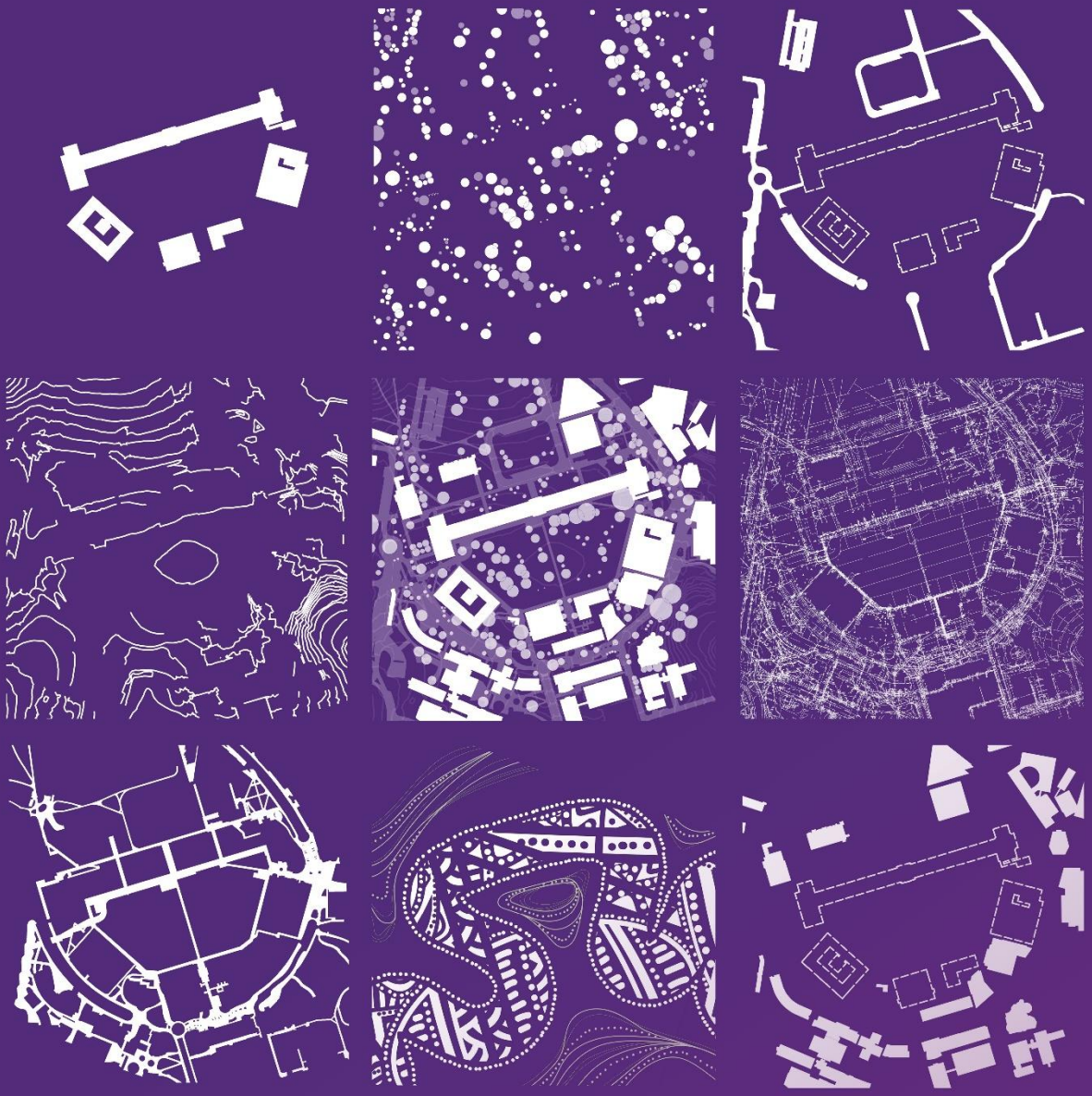


DESIGN STANDARDS

MASTER DOCUMENT

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

The Cover to the UQ Design Standard Master Document explores a small selection of the layering of design information and issues that must be considered, co-ordinated, documented and delivered in a successful UQ project. Nine (9) broad topics are covered.

The topics covered (Left to Right/Top to Bottom) include:

- The Great Court heritage overlay (the Original buildings circa 1937-1962)
- The Landscape overlay/significant trees (Natural Assets Local Law, NALL, overlays)
- Roads, vehicle movement and servicing strategies
- Relative Levels and contours / geology / geography / overland flow
- The combination of multiple issues making a place specific to UQ which supports excellence in teaching and research and builds community.
- Subsurface and infrastructure services (including Chilled Water, drainage, stormwater, water, irrigation, electricity and telecommunications etc.)
- Pedestrian pathways
- First Nations / Indigenous Design Considerations “Freshwater Saltwater Markings” by Casey Coolwell-Fisher (2021)
- New building stock (post 1962)

Document Register

Revision	Date	Description	Prepared By	Reviewed By
1.0	18.10.2021	Project Use		FN
2.0	21.07.2023	Annual Review and Update	T.Sweeny	B.Veliscek

Definitions

When the word “shall” is used, this indicates the requirement is mandatory.

When the word “should” is used. This indicates the requirement is a recommendation.

“Designer” includes any person or group who makes decisions about the design, redesign or selection of; structures and constructed features, building systems, built elements, work systems or equipment. It includes but is not limited to consultants or external experts who contribute to design projects (including architects, engineers (all disciplines), landscape architects and all specialist consultants with inputs to built forms (including traffic engineers, food & beverage, kitchen, retail, pool consultants etc). In some procurement models the contractor may also be the “designer”. A project has multiple “designers” working on it as a whole and its constituent parts, through every phase. Contractually the principal consultant / principal designer is determined by the University’s design procurement process.

Abbreviations

DIS	Director Infrastructure & Sustainability
DPP	Director Planning & Property
AV	Audio Visual
BIM	Building Information Modelling
CIC	Campus Infrastructure Committee
CPTED	Crime Prevention through Environmental Design
EMP	Environmental Management Plan
ITS	Information Technology Services
OH&S	Occupational Health and Safety
PCG	Project Control Group
PM	University of Queensland Project Manager
PREM	Project Review and Evaluation Method
TEFMA	Tertiary Education Facilities Management Association
TOS	Technical Officer / Security
UQ	The University of Queensland

Reference Documents

Refer to the UQ Design Standards nominated here for the list of documents and associated standards to be referenced for all design work.
The designer is to coordinate between disciplines and standards. When conflicting requirements arise, they are to be bought to the attention of the PM or Superintendent for clarification and direction.

Contents

01 Introduction

The architecture of the University of Queensland's buildings must be; culturally embedded, inclusive, safe, pragmatic, sustainable, flexible, innovative, cost effective and compliant.

1.1 Purpose

The UQ Design Standards detail the minimum design requirements for all UQ projects.

This Design Standard forms part of the University of Queensland's suite of Design Standards.

The purpose of this Design Standard is to:

a) Define the University of Queensland's specific requirements and
b) To assist designers, contractors and other professionals involved in the preparation of designs commissioned by the University to understand the University context.
c) To ensure user functionality and equity
d) Define the Universities Environmental and Sustainability Objectives
e) Establish the contextual relationship with the existing site and buildings
f) To consider maintenance liabilities (reduced life cycle costs)
g) To promote flexibility (adaptive re-use)

The Design Standards contribute to a comprehensive facilities management approach through integrated systems and services to support the University's goals and its environment. This will be achieved through core service delivery, risk management, customer service, and resource and systems management.

The Design Standards also contribute to achieving one of the University's key operational priorities **"Enhance the physical environment and facilities of the University, particularly teaching and learning facilities"**, and the management and resources objective to **"Provide an appropriate physical environment and maintain it to high aesthetic, functional and safety standards."**

The University owns, occupies and maintains a substantial and expanding property portfolio. Properties are primarily used for teaching and research purposes although the University's portfolio encompasses a wide range of other uses and activities. The Design Standards are primarily written for the teaching and research facilities. However, the objectives of the Design Standards shall be implied as the quality expected for all University projects. Design Standards are one of a number of key controlling documents that form part of any projects brief as outlined in Figure 1.

