stage 2

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 2**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

CONCEPT (RIBA STAGE 2) - Building services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

General Obligations & External Liaison	General Comments	Received and Reviewed?
Prepare initial strategy for fire safety (such as compartmentation, location of fire lifts, fire detection and suppression philosophy, consultation with relevant authorities)		
Client liaison		
Review and report on the condition/status of any existing services installations (usually only required for buildings being refurbished /extended)		
Selection of plant and specialist designers		
Assessment and selection of specialist designers and contractors		
Establish areas/zones for central plant in line with mechanical, electrical and public health design philosophies		
Mechanical design		
Determine mechanical systems philosophy		
Determine passive design philosophy		
Design review		
Electrical design		
Determine electrical systems philosophy (use of natural light, degree of system integration, redundancy, life-cycle)		
Design review		
Public health design		
Determine water supply and waste-handling philosophy (recycling, storage)		
Design review		
Commissioning		

General Obligations & External Liaison	General Comments	Received and Reviewed?
Phased handovers, system configuration or plant arrangements to simplify commissioning		
Strategic commissioning plan		
Deliverables – including drawings, specifications, reports		
Provide report on building services issues as part of concept design report, including:		
Recommendations for renewables		
Considerations for off-site manufacture		
Environmental assessments		
Section 6 requirements		
Building energy model		
Thermal modelling		
Noise and acoustic measures		
Fire and smoke control measures		
Adequacy of utilities supplies		
Constraints arising from the brief or local authority policy		
Research on innovative solutions		
Provide concept design model including appropriate geometric detail and object information		
Provide concept sketch drawings for preferred preliminary design(s)		
Provide concept schematics for preferred preliminary design(s)		
Provide information for early-stage life-cycle cost and life-cycle assessment studies		
Provide outline performance specifications for mechanical, electrical and public health services if required depending on procurement strategy		
Provide outline cost plan for building services based on floor area/building type/system assumptions		
Provide high-level metering strategy		
Provide COBie-UK-2012 tables for Information / Data Drop Stage 2 / Exchange 2		

The following observations and comments have been recorded:

Ref	Observation	Comment/Action	Comment/Action Lead

3.4.2 Appendix 4B: RIBA PLAN OF WORK – Project Review Documentation – Stage 3A

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 3A**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

DEVELOPED DESIGN PART 1 (RIBA STAGE 3) - Building Services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic	General Comments	Received and Reviewed?
Client liaison (briefing, handover, surveys)		
Confirm design criteria, scope and extent of mechanical, electrical and public health services		
Mechanical design		
Primary design criteria for mechanical systems		
Provide preliminary information on specialist mechanical systems, such as performance specification, loads, and schedules		
Electrical design		
Primary design criteria and extent of electrical systems		
Provide preliminary information on specialist electrical systems, such as performance specification, loads and schedules		
Public health design		
Primary design criteria for public health systems		
Establish main below-ground drainage routes and manhole locations		
Deliverables – including drawings, specifications, reports		
Energy statement for planning submission, based on agreed energy strategy		
Performance specifications and/or main plant equipment schedules for MEP services if required by procurement strategy		
Provide updated design risk assessments		

The following observations have been made:

Ref	Observation	Comment/Action	Comment/Action Lead

3.4.3 Appendix 4C: RIBA PLAN OF WORK - Project Review Documentation – Stage 3B

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 3B**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

DEVELOPED DESIGN PART 2 (RIBA STAGE 3) - Building Services Review/Comments (Mechanical/Electrical) - Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic Description	General Comments	Category
General obligations, external liaison		
Fire safety strategy		
Client liaison		
Recommendations for operating and maintenance strategy		
Mechanical design		
Principal metering strategy		
Indicative plant sizes for mechanical systems and confirm plant room/riser locations/sizes		
Dynamic thermal simulation studies in the development of energy strategies for the fabric and engineering services as required to support the design		
Computational fluid dynamics studies as part of a detailed evaluation for the particular stated aspects of the building services design		
Determine main duct and pipe routes around floors to and from risers		
Room loads using approximate methods		
Approximate duct sizes, pipe sizes, terminal sizes and locations, valve sizes and locations, fan sizes, pump sizes, locations and sizes of ancillary equipment		
Electrical design		
Determine principal plant locations/sizes		
Prepare principal metering strategy		
Establish indicative plant sizes for electrical systems and confirm plant room and riser locations/sizes		

