UWE Estates Design Specification

Chapter 1: Introduction

UWE Bristol | University of the West of England

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1.1 Change Control

Version Number	Date of Issue	Chapter Ref	Brief Description of Change(s)
1.5	01/05/19	ALL	All sections have changes, all separately itemised in 2019 version.
1.6	NOV2019	1.5.5 & 1.6	1.5.5 Structure of the Design Guide updated. 1.6 Strategy 2020 replaced with 2030
2021	JAN2021	ALL	Various updates all itemised in 2021 version.
2022	JAN2022	ALL	Various updates all itemised in 2022 version.
2023	JAN2023	None	NO CHANGES
2024	FEB2024	ALL	Chapter 2 incorporated into Chapter 1. ALL sections updated, moved, and amended.
2025	JAN2025	ALL	NO CHANGES

1.2 Introduction

The Design Specification sets out Minimum Standards that must be applied.

The Design Specification explains the overarching principles, functional requirements and technical standards for our buildings and infrastructure. It is not intended to stifle innovation or technical advances.

The Design Specification is based on past UWE experiences and UWE's goals and ambitions. It does not absolve external design consultants of their legal or contractual responsibilities under health and safety legislation, statutory requirements nor design/professional duties, liabilities, and indemnities. Designers must consult the Lessons Learnt folders from previous projects.

The Design Specification is divided into Chapters, each dealing with a separate aspect of design.

1 Introduction
UWE's expectations of how the design process will be managed, including drawing standards, UWE's approach to BIM, technical assurance, management of derogations etc.

2 NOT USED
3 UWE Strategies
Core UWE strategies relating to equality and diversity, sustainability etc. and their impact on design.

4 Space Standards
An overview of space requirements for different functional areas within UWE.

5 Fabric, Structure, Acoustic
Detailed requirements relating to the structure and fabric of buildings. There is also a section on catering design.

6 Mechanical Engineering
Detailed requirements informing the selection and design of mechanical plant and installations.

7 Electrical Engineering
Detailed requirements informing the selection and design of electrical systems, including Fire, Escape, and Security systems.

8 IT and Audio-Visual Infrastructure
Cabling design and requirements

9 Landscaping, Biodiversity and Public Realm
This covers the external areas, including landscaping, roads, parking and other aspects civil engineering, planting schemes etc.

10 NOT USED
11 NOT USED

12 Controls Standards
This covers all aspects relating to BMS and controls design, specification, and installation.

1.3 Design Specification Compliance Checklist and Derogations

UWE recognise that there may be times when different design objectives may appear to be in competition. The project team must openly discuss these as and when they arise, but always using UWE's values and priorities to inform those conversations.
Derogations will be allowed if there is a specific and direct advantage to UWE. Derogations from any standard, in relation to health & safety or fire safety, must have a written risk mitigation statement to explain why and how the risk is mitigated, who agreed these departures and the actions required by UWE once the building / area is occupied and managed.
All Derogations shall be recorded in the Design Specification Derogation Spreadsheet and must be approved by Senior Estates management.

Economic advantage shall be evaluated using whole life cycle cost models to ensure value for money. UWE will allocate a technical assurance function to certain projects who will review/comment on design proposals.

The Design Team shall complete the Design Specification Compliance Checklist spreadsheet. This shall be continually reviewed by the Project Manager throughout the works to account for variations and changes. All derogations to any section of any Chapter of the Design Specification shall be itemised on the spreadsheet as a Derogation and must be authorised by relevant UWE Estates staff.

1.4 Value for Money

All designs must support UWE to achieve a strong and confident financial position. Designs must represent good value for money. Do not confuse low cost with 'value for money' or expensive with good quality.
Ensure that projects align with UWE strategies which will help to prevent later changes to the project scope.
Rationalise stock, spares, or cleaning and maintenance regimes through greater standardisation by adhering to this Design Specification.
The whole life cycle cost must be embodied into design considerations, including all operational costs as well as carbon impact.