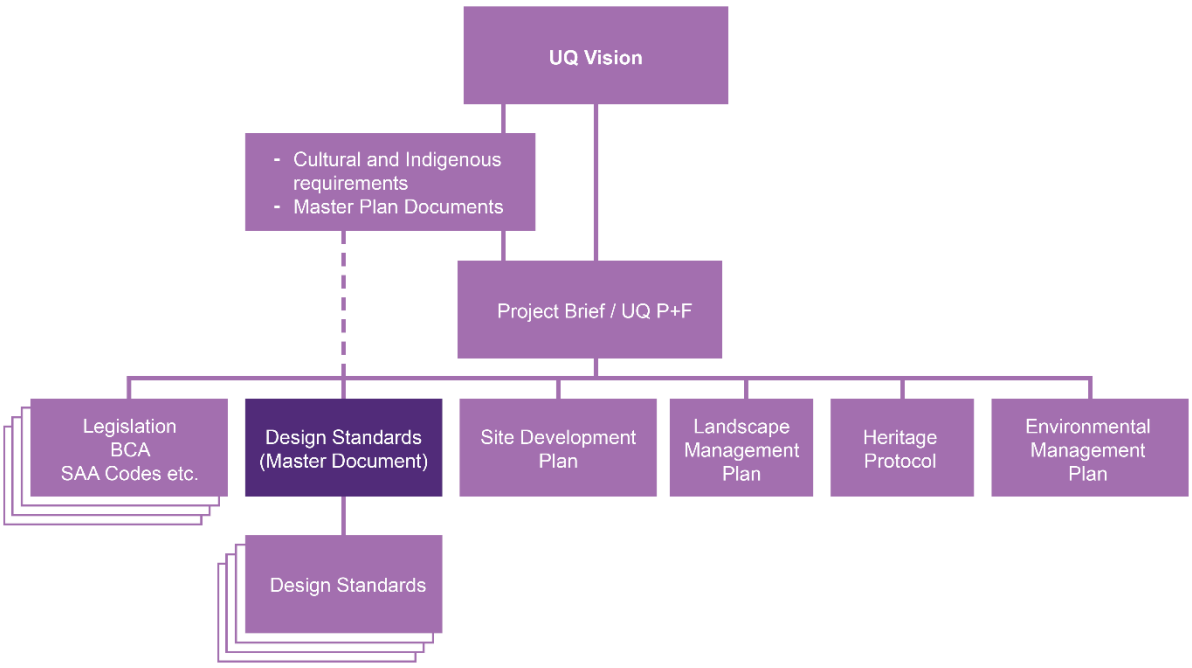


Figure 1: Document Control

The purpose of the Design Standard is to define the University of Queensland's specific requirements and to assist designers, contractors and other professionals involved in the preparation of designs commissioned by the University to understand the University context.

Where specific requirements are not addressed by the Design Standard, it is the designer's responsibility, in consultation with the University, to apply relevant industry-based design and construction principles to develop safe, pragmatic, innovative and compliant solutions.

Note.

The purpose of this Design Standard is not to detract from the designers' obligations to undertake stakeholder engagement to develop design briefs, follow good design practice, and produce designs that address project specifics.

Nor is it to repeat the requirements of relevant legislation, codes and standards or detract from designers' obligations to seek endorsement of their design from UQ.

Designers shall produce fit for purpose design outcomes in accordance with the requirements of relevant legislation irrespective of the requirements of this Design Standard.

1.2 Connection to UQ Vision

This Design Standard has been developed to extend and make real, the University of Queensland's 'Vision, mission and values' statement, as well as 'teaching and research goals and strategic objectives'.

Refer to the Contacts Schedule at the end of this document.

1.3 Connection to UQ Master Planning

Campus Master Plans and architectural design guidance is referenced in site specific Site Development Plans and includes guidelines on Built Form, Materials and Colour.
Each University campus has unique urban design and landscape characteristics that will form part of the assessment for every project which connects to or effects the campus fabric.

1.4 Compliance and Departures from the Design Standard(s)

2.4.1 Compliance with the Design Standard

Compliance with the Design Standards is mandatory for all projects. If project specifics require any departure from the Design Standard, the below process shall be followed.

At the end of each design phase (Feasibility Study / Concept Design / Schematic Design / Detailed Design / Contract Documentation), the design team will provide a Compliance

Statement in the form nominated by UQ, confirming compliance with the Design Standards.

All non-compliances and departures from the Design Standards shall be identified in the Compliance Statement along with a statement outlining how the non-compliance, or departure will be addressed.

2.4.2 Departures from the Design Standard

All departures from the Design Standard are to be identified in the project Compliance Statement. The UQ PM shall review the non-compliance and discuss, as necessary, internally within UQ to make a determination. Written approval from the UQ PM is required for all non-compliances with the Design Standard.

The design team shall raise all departures from the Design Standard as early as possible to avoid abortive works.

The UQ PM shall identify all approved departures from the Design Standards and communicate these to Properties and Facilities for consideration of updating these Standards.

1.5 Primary Objectives

The University's capital investment in physical facilities is a long-term investment and includes the operational expense of a building throughout its life, therefore proven methods of construction, materials and architectural detailing are to be used. Standards and the application of architectural elements and finishes shall be industry best practice.

The architecture of UQ's buildings is determined by the following objectives:

1. Satisfy the functional, social and cultural requirements of the University.
2. Contribute to the overall vision and goals of the Master Plans and Site Development Plans where the building forms part of a campus.
3. Respond positively to the local context in terms of specific planning and architectural design intent.
4. Respond positively to all relevant building regulations. (Regulations include Local Authority and State Government requirements.)
5. Achieve an environmentally sustainable development (ESD) and cost-effective solution without compromising the safety, durability and serviceability of the building.
6. To integrate the sites infrastructure and services requirements as well as coordinate the project's own; services, structural and architectural elements
7. Create world class exemplars in innovation and best practise.

1.6 Relationship to Building Codes and Australian Standards

Compliance with all codes and standards is mandatory.

The UQ Design Standards cover requirements in addition to the NCC and Australian Standards

The current regulation, standards or codes will apply to all UQ projects.

Any changes in regulation or code that conflicts with the Design Standards is to be identified to the PM.

1.7 Inclusion and Diversity

Inclusion and Diversity in the built realm is supported by the University's; 'Reconciliation Action Plan' and 'Disability Action Plan' and the full Design Standards suite. These documents are to be referenced in the design process.

All projects should follow the principles of Universal Design to maximise inclusivity.

Home Page - Centre for Universal Design Australia

1.8 Cultural and Indigenous Requirements

The University's Indigenous Design Principles document – *Campuses on Countries: A Framework for Aboriginal and Torres Strait Islander Design at The University of Queensland* (ATSI Design Framework) - is referenced at particular stages of the design process from a project's inception. The framework sets out requirements for incorporation of Indigenous values and engagement that must be followed. The triggering of which projects are included in the remit of the Indigenous design principles is explained in the framework document. The framework includes exemplar projects, and reference material on UQ campuses.

It should be noted that the issues of Inclusion and Diversity (2.7), Heritage and Cultural Heritage (2.9), Sustainability (2.10) and Landscape Architecture all overlap with the Campuses on Country Framework, so they should be referenced when considering those issues.

The Aboriginal and Torres Strait Islander Design Principles fall under these headings which are dealt with in more detail in the Campuses on Countries Design Framework document.

1. First Caring for Country – Connecting with Environments.
2. Deep Listening with Aboriginal and Torres Strait Islander Communities – Purposeful Action from the Project Conception to Completion.
3. Shared Respect, Shared Meaning and Shared Knowledge – Honouring Diversity in Built Environments.
4. Embedded Voices – Inclusion will be UQ's Business as Usual and UQ will be a Sector Leader.
5. Celebrating Aboriginal and Torres Strait Islander Excellence – Current and Future.
6. Exploring Storylines – Story Places, Story Customs and Story Cultures.

Requirements of broader cultural groups should be addressed by need and may require consultation with various cultural or religious groups both within and external to UQ, depending on the project.

1.9 Heritage and Cultural Heritage

There are many individually listed heritage sites within the UQ estate. In conjunction with the Project Manager, the designer is to obtain the relevant information, design within the requirements and assist the Project Manager in obtaining relevant approvals. It should be noted that not every significant site will currently be heritage listed, so investigation of the significance of sites should be conducted as part of a projects concept deign stages.

1.10 Sustainability

Sustainability must be a consideration for every aspect of a project. The default design standard for all University projects is: 5 Star Green Star. Sustainability principles must be applied in ways which allow the benefits to be measured prior to project commencement.

Refer to Section 05 Sustainability.

1.11 Occupational Health and Safety

Designers are to consider the University's Occupational Health and Safety requirements in all aspects of the design.

For the designer to consult with UQ on Occupational Health and Safety refer to the 'Contacts Schedule' at the back of this document.

1.12 Safety In Design

Designers are to consider the University's Occupational Health and Safety requirements in all aspects of the design. Consultation with the UQ PM and user groups on Safety in Design issues is mandatory as part of the design process. A safety is design register must be submitted updated at every PREM review. Designers must confirm, so far as it is reasonably practicable, that the structure is without risks to health and safety.

Design risks must be considered for the asset lifecycle covering construction, operational, maintenance, refurbishments, and decommissioning. The report should be structured according to these lifecycle phases.

The design safety register must include the following:

a) Description of design element,
b) Description of potential risks and hazards associated with the design element,
c) A low/medium/high risk assessment considering the likelihood and consequence.

For the designer to consult with UQ on safety in design refer to the 'Contacts Schedule' at the back of this document.

1.13 Facilities Management

Designers are to consider the University's Facilities Management requirements in all aspects of the design. Consultation throughout the design process with both the

UQ PM and UQ Facilities Management is mandatory.

For the designer to consult with UQ on Facility Management refer to the ‘Contacts Schedule’ at the back of this document.

1.14 Hazardous Materials

Refer the University’s register of Hazardous Materials for related records.

For the designer to consult with UQ on Hazardous Materials refer to the ‘Contacts Schedule’ at the back of this document.

1.15 BIM Requirements

Refer the University’s project brief for BIM requirements at the project briefing stage.

For the designer to consult with UQ on BIM Requirements refer to the ‘Contacts Schedule’ at the back of this document.