Topic Description	General Comments	Category
Daylight computer modelling required to support the design		
Calculate the maximum demand for small power and lighting using approximate methods		
Calculate the maximum demand for high voltage supply using approximate methods		
Determine main distribution routes and circuits around floors to and from risers and main switchgear, and approximate sizes of containment and switchgear		
Public health design		
Prepare principal metering strategy		
Establish indicative plant sizes for public health systems and confirm plant room and riser locations/sizes		
Maximum demand for water supply and waste removal using approximate methods		
Approximate system capacities for hot and cold water central plant		
Determine main pipe and drain routes around floors to and from risers		
Confirm main below-ground drainage routes and manhole locations		
Commissioning		
Updated commissioning plan		
Deliverables – including drawings, specifications, reports		
Provide an initial schedule of cast-in/formed builders' work openings that are structurally significant		
Provide COBie tables for Information Exchange 3		
Provide programme information on design and construction issues		
Provide a refined cost plan for building services		
Provide a report on building services issues as part of the developed design report		
Provide developed design model		
Provide developed design drawings		
Provide developed schematics		

The following review, comments and categories have been recorded:

Ref	Observation	Comment/Action	Comment/Action Lead

3.4.4 Appendix 4D: RIBA PLAN OF WORK - Project Review Documentation – Stage 4A

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 4A**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

TECHNICAL DESIGN PART 1 (RIBA STAGE 4) - Building Services Review (Mechanical/Electrical) – Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic	General Comments	Received and Reviewed?
Deliverables – including drawings, specifications, reports		
Provide a report on building services issues as part of the technical design report		
Provide risk assessments of the design		
Provide information for detailed whole-life cost studies		
Provide information to the Environmental Assessment Method Assessor to allow credits to be checked and awarded		
Provide revised commissioning plan		
Provide updated health and safety plan information		
Provide calculations and/or software files as evidence of detailed design model and/or drawings		
Provide schedules to cross-reference cables to containment systems		
Provide technical design model relevant to the first part of Stage 4		
Provide technical design drawings		
Provide builders' work information		
Produce materials and workmanship specifications		
Produce equipment schedules		
Provide design stage information towards log book		
Provide mechanical, electrical and public health information necessary to obtain statutory approvals		

Topic	General Comments	Received and Reviewed?
Provide detailed specifications for mechanical, electrical, public health services, if relevant		
Provide final commissioning specification		

The following review, comments and categories have been recorded:

Ref	Comment	Category	Review Lead

3.4.5 Appendix 4E: RIBA PLAN OF WORK - Project Review Documentation – Stage 4B

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 4B**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

TECHNICAL DESIGN PART 2 (RIBA STAGE 4) - Building Services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic	General Comments	Received and Reviewed?
Commissioning		
Determine witnessing and commissioning requirements for off-site manufactured elements		
Deliverables – including drawings, specifications, and reports		
Contribute to draft construction programme for the project		
Provide updated design risk assessments		
Provide revised technical design model to show resolution of all clashes between architecture, structure and all services		
Provide coordinated working drawings		
Provide final coordinated reflected ceiling plans based on latest architectural information for all components		

The following observations and comments have been recorded:

Ref	Observation	Comment/Action	Comment/ Action Lead

3.4.6 Appendix 4F: RIBA PLAN OF WORK - Project Review Documentation – Stage 4C

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 4C**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

TECHNICAL DESIGN PART 3 (RIBA STAGE 4) - Building Services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic	General Comments	Received and Reviewed?
Deliverables – including drawings, specifications, and reports		
Provide updated health and safety plan information		
Provide detailed cost plan		
Provide final construction programme		
Provide detailed commissioning programme		
Provide final co-ordinated reflected ceiling plans based on latest architectural information for all components		
Provide updated technical design model with revised or new design details		
Provide report on the specialist designers' proposals within the main contract		
Provide a report in consideration of any alternative plant, equipment, and component selections		
Provide calculations and/or software files in support of specialist design proposals		

The following observations and comments have been recorded:

Ref	Observation	Comment/Action	Comment/ Action Lead

3.4.7 Appendix 4G: RIBA PLAN OF WORK - Project Review Documentation – Stage 5

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 5**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

CONSTRUCTION DESIGN (RIBA STAGE 5)
Building Services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review:

Topic	General Comments	Received and Reviewed?
Deliverables – including drawings, specifications, reports		
Provide final installation details, including dimensions, of electrical switchgear to ensure that cable entry is acceptable in the selected location and that safe operating and maintenance clearances are provided		
Provide final installation details, including dimensions, of automatic control panels to suit the detailed requirements of the agreed supplier of the controls equipment		
Provide detailed BMS point schedules, wiring schematics, control panel labelling details and equipment schedules for the complete works		
Provide detailed electrical wiring diagrams of all equipment supplied showing all interconnections between equipment to enable all necessary wiring to be undertaken		
Provide installation model		
Provide installation drawings		
Provide builders' work details		
Provide manufacturers' drawings		
Provide a final commissioning report detailing the results of the commissioning and commenting on the performance of systems signed by a competent person		
Provide schedule of activities/works required for handover		
Provide all necessary calculations, drawings, information and logs for the Health and Safety file		