Value Engineering is not a cost reduction exercise. The intention is to find alternative and better value solutions to deliver the same or improved outcomes for the end user, rather than undermining functional requirements or performance of a structure in the pursuit of cost savings.

Value Engineering must be based upon sound WLCC evaluations. For example, if a plant purchase is likely to save money throughout its life expectancy, but have a substantial impact upon the capital budget then this must be considered in any capital decision. An evaluation of performance, maintainability, spares holdings, etc. must be included in order to establish the consequences of any trade off in the purchasing decision.

1.5 Consulting and Stakeholders

Project Managers and Designers must engage in consultation with a range of stakeholders in a timely manner, and throughout the project at every stage. Project Managers and Designers must consult the Lessons Learnt folders from previous projects.
The stakeholders inform design and project planning by explaining requirements, sharing expertise or consulting with their own stakeholders. Do not assume knowledge of how spaces will be used or expect one stakeholder to have all the answers.
Schools and Colleges can establish student user groups to help develop briefs and assess proposed designs.
Cleaning services can test the 'cleanability' of proposed products and advice on the impact to cleaning regimes and costs.
Central Examination and Time Tabling Service can report on space utilisation and model the space requirements or impacts of a proposed project.

1.6 Project Governance

Sustainability assessments will be undertaken from the earliest project stages to mitigate environmental risk and align to UWE's 2030 net zero ambition. Whole lifecycle approach will be applied.
All projects from their inception must determine and communicate i) what standard is being utilised, ii) the level targeted and iii) how it will be assessed. The UWE Project Board will determine the desired approach. The responsibility for adequate assessment is with the project.

Passivhaus or EnerPHit must be targeted for all new builds and major refurbishments (use the decision tree in Chapter 3). Projects that fall outside of the new build or major refurb category must use the net zero trigger points checklist to determine if any other action must be taken to reduce carbon emissions within the scope of each project.

All projects with an impact on the external landscape or public realm must be designed and delivered to the Building with Nature standard.

1.7 Construction (Design & Management) Regulations 2015 (CDM)

UWE recognises its Client duties under CDM2015, and where applicable as Principal Designer and/or Designer.
All Principal Designers and Designers must evidence their competence in the roles to which they are appointed.
All Designers must compile a written Design Risk Assessment and share these with the Principal Designer.

1.8 Building Services Spatial Fit

There must be very early design considerations for ensuring sufficient spatial fit for building services. This will affect building principles such as riser sizes, storey heights, ceiling void depths and distribution routes. To validate services ceiling zones, plant rooms and risers, the designer must ensure that pinch points and spatial consideration is tested for all rooms, routes and risers. This should include pinch point and typical void modelling for all areas to ensure sufficient spatial fit. If a

design progresses without undertaking the necessary due diligence to confirm void spaces, then there could be a high risk of spatial fit, compliance, access and maintenance issues.

The Building Services must be organised, generally with drainage ductwork at the top, then life safety services. Pipework is generally organised in the middle, with electrical services at the bottom.

- Separation of Building Services must incorporate sufficient distance between HV, LV and ELV to eliminate EMC and EMF interference.
- To ensure passive fire stopping compliance it is imperative that designers allow spatial provision for services that pass through a fire rated structure during early stages of the design. Any services penetrations through fire rated walls and floors must be spatially planned in accordance with an approved and tested manufacturers fire stopping detail.
- Separation of Building Services must allow for fire compartmentation cladding around services, insulation thicknesses, reduction of heat transfer, whilst permitting access for maintenance.
- Spare capacity and zones for future services provisions should be agreed with the Client early in the design process to ensure adequate spatial provision is provided. Void modelling should account for any future services' zones.

1.9 Access and Maintenance Strategy

An Access and Maintenance Strategy (including plant replacements) must be provided on all projects (unless agreed otherwise). An outline Access and Maintenance Strategy must be produced during RIBA Stages 2 & 3 consisting of descriptive text and supporting drawings to show the provision for safe and practical maintenance and replacement. It must address the following as a minimum:
1. The assets which require maintenance / require access to them.
2. The maintenance those assets require / reasons to access them.
3. The frequency of these maintenance activities / likelihood of reactive access requirement.
4. How long these activities might take.
5. Expected design life of the assets i.e. how long before access is required for replacement

A detailed Access and Maintenance Strategy must be developed during RIBA stage 4. Before the project proceeds on site, the documents must be reviewed by the Principal Designer, UWE Operations & Maintenance team, and staff responsible for Technical Assurance.
The document forms part of the Health and Safety File.