1.16 Project Status

The UQ PM shall determine a project status for each project. Projects shall be defined as “Major Projects”, “Minor Projects” or “Maintenance Projects”; as defined by UQ Properties and Facilities.

Major Projects have additional requirements, as noted throughout the various discipline Design Standards.

A project that involves the Strategic Program Office (SPO) shall be a “Major Project”.

A Maintenance Project includes upgrades and rectification works to maintain operational functionality.

02 Property and Facilities Division

The following section details the delineation of works within the Property and Facilities Division.

2.1 Property and Facilities Division Structure and Responsibilities

The Division's activities include the physical planning, development and maintenance of University assets. The Division is organised into various Sections reporting to the Chief Property Officer All of the Divisional units combine to form a team that performs various duties and activities required to deliver and maintain the University's physical infrastructure. A Project Manager could be from any of the units depending on the nature of a project. For example; the majority of new building works is managed via the Project Delivery Section, whilst repair works may be managed through Campus Operations.

A brief outline of Section involvement in the approval processes is provided in the diagram below.

2.2 Chief Property Officer (CPO) Office

The Chief Property Officer reports to the Chief Operating Officer and leads the delivery of planning, development and maintenance of University property and facilities. The CPO is not a member of the CIC but rather advises the committee which makes design recommendations to Senate. The CPO participates in many Project Control Groups and chairs the Property and Facilities Planning Cell. This active involvement in the process of design and construction relies on the combined skills and experience of the Division staff, Consultants and Contractors engaged to implement construction and maintenance of property and facilities in the spirit of the Design Standards.

2.3 Commercial Operations & Corporate Services

The Commercial Operations & Corporate Services Section provides a range of corporate services to the Property and Facilities Division including personnel management, quality assurance, financial management and records management.

2.4 Project Delivery

The Project Delivery Section manages the implementation of projects on University sites from inception (formulation of a brief) to completion (final completion of the contract). In this role the Section employs several project managers who provide a point of contact with the University, its Users and relevant resources to assist with the procurement of the project. Project managers assigned to projects will generally be the University's point of contact for all matters relating to the project.

2.5 Campus Operations

The Campus Operations Section has a vested interest in the design and construction as the managers of maintenance on University property and the life cycle cost of property.

The Campus Operations Section also provides security services, environmental services, safety to works services and manages building and grounds maintenance and operating systems.

The Campus Operations Section has a vested interest in the design of a building as managers and deliverers of services including cleaning, transport, pest control, stores and mail. A project brief shall incorporate the service requirements on a project by project basis

2.6 Infrastructure & Sustainability

The Infrastructure & Sustainability Section are responsible for managing the technical infrastructure and improving the environmental performances of UQ's campuses and operations.

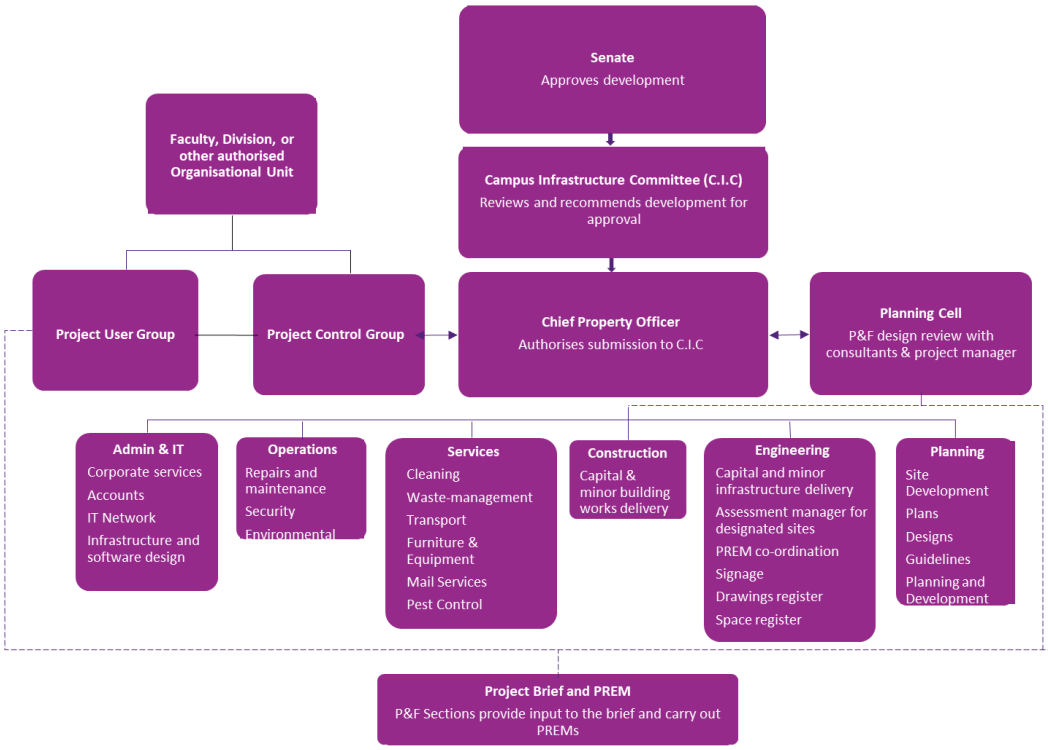
2.7 Planning & Property

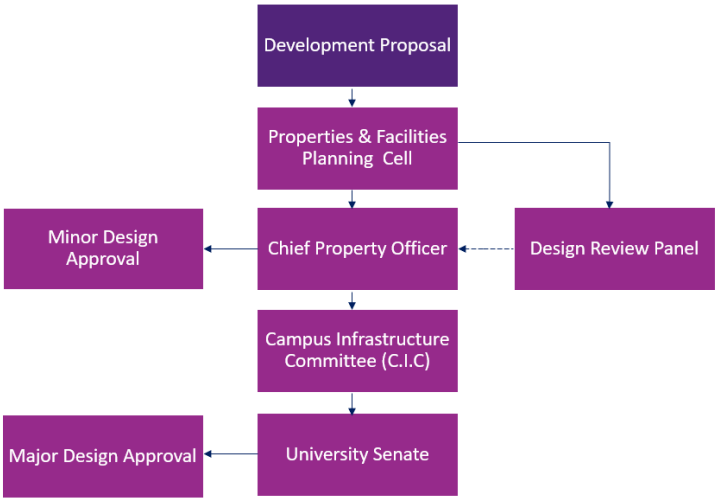
The Planning & Property Section prepares, and reviews campus Site Development Plans and assists with matters relating to planning and design approval for all sites.

All specific planning requirements should be clarified in the project briefing. The Planning & Property Section is responsible for space management and the provision of internal and external signage.

Refer to Contacts for links to the UQ Campus planning documents.

Building floor levels and rooms shall be named and numbered by Properties and Facilities in accordance with the Space Planning Documents, as described in Reference Document.





03 Design Criteria

The following Design Criteria must be considered in the design development and delivery of UQ projects. Many of these issues are expanded upon in the suite of UQ Design standards.

3.1 Accessibility

All university facilities and university property shall strive to be an exemplar in accessibility for all users.

New projects shall consider the campus wide implications of accessibility and compliance with the UQ Disability Action Plan.

All buildings shall provide equitable access for all users, in accordance with AS1428.1, AS1428.2, The Access to Premises Standard and the Disability Discrimination Act.

All Main Entrances, Lecture Theatres and Teaching spaces shall provide door clearances in accordance with AS1428.2

All occupied spaces at UQ shall be accessible and comply with the Disability Discrimination Act.

3.2 Security

The principle objective for security at UQ is to prioritise the safety of all users of UQ properties and facilities. The secondary objective for security is asset protection.

All UQ spaces shall promote a sense of wellbeing and the perception of personal safety.

The project team is responsible for to establish the security concepts and undertake a risk assessment for a project. Designers shall consider both security personal and electronic security. The UQ PM is responsible for signing off the security concept with UQ P&F.

The UQ PM is responsible for identifying all critical requirements or assets specific to a project. Including:

1. Dangerous Goods
2. Areas of intellectual or monetary value
3. Ares handling substantial amounts of money
4. Sensitive waste storage
5. Critical infrastructure
6. Animal houses
7. Staff and administration areas

Security shall not detract from equitable access, or pedestrian movement.

Vehicle movement shall be separated from pedestrian movement whenever possible by use of bollards or physical barriers including landscape and built forms.

CPTED principles shall be utilised where appropriate.

Refer to the Electrical Engineering Design Standard for the detailed requirements of electronic security systems.

3.3 Crime Prevention Through Environmental Design (CPTED)

Crime Prevention Through Environmental Design (CPTED) requires thoughtful consideration to achieve design outcomes that improve safety and security to all users of UQ properties and facilities.

CPTED principles are to be employed at the masterplanning, precinct, building and fitout level of all projects.

Maintenance programs must facilitate all CTEPD principles.