Topic	General Comments	Received and Reviewed?
Provide a schedule of all spare parts required for the works including recommendations of any others not stated in the specification		
Provide a schedule of all tools required for the works including recommendations of any others not stated in the specification		
Provide specialist author for production of operating and maintenance manuals		
Provide as-built model		
Provide record drawings		
Provide log book(s) in accordance with the requirements of the specification and the Building Regulations		
Provide planned preventative maintenance schedules		
Provide operation and maintenance information in accordance with the specified requirements		
Provide technical guide for the facilities management team		
Provide recorded water, gas and electricity meter readings on completion of the works		
Provide Building Users' Guide, including instructions on controls, energy-saving and water-saving features		
Provide pre-handover defects schedule		

The following observations and comments have been recorded:

Ref	Observation	Comment/Action	Comment/ Action Lead

3.4.8 Appendix 4H: RIBA PLAN OF WORK - Project Review Documentation – Stage 6 & 7

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**Project Review RIBA Stage 6 & 7**	
		Estates Lead:	
		Project Lead:	
	Filing Ref:	**Version:**	

HANDOVER, CLOSE OUT & IN USE (RIBA STAGE 6 & 7) - Building Services Review (Mechanical/Electrical) Example

Project Name:
Scope of Project Review:
Project Reviewer:
Review Date:

The following table is a checklist showing the information provided for review at RIBA Stage 6:

Topic	General Comments	Received and Reviewed?
Deliverables – including drawings, specifications, reports		
Provide a reviewed and updated list of defects identified during post completion audit		
Provide COBie-UK-2012 tables for Information Exchange 6		
Provide written reviews of energy use and system performance (as defined in the Soft Landings Framework)		
Provide outturn cost analysis		
Provide updated as-built model incorporating defect rectification and any changes resulting from Year 1 aftercare		
Provide updated record drawings incorporating defect rectification and any changes resulting from Year 1 aftercare		
Provide lessons learned report		

The following table is a checklist showing the information provided for review at RIBA Stage 7:

Topic	General Comments	Received and Reviewed by:
Deliverables – including drawings, specifications, reports		
Provide written reviews of energy use and system performance (as defined in the Soft Landings Framework)		
Provide updated as-built model incorporating any changes resulting from Years 2 and 3 aftercare		

Provide updated record drawings incorporating any changes resulting from Years 2 and 3 aftercare		

The following observations and comments have been recorded:

Ref	Observation	Comment/Action	Comment/ Action Lead

3.5 Appendix No. 5: T59 Procedure

	THE UNIVERSITY *of* EDINBURGH **Estates Department**	**T59B END OF STAGE 5 CHECKLIST**
		Estates Lead:
		Project Lead:
	Filing Ref: PROJECTCODE\L.XX\SUBFOLDER\T59B	**Version:**

WADDINGTON II – STAGE 5
PART B – HANDOVER CHECKLIST: MAIN CONTRACTOR DEMONSTRATION TO DESIGN TEAM - EXAMPLE

Note: For each demonstration, the Architect and relevant Design Team member must attend. At the end of the demonstration by the Main Contractor, they should certify by initialling and dating to confirm the following:

- That they are satisfied with the outcome of the demonstration
- That the installation complies with all University requirements

If they are not satisfied, they should indicate this with reasons why and a new date scheduled for a follow-up demonstration. Final approvals section must be signed on completion of all items as indicated.

Item	System	DT Attendee	Accepted Y / N	DT Attendee Initials	Date Signed Off
ELECTRICAL					
1.	**Small Power Systems**				
a)	Test certificates				
	If not accepted, give reasons:				
2.	**Lighting and Emergency Lighting**				
a)	Lighting controls demonstration				
b)	Lighting test certificates				
c)	Emergency lighting commissioning certificates				
d)	Emergency lighting system demonstration				
e)	Emergency lighting self-testing schedule				
f)	General and emergency lux level record drawings				
g)	3-hour duration test certificate				
	If not accepted, give reasons:				