Escape routes within plant rooms/areas must be well defined. Where determined by the fire strategy, there shall be a second means of escape provided.
Where plant is roof mounted (other than on concrete plinths), a clearance of 450mm must be maintained below any item of plant, pipework or ductwork running on or across roof finishes to enable roof maintenance to be carried out without the need to remove or raise services.
UWE has several areas where access is restricted due to hazardous processes e.g. laboratories. Isolation valves, control panels, etc. must be located outside of these areas so that easy maintenance can be undertaken, and, in an emergency, supplies can be shut off without exposing workers to risk.

The first year of maintenance of some items of large plant (e.g. lift, boiler, chiller) will be the responsibility of the Principal Contractor. This will be clarified in contract documents. The intention is to encourage project teams to carefully consider 'maintainability' at design stage and, in the pre-tender stage, to identify maintenance responsibilities.

1.10 Lessons Learned

Lessons learned from previous projects include, but are not limited to:

1) Constructing upstands on roofs that require louvres and damper blades to be removed to give access to motors and actuators. With the blades removed, a 5 storey, unguarded fall is created. Hatches would have enabled the actuators to be accessed from a position of safety on the roof.
2) Designers specifying end of line products as a cost saving exercise, meaning that spare parts are no longer produced and the plant is obsolete on the day it is installed.
3) Risers which employees could or need to enter but which lack a load bearing floor
4) No, or inadequate fire stopping provision. No, or inadequate fire stopping labelling and details.
5) Mechanical installations (or elements thereof such as pump heads) lacking details of weights, lifting points etc. leading to delays and complications during replacement/removal
6) Handover documentation has historically not detailed the management strategy if plant/equipment removal/replacement requires the use of cranes, lifting beams, sacrificial panels etc. or other activity that pose operational difficulties or a significant risk to contractors or UWE staff, students or assets.
7) Constructing canopies on the side of existing buildings, preventing access for window/gutter cleaning and with no alternative strategy being considered.
8) Plantroom thresholds which render it difficult or impossible to use wheeled, mechanical lifting aids to transport plant and equipment.
9) Ensure that tenders span the Pre-Tender Estimate to prevent automatic choice of lowest tender.

1.11 Designing for Business Continuity

UWE does not want long down times of assets due to inappropriate product selection or subsequent delays in repairing/replacing them. Whole Life Cycle Cost (WLCC) analysis highlights potential risks inherent in design/asset selection. This Design Specification has a process for assessing derogations, and the UWE Technical Authority can challenge designs/selections based on the risks that they present. Design and project risk registers must be used to highlight risks to the resilience of the new or refurbished structure / area.

Specific actions to increase resiliency are:

- The Design Specification details designs, makes & models, features etc. that must be used. This may be because they offer certainty of supply, certainty about durability and reliability, consolidation of spares holdings, etc.
- The life expectancy/reliability of critical plant (i.e. plant and equipment that would render a building unusable if it failed) must not be a victim of value engineering.
- Build redundancy into critical systems (e.g. back up boilers).
- Avoid single points of failure.
- Manual override systems are generally more resilient than complex solutions.
- Utilities, IT and communication cabling must enter a building at diverse points.
- Avoid products/systems with a single source of supply or long lead times, especially when they are critical assets. Critical assets will need UWE to hold spares.
- If critical assets require highly specialist skills or equipment to maintain:
    - Ensure there is more than one company who can reasonably maintain the asset in case one ceases trading, and to prove best value for money.
    - Ensure there is satisfactory 24/7/365 response, including a suitable response time
    - Choose alternative equipment
    - Upskill the UWE term contractor to enable them to carry out the task themselves

Designers must think beyond the immediate boundaries of their own design. Designers must consider what else could be affected if a building or asset fails; what critical services might be delivered from that building that may need to be relocated; Risks may ultimately be escalated to UWE Executive Operational Risk Registers.