CTEPD principles include:

1. Promotion of pedestrian orientated facilities that increase the population of spaces.

2. Clear and intuitive wayfinding
3. Avoidance of entrapment spots or opportunities for concealment.
4. Material selections that discourage vandalism
5. Lighting design that provides appropriate illumination for the safe use of populated areas including access ways, corners, entrances, corridors and stair wells.
6. CCTV coverage to key areas including external walkways, public transport nodes, externally to amenities and building entrances.
7. Design that facilitates visual supervision through passive observation.
8. Design that avoids opportunities for loitering.
9. Provision of safe out of hours access to car parks, bike parks and public transport nodes.
10. Provision of electronic security call points.
11. Well placed PA speakers.
12. Use of electronically locked doors that monitor use.
13. Fence and barrier design that does not impede sight lines.
14. Design that provides visual connection to spaces and avoids blind corners.

3.4 Bushfire Prone Areas

The university has several properties that are within designated bushfire prone areas. The affected sites include:

a) Long Pocket Campus
b) The Julius Kruttschnitt Mineral Research Centre at Indooroopilly.
c) The Pinjarra Hills Research Facility.

The UQ PM is to advise of bushfire concerns as a project briefing item.

All construction within bushfire prone areas is to comply with the AS 3959

3.5 Flood Levels

Parts of the St Lucia and Gatton Campuses are vulnerable to flooding.

The project control group shall determine the site flood levels as a briefing item.

Unless otherwise approved habitable rooms are located a minimum of 500mm above the AEP Flood levels from the 2017 Brisbane River Catchment Flood Study (BRCFS).

All rooms containing essential services shall be located a minimum of 500mm above the AEP Flood levels from the 2017 Brisbane River Catchment Flood Study (BRCFS).

The 2017 Brisbane River Catchment Flood Study (BRCFS) nominates a development control of 8.0 AHD

All electrical conduits below the development control level are to be sealed to prevent floodwaters from entering them or flowing into them as per Recommendation 10.21 in the Queensland Floods Commission of Inquiry Final Report March 2012.

3.6 Seismic Code

All construction projects at the University shall comply to the seismic standard AS 1170.4. refer to the Structural Engineering Design Standard.

Designers shall consider the seismic requirements for the support of all structures, partitions, ceilings and services.

All Major Projects shall include a specialised Seismic Consultant.

3.7 Wind

Designers shall give consideration to the local microclimate including prevailing winds.

Designers shall not create spaces that become inhospitable during wind events. Spaces that funnel wind or create ‘wind tunnels’ shall be avoided.

Wind barriers should be considered to exposed external spaces as required to maintain a hospitable environment.

Designers shall consider the location and orientation of main entrances to avoid buffering or prevailing winds. Use of airlocks at main entrances shall be avoided.

Materials exposed to wind shall maintain structural integrity.

Building elements and materials exposed to wind, including external sunshades, signage and the like, shall address the potential for ‘whistling’ or harmonic nuisance.

3.8 Natural Ventilation and Mixed Mode Mechanical Systems

When function allows, designers should consider the use of natural ventilation or mixed mode design.

3.9 Daylight

The requirement for a daylight analysis will be considered on a project-by-project basis. As a recommended target, at least 40% of regularly occupied spaces should achieve one of the following:

- Daylight Factor above 2%
- Daylight Autonomy: at least 160 lux due to daylight during 80% of the operable hours

It is noted that daylight autonomy is the preferred method, as a more robust analysis of actual daylight levels.

3.10 Environmental Management Plans

All Major Projects shall have an Environmental Management Plan (EMP). Refer to Project Status for definitions of project types.

The Environmental Management Plan shall align with the current UQ Sustainability Strategy and must be approved by the UQ Sustainability Manager

The Contractor shall be responsible for the preparation and adoption of Environmental Management Plans through all phases of the project.

Before commencement of construction the Contractor shall provide the relevant documentation to the Sustainability Office for approval.

For Minor and Maintenance Projects a simple template will be provided by UQ.

3.11 Waste Management

3.11.1 General

1. The waste management strategy shall align with the current UQ Sustainability Strategy.
2. The designer shall review the feasibility of reusing existing structure and fabric.
3. Refer to Sustainability – Materials Selections

3.11.2 Operational Waste Management – Minor Refurbishments

For Minor Projects:

1. The designer shall allocate space for waste and recycling bins within the project, or nominate bins elsewhere, in accordance with the UQ Waste Infrastructure Guideline.
2. Where there is a change in use, or expected increase in occupant numbers, the designer shall consult with relevant staff in the Campus Operations and Sustainability teams, to confirm the number of bins required or any other special requirements (e.g. hazardous waste).
3. If the refurbishment involves a change in use (e.g. from office to food & beverage, or to a use that involves hazardous materials), an Operational Waste Management Plan must be prepared.
4. The Operational Waste Management Plan shall be produced in consultation with the relevant staff in the Campus Operations and Sustainability teams, or by a suitably experienced consultant.
5. The Operational Waste Management Plan shall align with the current UQ Sustainability Strategy.

3.11.3 Operational Waste Management – New Buildings and Major Refurbishments

For Major Projects:

1. The project team shall develop a project specific Operational Waste Management Plan that identifies the material streams into / out of the building, the type and number of bins required, storage requirements, and the need for loading docks or other material handling equipment. The plan shall co-ordinate with any applicable precinct or campus plans or strategies regarding waste, recycling and materials handling.
2. The plan shall be prepared by a suitably experienced consultant and approved by the University Project Manager in consultation with the

Properties & Facilities Sustainability team.

3. The project shall provide the facilities and space for bins and material handling equipment recommended by the Operational Waste Management Plan. Refer to the UQ Waste Infrastructure Guideline for details of University standard bins.
4. The Operational Waste Management Plan shall align with the current UQ Sustainability Strategy.

3.11.4 Design for Re-use

Existing items in good condition shall be reused or recycled provided they meet current standards and are fit for use. Consultants must identify these items at the design phase. In decreasing order of preference, appropriate items should be:

a) Reused in the new project, if suitable.
b) Reused in other UQ projects if there is an opportunity, as identified and coordinated by the UQ Project Manager.

Furniture and furnishings must be reused, salvaged, or refurbished to the greatest degree possible.

Building less, by refurbishing and reusing existing buildings and their contents, is a key concept in reducing embodied carbon and achieving significant sustainability targets. It is critical to consider the following on all projects:

a) Whether a new building is necessary to meet the brief and whether retrofit been considered.
b) Whether existing materials and products on or near the site can be utilised.
c) Whether spaces can be shared or multifunctional.
d) Whether all proposed materials are necessary, and whether the design can be simplified to make more efficient use of materials.

3.11.5 Construction Waste Management

Refer to the Environmental Design Standard for details of Construction Waste Management.

3.12 Whole of Life Considerations

Designs are to be developed to achieve optimal efficiency in operation of the building and consider the whole of life costs associated with the materials, plant and equipment proposed.

UQ is committed to a high standard of environmentally sustainable design. Building design shall achieve an optimal economy for the full design life of the facility. Costs associated with materials, plant, equipment and fitout shall be approved by the UQ PM.

Temporary buildings, including demountable structures and containers, are undesirable and should not be considered for any UQ Campus, except in exceptional circumstances and for strictly limited times.

All university buildings are to have a minimum design life of 50 years. The design life for certain projects may be extended at the determination of the University Senate.

3.13 Building Areas and Definitions

For all estimating purposes building areas shall be measured using the following methods: GFA, UFA, FECA & UCA – as defined in Variation 2 of the Group of Eight (G08) Playbook and the TEFMA definitions within. Refer to the Space Planning Standard Documents, as described in Reference Documents.

The design team shall report on GFA and UFA at the early design phase.

As a project nears completion, UQ will create Archibus drawings that contain polylines around the rooms to calculate the FECA, UCA, UFA and GFA.

3.14 Electric Vehicles

UQ encourages the use of electric vehicles at all University campuses and sites.

All infrastructure and projects containing carparks, shall consider provision of electric vehicle charging stations.

04 Sustainability Strategy 2020-2030

4.1 Strategy

The University of Queensland is committed to world class sustainable outcomes in its built environment.

New University buildings, refurbishments and infrastructure are a showcase of green building materials and design, which are responsive to their environment, climate, surrounding landscapes and occupants. Sustainability requires a balance of cost, environmental benefits and human benefits while meeting the vision and function of the intended use. The main objectives of sustainable design are to avoid resource depletion of energy, water and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life-cycle; and create built environments that are liveable, safe and productive.

UQ's Sustainability Strategy outlines clear commitments and targets for the University. All new buildings and refurbishments are to be delivered to meet the latest version of UQ's Sustainability Strategy 2020-2030 – the project team must read this document in conjunction with the Design Standards.

The project team must communicate with the Sustainability team from UQ's Property and Facilities Division to understand the latest commitments and targets and obtain feedback on the design.

The project team must be aware that UQ uses the using the Sustainability Tracking, Assessment & Rating System (STARS), an industry-endorsed measurement and assessment tool for the tertiary sector, to measure the University's sustainability successes and challenges.

Building less, by refurbishing and reusing existing buildings and their contents, is a key concept in reducing embodied carbon and achieving significant sustainability targets. Designers are to consider the following on all projects:

1. If a new building is necessary to meet the brief and whether retrofit been considered.
2. If existing materials and products on or near the site can be utilised.
3. If spaces can be shared or multifunctional.
4. Review material efficiency and determine if all materials proposed are necessary, seeking to simplify the design.

4.2 Principles

The targets and requirements within the Design Standards have been derived from several different green initiatives and rating programmes.