Item	System	DT Attendee	Accepted Y / N	DT Attendee Initials	Date Signed Off
3.	**Electrical Distribution**				
a)	Test certificates				
b)	Circuit charts provided				
c)	As installed schematic on switch room wall				
	If not accepted, give reasons:				
4.	**Fire Alarms (post 5pm)**				
a)	Fire alarm activation demo				
b)	Lift demonstration (covered in lift section)				
c)	Demo with existing Waddington System link to Infirmary Street				
d)	Double knock demo (if applicable)				
e)	Smoke tests demo				
f)	Audibility tests demo				
g)	Demonstration of mech. plant shutdown on alarm				
h)	Vesda system demonstration				
i)	Commissioning certificates				
	If not accepted, give reasons:				
5.	**Door Alarm/Access**				
a)	Door alarm demonstration				
b)	Door release on fire alarm demonstration				
	If not accepted, give reasons:				
6.	**CCTV**				
a)	CCTV system demonstration				
	If not accepted, give reasons:				
7.	**Disabled** Refuge System				
a)	Disabled refuge system demonstration				
b)	Commissioning certificates				
	If not accepted, give reasons:				
8.	**Generator Panel Board**				
a)	Generator board to be demonstrated as part of MEP commissioning				
b)	Generator commissioning certificates				

Item	System	DT Attendee	Accepted Y / N	DT Attendee Initials	Date Signed Off
	If not accepted, give reasons:				
9.	**Data**				
a)	Data system demonstration				
b)	Data testing certificates				
	If not accepted, give reasons:				
10.	**Lightning Protection**				
a)	Lightning protection commissioning certificates				
b)	Surge protection commissioning certificates				
	If not accepted, give reasons:				
11.	**Lift Installation**				
a)	Lift system demonstration				
b)	Lift emergency call demonstration				
c)	Lift under fire alarm condition evacuation demonstration				
d)	UoE Lift Consultant handover document				
	If not accepted, give reasons:				
12.	**Other Systems as Detailed by the Project Team**				
a)					
b)					
MECHANICAL					
13.	**Mechanical Controls and Environment Controls**				
a)	Controls commissioning certificates				
b)	BMS final commissioning record				
c)	7 day monitoring results				
d)	O&M Manuals for mechanical installations (including as-builts)				
	If not accepted, give reasons:				
14.	**General Ventilation System**				
a)	AHU start/stop demo				
b)	Ductwork pressure test records				

Item	System	DT Attendee	Accepted Y / N	DT Attendee Initials	Date Signed Off
c)	Balancing of ventilation system				
d)	Chilled beams commissioning record (for each chilled beam)				
e)	FCU commissioning records (for each FCU)				
f)	Running of ventilation plant demonstration				
	If not accepted, give reasons:				
15.	**Toilet Ventilation - Extract Only**				
a)	Balancing of extract system				
b)	Extract fan commissioning record				
c)	Plant demonstration				
	If not accepted, give reasons:				
16.	**LPHW Water Systems**				
a)	CHP/LTHW system flushing demo (external)				
b)	LTHW system flushing demo (internal)				
c)	LTHW pipework pressure test record				
d)	Dosing of system documentation				
e)	Pumps sets commissioning record (for each pump)				
f)	Mechanical plant demo				
	If not accepted, give reasons:				
17.	**Chilled Water Systems**				
a)	Chillers commissioning documentation (for each chiller)				
b)	Chiller gas charge record (for each chiller)				
c)	CHW system flushing demo				
d)	CHW pipework pressure test record				
e)	Dosing of system documentation				
f)	Pumps set commissioning record (for each pump)				
g)	Condenser system - Glycol % and record				
h)	Mechanical plant demo				

Item	System	DT Attendee	Accepted Y / N	DT Attendee Initials	Date Signed Off
	If not accepted, give reasons:				
18.	**Potable Water System**				
a)	DHW system flushing demo				
b)	DHW pipework pressure test records				
c)	Chlorination documentation				
d)	Pumps set commissioning record (for each pump)				
e)	Mechanical plant demo				
	If not acceptable, give reasons:				
19.	**Drainage**				
a)	Drainage system test certificates				
	If not accepted, give reasons:				
20.	**DX Unit**				
a)	DX pipework pressure test records				
b)	DX system gas charge records				
c)	DX control and plant demo				
	If not acceptable, give reasons:				
21.	**Other Systems as Detailed by the Project Team**				
a)					
b)					
	If not accepted, give reasons:				
22.	**O&M Information**				
a)	Mechanical O&M manual provided				
b)	Electrical O&M manual provided				
c)	Electronic copy inc. REVIT model provided				
	If not accepted, give reasons:				

Approvals	Signature	Date
Project Board endorsed (signed by EDM)		
EDM endorsed		

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