1.12 Asset Management at UWE

All assets must be logged, and if required barcoded, for management within the University's CAFM system (Archibus). This system is used for many purposes, but not least to plan all proactive and reactive maintenance activities.
It is essential that any works are accompanied by accurate information about all new, removed, relocated, or updated assets. This is regardless of the size of the works.

1.13 Whole Life Cycle Costs

Approximately 20% of WLC costs are capital expenditure in procuring or refurbishing a building or infrastructure. The remaining 80% of costs are from running, managing, maintaining, and replacing assets. Great care must be taken to ensure that what is provided is suitable and fit-for-purpose for its' ongoing life. UWE believes that sustainable buildings and infrastructure will help to minimise operating costs as well as safeguarding the environment and promoting the well-being of staff and students. This is essential to achieve UWE's 2030 net zero carbon strategy.

WLCC is to be carried out in accordance with BS ISO 15686-5, using best practice as defined by BSRIA BG 67/2016 'A BSRIA Guide Life Cycle Costing' and the BCIS/BSI publication PD156865 'Standardized Method of Life Cycle Costing for Construction Procurement (SMLCC)': A supplement to BS ISO 15686-5 'Buildings & constructed assets - Service life planning' - Part 5: 'Life cycle costing'.

1.13.1 WLCC on Major Projects

To deliver UWE's commitment, all Major Capital Projects (projects with a construction value of £2.5m (exc. VAT) or more) will fully follow the Whole Life Cycle Cost process.

RIBA Stage 0/1: WLCC is to be used to provide a high-level economic prediction of the project's out-turn costs, to enable UWE to make informed investment decisions regarding whether the project is viable, sustainable and represents best value as part of a wider academic, sustainability and environment assessment.

RIBA Stage 2: WLCC is to be used as part of a strategic option appraisal process, to inform the selection of fundamental or cost significant elements, such as structure, envelope, services etc.

RIBA Stages 3/4: WLCC is to be used to appraise and select the detailed design options from a life cycle cost and performance perspective.
During the tendering process, life cycle costs are used to compare a bid's competitiveness and to test the project affordability.

RIBA Stage 7: Benchmark the actual operational cost as part of the Soft Landings principles. Post Occupancy Evaluations are to be undertaken to assess the actual building performance against the design performance.

1.13.2 WLCC on Minor Projects and Works

WLCC or LCC for projects and works under £2.5M exc. VAT is to be adopted proportionally to the value and nature of the specific scheme. Parameters are to be agreed and recorded at the earliest stage by the Project Manager.

1.14 Soft Landings

The ultimate goal of any construction project is, obviously, to deliver a functional facility that meets UWE's requirements. To achieve this, UWE needs to work collaboratively with internal and external stakeholders, designers and consultants to determine their functional and technical requirements, objectives and targets, which may go beyond those stipulated in this design Specification, and the information, training, support and aftercare that are needed to use/operate the building.

UWE Estates have Soft Landing Requirements which set out what needs to be done and when, to achieve these ambitions. UWE are committed to adopting Soft Landings philosophy on all major new build and refurbishment projects from concept to 18-months post-completion.

UWE project processes set out the information required at handover and also provides templates to enable project teams to identify and track the required documentation. This includes Health and Safety File information (including access and maintenance strategies), Fire Safety Information, and the Operation and Maintenance (O&M) manual.

Information must be supplied in specific electronic format, as explained in Project Execution Plan.

1.15 Post Occupancy Evaluation (POE)

UWE has a POE strategy which has been incorporated into the UWE project processes.
The Project Manager will, at the outset of the project, determine the precise approach that POE will take.
Projects with a construction value of less than £2.5M (exc. VAT) will take a more focussed or indicative approach to POE, usually as follows:
Stage 1: Contract Sum Analysis
Stage 2: Lessons Learned Report
Stage 3: Consultant / Contractor Performance Review.
These three stages will be carried out in the first six months after handover.