Sustainability initiatives are to be embedded holistically into all projects through good design, including:

Reduction of climate change impacts
Energy efficient outcomes
On-site energy generation
Renewable energy
Infrastructure that reduces climate change vulnerability.
Water conservation
High quality indoor environmental quality
Promotion of wellbeing
Responsible use of resources
Progressive waste management
Urban greening and enhancing of biodiversity

Sustainable transport modes
Preservation of heritage, cultural and natural assets.
Promotion of facilities and spaces that facilitate and encourage sustainable behaviours.

Sustainability related targets and requirements covering the above principles have been implemented throughout the Design Standards, in the relevant discipline section. The intention is that each discipline is responsible for ensuring requirements are met in their design.

The following sections are initiatives that are typically the responsibility of the Sustainability Consultant.

A summary of key sustainability initiatives and responsibilities are outlined in the *Sustainability Tracker Spreadsheet*. At the end of each design phase (Feasibility Study / Concept Design / Schematic Design / Detailed Design / Contract Documentation), the design team will provide a completed copy of the *Sustainability Tracker Spreadsheet* to UQ, confirming compliance with the Design Standards. All non-compliances with the Design Standards shall be identified in the along with a statement outlining how the non-compliance will be addressed.

4.3 Benchmarks

All projects shall achieve, as a minimum, the equivalent of a 5-Star Green Star Rating in accordance with the GBCA Green Star system.

Major Projects are encouraged to achieve the equivalent of a 6-Star Green Star Rating.

Typically, UQ do not certify projects to the Green Star system.

At each project stage (Feasibility Study / Concept Design / Schematic Design / Detailed Design / Contract Documentation / Project Completion), the project team must provide a Green Star pathway and tracker spreadsheet for the University to review, including the following information as minimum:

1. Target rating, total points targeted and number of buffer points
2. Credits targeted
3. Description of targeted credit
4. Status and summary of strategy for how each targeted credit is being achieved
5. Responsibility

UQ Design Standard requirements will take precedence only where they exceed the Green Star requirements.

4.4 Energy

UQ has a strong focus on reducing energy use. Passive design principles are a priority to reduce loads and resulting cooling energy, in order to minimise the life cycle costs of air conditioning systems. Emphasis must be placed on appropriate orientation and massing, window to wall ratio, envelope thermal performance, and use of external sun control shades.

New and refurbished buildings must achieve the following:

NABERS Base Building Energy 5.5 stars as a minimum (applies to office areas only)
Exceed NCC Section J by at least 10%, with consideration for the following:

a) Roof/ceiling insulation - 10% increase on the minimum required total R-values in Part J1.3
b) Wall-glazing construction with area-weighted total system U-value at least 10% less than the maximum allowable in Part J1.5
c) Wall-glazing construction with at least 10% less solar admittance than the maximum allowable in Part J1.5
d) Where wall components are 80% or more of the wall-glazing construction, at least a 10% increase on the minimum wall R-value in Part J1.5
e) Roof solar absorptance less than 0.40

Internal blinds must not be used as a substitute for external shade devices to control solar admittance.

Passivhaus principles should be considered, with a focus on high performing building envelope, airtight and thermal-bridge free design.

4.4.1 Air Tightness

Air tightness testing is required for the laboratories and other areas which require high outside air rates. The designers shall provide laboratory building fabric air tightness testing in the following instances:

1. Where buildings have insect proofing requirements

2. For animal houses
3. Where PC3 containment levels are required
4. For clean rooms and high air change laboratory spaces
5. For rooms where containment of high-risk chemicals pose a risk to occupants outside the laboratory
6. Where particles or gases present outside the laboratory pose as a risk to the procedures within the laboratory.

4.4.2 Air Tightness Testing

The designers shall consult with the University for room leakage risk levels and include if directed to other laboratory spaces. Testing shall include all at high-risk spaces, submit a report to assess these spaces.

Sealing and Testing shall be as follows:

1. Sealed in accordance with the NCC (BCA) Section J
2. Testing to the Air Tightness Testing & Measurement Association (ATTMA) Technical Standard TSL2
3. Leakage shall not to exceed 0.5L/s/sqm, or 1.8 M3/Hr/M2, at 50Pa for general laboratory spaces and 0.2l/s/sqm at 50Pa for spaces such as clean rooms. These are minimum levels and shall be discussed with the University, refer also relevant laboratory Australian standards such as AS/NZS2243 series and apply these if applicable to the space for required leakage rates
4. Areas that fail testing shall be re-sealed and re-tested until compliant
5. Final leakage testing report shall be submitted to the university and smoke pens shall be utilised to demonstrate to the University physical leakage paths during commissioning

4.5 Materials

4.5.1 General

The requirement for a whole of building, cradle to grave Life Cycle Assessment (LCA) will be considered on a project-by-project basis. The UQ PM, in conjunction with UQ Sustainability, shall determine if and LCA is required.

Where an LCA is performed, the following Green Star Buildings credits must be achieved (Minimum Expectation and Credit Achievement):

1. Upfront carbon Emissions
2. Life Cycle Impacts

Note that low-carbon material selections are included in other relevant sections of the Design Standard, such as reduced Portland Cement for concrete, and targets for recycled/certified product selections.

4.5.2 Material Selections

1. Materials selections shall align with the UQ Sustainability Strategy.
2. Local, indigenous, and sustainable materials and products should be prioritised. At least 80% of structural components, 60% of building envelope components, 20% of active building systems, and 60% of internal building finishes, by cost (or area for finishes), must meet at least one of the following:

a) Reused or recycled
b) Product specific Environmental Product Declaration (EPD)
c) Climate Active Carbon Neutral
d) Chain of custody certification
e) Third-party product certification schemes, as listed on the GBCA website

3. Products with materials, chemical and elements on the Living Building Challenge's (LBC) Red List should be avoided where practicable.
4. The designer shall favour materials that contain less virgin material and more recycled content.
5. Designs shall minimise the use of materials with high virgin content through smart design, when materials with more recycled content are not available.
6. Timber used in the project should be either re-used or certified to FSC International or a PEFC-accredited certification scheme.
7. All engineered timber products (including particleboard, plywood, veneer, medium density fibreboard and decorative overlaid wood panels) shall have a level of formaldehyde emissions equal to or less than E1 standard.

8. The use of PVC should be avoided or minimised where practicable. Where PVC is used, it must meet the GBCA's Best Practice Guidelines for PVC
9. Refrigerants shall have a low environmental impact.
10. Insulation shall not use any ozone depleting materials in its manufacture or composition.
11. The Portland cement content of any concrete used shall be reduced by 30% compared to a standard practice reference concrete mix (as of 2020).
12. Fabricated structural steelwork shall be supplied by a steel fabricator / steel Contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute and the reinforcing steel for the Project should be sourced from a steel maker using an energy-reducing process in manufacture, such as Polymer Injection Technology.
13. The Contractor shall demonstrate sustainable purchasing practices during material and equipment selection.

4.5.3 Material VOC/Formaldehyde Limits

Internally applied paints, adhesives, sealants, and carpets must meet the maximum Total Volatile Organic Compounds (TVOC) limits in accordance with Green Star, demonstrated by one of the following two methods:

- The product(s) are certified under a recognised Product Certification Scheme accepted by the GBCA (for Green Star Buildings); or

- The product(s) are tested in a laboratory

Total VOC Limits for paints, adhesives and sealants:

Product Category	Max Total Volatile Organic Compounds (TVOC) content in grams per litre (g/L) of ready to use product
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

Total VOC Limits for carpets:

Compliance Option	Test Protocol	Limit
ASTM D5116	ASTM D5116 - Total VOC limit	0.5mg/m2 per hour
	ASTM D5116 - 4-PC (4-Phenylcyclohexene)	0.05mg/m2 per hour
ISO 16000 / EN 13419	ISO 16000 / EN 13419 – TVOC at three days	0.5 mg/m2 per hour
ISO 10580 / ISO/TC 219 (Document N238)	ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5 mg/m2 per hour

All engineered wood products are to meet the maximum formaldehyde emission limits, demonstrated by one of the following two methods:

The product(s) are certified under a recognised Product Certification Scheme accepted by the GBCA (for Green Star Buildings); or
The product(s) are tested in a laboratory

Formaldehyde limits for Engineered Wood Products:

Test Protocol	Emission Limit
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/L

AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m2 hr*
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m2 hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m2 hr (at 3 days)
ASTM D6007	≤0.12mg/m3
ASTM E1333	≤0.12mg/m3
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m2 hr

05 Space Planning

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

5.1 General

Space Planning sets out the minimum spatial requirements and relationships for building program functions.

Space Planning shall be functional and flexible.

5.2 Standard

Refer to the Space Planning Standard Document, as described in Reference Documents.

06 Architectural Design Standard

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

Each UQ campus has unique characteristics in terms of built form and landscape that require a particular assessment and response.

6.1 General

The architecture of the University of Queensland's buildings is determined by the following objectives:

1. Satisfy the functional, social, and cultural requirements of the University.
2. Contribute to the overall vision and goals of the University Master Plans.
3. Respond positively to the local context in terms of specific planning and building regulations.
4. Achieve an environmentally sustainable built environment that contributes to the safe educational experience of all users.