Full Post Occupancy Evaluation (POE) is usually required on any UWE project with a construction value of £2.5m (exc. VAT) or more. This will require a more in-depth investigative and diagnostic approach to the POE process, including all 3 stages as above plus
Stage 4: User Satisfaction Survey (12 months from handover
Stage 5: Building Performance Evaluation (18 months from handover)
Stage 6: Operational Costs Assessment (18 months from handover)

UWE will work with designers to ensure stakeholders requirements and expectations are clearly articulated and considered. By setting out project objectives, intended benefits and POE requirements at the outset, designers and consultants can allocate sufficient resources to ensure they can contribute meaningfully to a positive POE process.

1.16 BIM, Asset Capture, and Drawings.

UWE's approach to BIM, and specific information requirements, are detailed in "UWE Exchange Information Requirements (EIR)". All new buildings, or future refurbishments of buildings that have been modelled in BIM, must comply with this document.

The objectives of our information requirements are to:

- Maximise production efficiency by adopting a coordinated and consistent approach to working in BIM.
- Define the standards, settings and best practices that ensure delivery of high-quality data and uniform drawing output across an entire project.
- Ensure digital BIM files are structured correctly to enable efficient data sharing whilst working in a collaborative environment across multi-disciplinary teams.

To facilitate data exchange and collaboration, UWE require designers to share information using the Revizto collaboration package.

Even where projects fall outside BIM, the team must still comply with our asset capture procedures "UWE Asset Information Requirements (AIR)". This ensures our assets are appropriately recorded. This underpins our maintenance regime and is vitally important. Without it, we could fail to comply with statutory obligations to maintain assets or assets could fail leading to disruption and risks. Unless we know what we need to maintain we cannot adequately resource our maintenance operations.

1.17 Temporary Works Design

Temporary works are defined in BS 5975 as any solution that enables permanent works to be accessed and/or built. It covers everything from excavations to scaffolding, piling mats, propping and site hoarding.

The Health and Safety Executive has also produced their own guidance, SIM 02/2010/04, which complements the British Standard.

For the avoidance of any doubt:

- Temporary works must be designed. Temporary works can also be of 'standard' design such as but not limited to, Heras fencing erected as per manufacturers design standard, or scaffold as per TG20.
- Temporary works must be delivered under full compliance to CDM2015 Regulations.
- UWE will sometimes provide constraints, specifications and considerations for temporary works designers. A number of these requirements can be found in the UWE Contractor's Safety Pack, specifically:
    - Hoarding and site protection. Hoarding is to follow industry best practice guide Hoardings – A guide to good practice TWf2012:01.
    - Requirements for temporary footpaths
    - Public protection measures to be incorporated into scaffold design.
- Please note that designers are required to review and consider the UWE Contractor's Safety Pack. It is the responsibility of the designer to ensure the design is structurally sound, depending on location, ground and environmental/weather conditions etc.
- Contract documents, pre-construction information and Employer's requirements may further inform temporary works design

- In line with BS 5975 and SIM 02/2010/04, the Principal Contractor (PC) must have a temporary works co-ordinator who will oversee design and management of temporary works. On smaller projects with simple temporary works, those responsibilities may be discharged by the site manager or another member of the site team. Temporary works co-ordination will never be the responsibility of UWE.
- The PC must set out in their Construction Phase Plan (CPP) how they will manage temporary works. UWE will review those arrangements as part of their duty as client to ensure a CPP is in place and adequately manages significant risks.
- Temporary works must be checked. UWE does not have the capacity to provide a technical check of temporary works design.
- A number of temporary works operations are designated by UWE as high risk activities and requires a contractor to gain approval before commencing (under the approval to work system, explained in the Safety Pack). UWE staff will, at that stage, be involved in reviewing temporary works design. This is for the purposes of establishing that it has met UWE specifications (e.g. whether site plans show that hoarding, signage and/or temporary footpaths will be positioned where agreed). This is not the technical check required by BS 5975 and SIM 02/2010/04.