The universities investment in physical facilities represents a long-term investment that includes the operational expense of a building throughout its life.

6.2 Standard

The Architectural Design Standard sets out the expectations for standards and application of architectural elements and finishes in all UQ funded building works.

07 Furniture Fittings & Equipment

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

7.1 General

All University facilities shall have a furniture, fittings and equipment (FF&E) requirement.

Designers shall work with the PCG to determine the FF&E requirements and the method of procurement.

FF&E shall be procured as either:

Group 1 – Items to be supplied and installed by the contractor.

Group 2 – Items to be purchased by the principal and installed by the contractor.

Group 3 – items to be purchased and installed by the principal.

Designers shall document which group all FF&E items belong to.

Designers shall document the services requirement to suit all FF&E items.

Mobile Furniture is preferred over built-in joinery. The designer is to determine the strategy of providing services for mobile furniture.

7.2 Standard

Refer to the Furniture Fittings and Equipment Standards Document, as described in Reference Documents.

08 Landscape Architecture

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

8.1 General

Each of University of Queensland's campuses has a unique landscape character that is a fundamental element which enhances the campus experience. The unique character is a valued asset that is to be supported and enhanced by all development.

Landscape design for the various University campus sites shall be considered in conjunction with the campus Masterplan and any landscape management documents.

8.2 Standards

The Landscape Design Standard sets out the requirements for all hardscape, softscape and irrigation design.

09 Structural Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

9.1 General

The Structural Engineering Design Standard is provided to outline structural engineering design criteria and requirements specific to UQ which meet or exceed the minimum requirements imposed by Australian Standards and National Construction Code (NCC)

University buildings are to have a design life of 50 years. Good structural design is key to achieving this goal. Structural design determines the durability, flexibility and adaptability of a successful building.

19.2 Standard

The Structural Engineering Design Standard sets out the standards for structural engineering, façade engineering and geotechnical investigation for all UQ building works

10 Civil Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

10.1 General

The Civil Engineering Design Standard defines civil engineering design criteria and requirements specific to UQ which meet or exceed the minimum requirements imposed by Australian Standards and Local Authority requirements.

10.2 Standard

The Civil Engineering Design Standard sets out the standards for civil infrastructure and traffic engineering.

11 Hydraulic & Wet Fire Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

11.1 General

The Hydraulic & Wet Fire Design Standard defines the Universities requirements for the design of hydraulic and wet fire systems; and to assist designers, contractors and other professionals involved in the preparation of designs commissioned by UQ and understand the University context.

The efficient use of water resources is a key sustainable initiative of the University of Queensland.

11.2 Standard

The Hydraulic & Wet Fire Design Standard sets out the standards for all water, drainage, sewer, and wet fire design within UQ's property portfolio.

12 Mechanical Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

12.1 General

The Mechanical Engineering Design Standard defines the various mechanical systems and strategies employed at the University. This document defines the responsibilities for designers and provides a guide for design conditions, performance standards and other relevant design criteria.

12.2 Standard

The Mechanical Engineering Design Standard sets out the standards for air conditioning, exhaust, chilled water, steam systems, piped services, gases, vacuum, demineralised water, distilled water, fume cupboards, equipment and building management systems

13 Electrical Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

13.1 General

The Electrical Engineering Design Standard defines the University of Queensland's specific requirements for the design of electrical systems; and to assist designers, contractors and other professionals involved in the preparation of designs commissioned by the UQ to understand the University context.

13.2 Standard

The Electrical Engineering Design Standard sets out the standards for all electrical, electronic security and energy management services.

14 Dry Fire Services

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

14.1 General

The purpose of the Dry Fire Services Design Standard is to define the University of Queensland's specific requirements for the design of electrical systems; and to assist designers, contractors and other professionals involved in the preparation of designs commissioned by the UQ to understand the University context.

14.2 Standard

The Dry Fire Services Engineering Design Standard sets out the standards for all detection and alarm systems relating to fire safety.

15 Fire Engineering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

15.1 General

This Design Standard sets out the Universities requirements for standards and processes for fire engineering; and to assist designers, contractors and other professionals involved in the preparation of designs commissioned by the UQ to understand the University context. The Design Standard will apply to all new and renovation projects.

15.2 Standard

The Fire Engineering Design Standard sets out the standards and processes required to provide building occupants with the appropriate level of fire safety while achieving the functional intent and desired use of the building.

16 Vertical Transport

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

16.1 General

This Design Standard sets out the Universities requirements for standards, quality and quantity of vertical transport equipment. The Design Standard will apply to all new equipment and all major upgrades.

16.2 Standard

The Vertical Transportation Design Standard sets out the standards required for all vertical transportation infrastructure and associated services.

17 Acoustics

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

17.1 General

Acoustic design is an important element of the educational built environment.

The University has expectations over and above the minimum standards prescribed by the NCC. This document expands upon those expectations, specific to this discipline.

The Acoustic Design Standard describes the required design outcomes for airborne and structural noise and vibration.

17.2 Standard

Refer to the Acoustic Design Standard.

18 Security

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

18.1 General

This Design Standard is currently being written. In the interim, the University Technical Guide should be used along with guidance from UQ Properties and Facilities Engineering and the UQ PM.

The Security Standards describe the specific UQ requirements for all electronic security systems and locks ands keys to all University campuses.

18.2 Standard

Refer to the Security Standard Documents, as described in Reference Documents.

19 Information and Communications Technology

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

19.1 General

The Information and Communications Technology Design Standard defines the requirements for the design, installation and testing for all cabling, communication rooms, equipment risers, pits, conduits and communications processes across all the University campuses.

19.2 Standard

Refer to the Information and Communications Technology Design Standard.

20 Wayfinding and Signage

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

20.1 General

The Wayfinding and Signage Design Standard sets out the requirements for all signage works at the University.

Refer to the Space Planning Documents for building and room numbers.

20.2 Standard

Refer to the Wayfinding and Signage Design Standard.

21 Teaching Rooms

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

21.1 General

Teaching spaces are a key feature of the university experience. Teaching spaces shall achieve a high standard of experience for all users and functionality for teaching staff.

Designers are responsible for designing and documenting teaching spaces that:

1. Meet the functional requirements of the brief, including layout and population.
2. Provide equitable access.
3. Are acoustically appropriate.
4. Provide site lines as required functionally.
5. Meet all services and AV requirements.
6. Are aesthetically appropriate and enhance the student campus experience.
7. Meet all ergonomic requirements.

Teaching Spaces that require AV services shall follow the following procedure:

1. The PCG shall contact Information Technology Services, AV Projects to determine the AV brief.
2. The design team shall work with AV Projects to provide the infrastructure and services required to suit the AV equipment.

Refer to the Contact Schedule.

21.2 Document

Refer to the Teaching Standards Document, as described in Reference Documents.

22 Laboratories

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

22.1 General

The University estate includes an ever-changing portfolio of research and teaching laboratories. Laboratory spaces come in a variety of forms, each with specific functional and regulatory requirements.

Designers may be required to work with UQ representatives to establish the brief for Laboratory spaces.

Designers are responsible to design laboratory spaces that:

1. Achieve the highest possible standard of contemporary laboratory design
2. Suit the functional requirements of the brief.
3. Comply with all relevant standards and statutory and legislative requirements
4. Comply with all UQ Design Standards
5. Have a high standard of sustainability embedded into the design.
6. Are inherently flexible spaces.

Teaching Laboratories that require AV services shall follow the following procedure:

1. The PCG shall contact Information Technology Services, AV Projects to determine the AV brief.
2. The design team shall work with AV Projects to provide the infrastructure and services required to suit the AV equipment.

22.2 Reference Documents

Refer to the Laboratory Design Standard.

23 Environmental Design

23.1 General

The purpose of these Environmental Design Standards is to support the UQ Design Standards Master Document and provide environmental management requirements for the construction of projects at UQ to further the aims of UQ's Environmental Management Policy.

23.2 Standard

Refer to the Environmental Design Standard

24 Climate Risk Assessment

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

24.1 General

A climate risk assessment is an assessment of the physical risks capable of directly impacting the University of Queensland's assets and its operations. These risks may result from acute shocks, such as extreme weather events, or chronic stresses caused by changing climate and weather patterns.

24.2 Standard

Refer to the Climate Risk Design Standard.

25 Collaborative Learning Spaces

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

25.1 General

Collaborative learning is a key feature of the University educational experience.

Specific collaborative learning space design requirements have been developed in recognition of the breadth of collaborative teaching and learning approaches at the University. The Collaborative Learning Space Design Requirements document provides guidance for the design and development of spaces that support the variety of these practices.

Collaborative Learning Spaces that require AV services shall follow the following procedure:

1. The PCG shall contact Information Technology Services, AV Projects to determine the AV brief.
2. The design team shall work with AV Projects to provide the infrastructure and services required to suit the AV equipment.

Refer to the Contact Schedule

25.2 Standard

Refer to the Collaborative Learning Space Design Requirements Documents, as described in Reference Documents.

26 Retail Design and Fitout

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

26.1 General

The Retail Design and Fitout Design Standard provides tenants of retail tenancies within the University of Queensland with the necessary information to design their tenancy.

26.2 Reference Document

Refer to the Retail Design and Fitout Design Standard

27 Audio-Visual Design

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

27.1 General

All Audio-Visual installations at the University of Queensland is designed and specified by UQ ITS AV, to suit project specifics.

UQ ITS AV is to be consulted for all projects requiring Audio-Visual services.

The Audio-Visual Design Standard details the process for designers to follow whenever a project requires Audio-Visual services.

27.2 Reference Document

Refer to Audio-Visual Design Standard.

28 Electrical Metering

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

28.1 General

Effective metering of services is a requirement for all University projects.

The electrical services designer is to ensure that all electrical metering is briefed and designed to suit the Universities requirements.

28.2 Reference Document

Refer to the Electrical metering Standards Documents, as described in Reference Documents.

29 Working at Heights

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

29.1 General

The nature of the Universities properties and facilities often requires individuals to work at heights. Designers are required to understand and consider this to ensure the built environment has a high standard of safety whenever working at heights is required for maintenance or construction works.

Safe working at heights may require design consideration for the construction and maintenance of:

1. Roofs and roof mounted infrastructure.
2. Facades.
3. Ceilings.
4. Stairs.
5. Any works requiring a ladder.

29.2 Reference Document

Refer to the Working At Heights Standards Documents, as described in Reference Documents.

Refer to the QLD Government Worksafe ‘Fall prevention control measures required in the construction industry’.

30 Waste Infrastructure

This is an introduction to the concepts to be applied for this topic / discipline. The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

30.1 General

Waste management is a significant environmental and logistical challenge for the University. Considered planning is required at all levels to ensure the development of UQ properties and facilities achieve the highest standard of waste management. Designers shall engage with UQ stakeholders to determine and document how this is achieved.

Waste Management includes:

1. Provision of infrastructure and systems of use to facilitate the University and all individual users to achieve responsible waste management
2. Development at the campus level, to ensure efficient management and collection of all waste types
3. Consideration for all built environment projects, both new and refurbished, to achieve a high standard of waste management. This includes the repurposing / recycling of existing structures, materials, and FF&E
4. Infrastructure to facilitate the separation and storage of commercial and everyday waste.
5. Efficient collection of all waste types.

30.2 Reference Documents

Refer to the Waste Infrastructure Standards Documents, as described in Reference Documents.

31 Hazardous Area Assessments

The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

31.1 General

The Hazardous Area Assessment Design Standard defines the University of Queensland's specific requirements for the assessment and design responses to hazardous areas within projects; and to assist designers, contractors and other professionals in the preparation of designs commissioned by UQ to understand the university context.

31.2 Reference Documents

The Hazardous Area Assessment Design Standard sets out the standards relating to the assessment of hazardous areas for all University of Queensland projects.

32 Dangerous Goods Storage

The designer is to refer to the specific Design Standard for this subject to obtain the relevant detail.

32.1 General

The Dangerous Goods Storage Design Standard defines the University of Queensland's specific requirements for the design of areas to store dangerous goods; and to assist designers, contractors and other professionals in the preparation of designs commissioned by UQ to understand the university context.

32.2 Reference Documents

The Dangerous Goods Storage Design Standard sets out the standards for storage, handling and the physical properties & attributes for facilities used for the storage of dangerous goods in all University of Queensland projects.

33 Completion and Handover

33.1 General

Ownership of proprietary material. All project developed software and documentation must become the property of the University upon project handover.

33.2 Tools, consumables, and spare parts

Any spare parts listed in the project documents should be provided at or before project completion.
Provide painting, greasing, and packaging sufficient to prevent deterioration during storage.
Provide suitable and safe means of identifying, storing, and securing the tools, instruments, consumables, or equipment.
Spares used during the defect's liability period (DLP) must be replaced.
A **tools, consumables and spare parts schedule** should be submitted at least 8 weeks prior to the date of practical completion. The schedule should include all tooling required for maintenance or operation activities, portable instruments, consumables for calibration or cleaning, and spare parts necessary maintenance of the operation. For each item the schedule must include the:

- recommended quality held sufficient for 10 000 hours of operation,
- frequency of use/consumption in accordance with O&M,
- manufacturer,
- model number,
- current price,
- asset register reference,
- use in system,
- Lubrication schedule (as required),
- operation and maintenance manual reference, and
- detailed instructions for use.

33.3 Training

A program and agenda of training sessions should be provided to the relevant project manager 4 weeks prior to the sessions.
Instruction to be available for the whole of the commissioning and running-in periods.
Training to be conducted at agreed times, at the system or equipment location. As well as on-demand video instruction to cover all major components.
Training should include the use of tooling, consumables and procedures listed in the final draft of the operations and maintenance manuals. The final draft documents should be available during the training and the contents reviewed in detail with the principle's staff.
Provide register of attendance and participation in training for each attendee.

- Demonstrators. Training should only be conducted by qualified manufacturers' representatives who are knowledgeable about the installations.
- Operation. Training sessions held for operations personnel to explain and demonstrate the functions and operations of the installation. Training must include emergency and safety procedures.
- Maintenance. Training sessions held for maintenance personnel to explain and demonstrate the functions and maintenance of the installation. Training must include emergency and safety procedures.
- Seasonal Operation. For equipment that requires seasonal operation,

training should be held during the appropriate season.

33.4 Assets Register.

An asset register must be submitted on the **UQ Asset Collection Template** at completion.

33.5 Testing

Provide inspections and test plans consistent with the construction program including details of test stages and procedure.
Give sufficient notice of the time and place of documented tests for UQ internal engineering staff, maintenance personnel and consulting engineers to make themselves available for witnessing. Sufficient time is generally 7 days, unless arranged otherwise with the UQ project manager.
Provide attendance records of tests. If attendance in person is not possible, video or live feed of tests should be arranged.
Have tests carried out by an Accredited Testing Laboratory, accredited for the documented test method, except for site tests or test methods that do not have accredited testing. UQ internal engineering should be extended the option to witness the testing.

33.6 Test equipment

Use testing equipment designed to test and/or measure system performance within the documented tolerances. Use only instruments that have current calibrations certificates issued by an Accredited Testing Laboratory.
Tag or label instruments with calibration date and calibration authority name. Provide copies of certification with ITPs or commissioning test reports.
Calibration of equipment should be as per the manufacturer recommendation but not more than 12 months. Recalibration is necessary if dropped or damaged.
Testing procedures should include verification by:

- Manual testing,
- Monitoring performance and analysing results using control systems trend logs,
- A combination of the above.

Sampling may be used subject to a documented sampling strategy only for multiple identical pieces of non-life-safety or non-critical equipment.
If at any point more than one identical item fails during testing, stop testing, determine cause, rectify and document changes made to remaining units.
Documented test outcome should include;

- Pass/fail result,
- Values the meet documented requirements,
- Verification of manufacturer's claimed performance.

Test validity period should be as documented in project documentation or no older than 5 years.
Conduct integrated system tests for each mode. A risk assessment may need to be conducted to identify all operating modes, including associated system failure, emergency, and load shedding.

33.7 Commissioning

Commissioning shall occur for all new, modifications, replacement and removal of infrastructure.
Commissioning shall fully test, tune and demonstrate compliance with the design intent for every system in impacted by the works.
Systems, components and building elements are statically complete when:

- Their construction and installation is complete, including all systems and elements on which they are dependent is complete,
- All pre-commissioning checks have been completed,
- All cleaning that may adversely affect commissioning is complete,
- All remedial work that may adversely effect commissioning is completed,
- All spaces that required for access for commissioning are safe and cleared of obstructions.

33.7.1 Commissioning plan

Provide a commissioning plan including the following:

- A summary of the work covered by the commissioning plan,
- The parties responsible for this work and any commissioning interrelationships,
- The basis of the design,
- General sequence of commissioning,
- Project specific commissioning methodologies for each system and building element to be commissioned,
- Pre-commissioning requirements,
- Project specific commissioning procedures for each commissioning activity, including integrated system tests, deferred and seasonal tests,

- A project specific building tuning plan for all commissioned systems. Include building tuning procedures and team members,
- Requirements for witnessing to tests and documented demonstrations of completion of commissioning,
- Commissioning program,
- Commissioning activity schedule (CAS).

33.7.2 Commissioning program.

Submit a commissioning program consistent with, and forming part of the construction report:

- Set out the proposed program for pre-commissioning testing, static completion, commissioning, deferred and seasonal commissioning.
- Identify related work and timing of the works prerequisite to successful and timely completion of the works.
- Identify time in the program for the documented plant operating period before the date of practical completion.

Commissioning activity schedule. A commissioning activity schedule must be kept updated and shared with the UQ project manager and delegates regularly on the **UQ Commissioning Activity Schedule Template**.

33.7.3 Verification of commissioning.

On completion of commissioning of the equipment or system, provide;

- A completed commissioning report,
- A completed CAS with all results and principal's delegate witness signatures,
- A register of defects and issues and the progress of their resolution,
- All associated performance data, trends, photographs, or video files to demonstrate commissioning results.

33.7.4 Building Tuning

Unless otherwise requested, building tuning should be completed every 3 months.

At the end of the maintenance period. Provide last building tuning in the month before the end of the defect's liability period.

Submission of a report to the project manager post each building tuning attendance, containing the following:

- Review data from all recording systems against documented requirements,
- Review of building occupant, maintainer, and engineering feedback,
- Review defects and failures since completion,
- Corrective actions and effect of corrective actions,
- Recommend other actions to improve effectiveness, reliability, and efficiency of system.

33.8 Operation and maintenance manual

A draft submission of the manual should be available 4 weeks before the date of practical completion and the final submission available withing 2 weeks of practical commissioning, unless otherwise requested.
The contents of the manual are extremely detailed and needs to be focused on user groups. It is highly recommended that workshops with end users be scheduled to identify inclusions are commenced well in advanced of the draft submission date.

33.8.1 Contents of manual

a) Table of contents.
b) Table of amendments.
c) Directory. Include names, addresses, contact details of principle consultants, contractors, subcontractors, and responsible parties.
d) Record Drawings. Include a complete set of record drawings.
e) Drawings and technical data. Include as necessary for efficient operation and maintenance.
f) Installation description. Include a general description of installation.
g) Systems description and performance. Include a technical description of the systems installed including the basis of design, the interrelation with other systems and the building and mode of operations, presented in a clear and concise format readily understandable by the principle's staff.
h) Baseline data. Include the baseline data.
i) Commissioning records. Include all commissioning records and test records.
j) Training material. Include materials used to provide training in a format that can be used for ongoing training of new staff.

k) Fire systems and equipment. Include documentation including schedule of essential functionality, and performance.
l) Digital photographic records. Include records of labelling and marking, compliance plates, underground services.
m) Equipment. Include **assets register**.
n) Certificates. Including but not limited to; certificates from authorities, products certification, test certificates for each service installation and equipment warranties.
o) Trends. 7 day records of all trends at commissioning.
p) Operations procedures. Include for all systems installed;
    - Manufacturer's technical literature as appropriate.
    - Safe start-up, running in, operating and shutdown procedures in logical step-by-step instructions.
    - Control Systems. Include control sequence and flow diagrams.
    - Equipment settings. Schedules of fixed and variable equipment settings established during commissioning and maintenance period. Include recommendations for efficient plant operations.
    - Safety devices. A list of safety devices and their set points.
    - Safety data sheets (SDS).
    - Seasonal settings. Include seasonal settings and procedures for seasonal changeovers.
    - Warnings and alarms. Include description of alarm or warning, actions required and indication of urgency.
    - Common faults. Include procedures for identifying common faults in logical step-by-step instructions.
    - Re-commissioning. Include procedures for ongoing seasonal building tuning and re-commissioning procedures in logical step-by-step instructions.
q) Building occupants guide. Include a concise guide written and illustrated for building occupants with no technical background. Including the following;
    - Security provisions.
    - Safety and access.
    - Environmental features. Including energy, water, and water management.
    - Occupant relevant information on design and operations.
    - Information for occupants on environmental systems that rely wholly or partially on local control, including heating, lighting, cooling, maintenance, and emergencies.
    - Contact details for faults, maintenance, and emergencies.
r) Maintenance procedures. Including for each piece of equipment or system;
    - Manufacturer's technical literature as appropriate.
    - Detailed recommendations for periodic maintenance and logical step-by-step procedures, including recommended tests and cleaning.
    - Safe trouble shooting, disassembly, repair and reassembly, cleaning, alignment and adjustment, balancing, and checking procedures. Provide logical step-by-step guide with illustrations.
    - Provide access paths, load restrictions and dimensions for replacement of critical equipment and mobile equipment required to perform maintenance.
    - A tools, consumables and spare parts schedule.
    - Instructions for use of tools, equipment, and consumables in logical step-by-step instructions.
    - Emergency procedures. Including escalation procedure, procedures for system isolation, fault finding and load shedding.
s) Emergency information manual. Include for each type of emergency, including but not limited to, fire, flood, gas leak, water leak, power outage, water failure, system or subsystem failure, chemical release, or spill. Including instructions for isolation, shutdown, special operating instructions, and contact details for emergency.

33.9 Periodic maintenance

Periodic maintenance should be performed by the constructing contractor from the time the

systems are put into service until the maintenance period.
Statutory maintenance and inspections should be performed by the constructing contractor from the time the systems are put into service until the end of the maintenance period.
The maintenance period is the greater of the defect liability period or the otherwise documented period.
Annual maintenance, statutory maintenance and statutory inspections should be performed within 4 weeks of the completion of the maintenance period.
Maintenance performed should include all periodic and statutory maintenance, cleaning and replacement of consumables, emergency repairs and condition reporting.
Service personnel are required to report to the principal's designated maintenance representative on arrival to site having completed all necessary inductions.
Documentation of maintenance so that the condition and performance of the maintained work at the end of the maintenance period can be easily integrated into the history of the principle's asset management system, warranties are valid, certifications and compliance can be audited with equal to or better than the results at the time of issue.

33.9.1 Maintenance program.

Submit details of the contractor's maintenance attendance 6 weeks before the date of project completion, indicating;

- the dates of service,
- numbers of operators,
- arrangements for emergency call outs.

33.9.2 Maintenance records.

Including but not limited to;

- logbooks, checklists or records of maintenance,
- test or approval certificates,
- comments of the functioning systems,
- work carried out,
- corrective actions,
- spares, equipment, and consumables used,
- service operator,
- signature of principal's designated maintenance representative on the record of work undertaken.

34 Reference Documents

The university design documents are constantly evolving to meet the changing demands of modern university design. Design documents are updated to align with University policy and developments within the built environment.

34.1 General

The design documents employed by the University are in the process of being updated.

In order to maintain a common language and avoid confusion, the following reference names are used throughout the Design Standard documents

Reference Name	**Associated Documents**
UQ Design Standards	UQ Design Standards
Campuses on Country Design Framework	Campuses on Countries: A Framework for Aboriginal and Torres Strait Islander Design at The University of Queensland
Sustainability Strategy	Sustainability Strategy 2020-2030
Space Planning Documents	TG 6 Space Planning P&F Engineering Services Workbook “Building and Room Numbering” Go8 Space GFA UFA extract Group of Eight Australia ‘Go8 Space Playbook’
Architectural Design Standard	Architectural Design Standard
FF&E Standards Documents	TG 8 Furniture Fittings & Equipment
Landscape Design Standard	Landscape Design Standard St Lucia Campus Placemaking & Landscape Strategy.
Structural Design Standard	Structural Design Standard
Civil Design Standard	Civil Design Standard
Hydraulic and Wet Fire Design Standard	Hydraulic and Wet Fire Design Standard
Mechanical Design Standard	Mechanical Design Standard
Dry Fire Design Standard	Dry Fire Design Standard

Fire Engineering Design Standard	Fire Engineering Design Standard
Vertical Transportation Design Standard	Vertical Transportation Design Standard
Acoustic Design Standard	Acoustic Design Standard
Security Standards Documents	TG 18 Security
Information and Communications Technology Design Standards Documents	Information and Communications Technology Design Standard UQ ICT Cabling Spec Network and Data Centres ICT Cabling Specification UQ ICT Server Room Drawing Options The following Australian Standards – or the current version thereof: • AS/CA S008:2020 Requirements for customer cabling products • AS/CA S009:2020 Installation requirements for customer cabling (Wiring Rules)
Wayfinding and Signage Design Standard	Wayfinding and Signage Design Standard External Signage Manual Internal Signage Manual
Teaching Standards Documents	TG 21 Teaching Rooms
Laboratory Design Standards Documents	Laboratory Design Standards
Environmental Design Standard	Environmental Design Standard
Climate Risk Assessment Design Standard	Climate Risk Assessment Design Standard
Collaborative Learning Space Documents	Collaborative Learning Space Design Requirement
Retail Design and Fitouts Standards	Retail Design and Fitouts Standard Retail Design & Fitout Style Guide
AV Design Standard	AV Design Standard
Electrical Metering Standards Documents	Electrical Metering Technical Guide
Working at Heights Standards Documents	Working at Height Safety Systems
Waste Infrastructure Standards Documents	Waste Infrastructure Guideline
Hazardous Area Assessment Design Standard	Hazardous Area Assessment Design Standard
Dangerous Goods Storage Design Standard	Dangerous Goods Storage Design Standard

34.2 Contacts Schedule

Reason for Contact	Organisation/Group	Name	Contact Detail
Campus Planning	Property & Facilities Division	Tim Sweeney	+61 411 152 400
Occupational Work Place Health and Safety			
Safety In Design	Infrastructure and Sustainability		
Facilities Management			
Audio Visual (AV)	Information Technology Services, AV Projects	Luke Lickfold	+61 7 334 63005
Fire Extinguisher Design			+61 401 696 327
Signage	Officer Signage	Stephen Lascelles	+61 421 098 240
Hazardous Materials			
BIM Requirements	Senior Coordinator Digital Modelling	Christian Dorst	+61 4 77 217 050 c.dorst@uq.edu.au
UQ Vision Documents	https://about.uq.edu.au/strategic-plan/vision-mission- https://about.uq.edu.au/strategic-plan/long-term-objectives https://about.uq.edu.au/strategic-plan/medium-term-strategic-focus-areas https://teaching-learning.uq.edu.au/ https://research.uq.edu.au/research-overview		
UQ Environmental Policy	https://ppl.app.uq.edu.au/content/10.20.01-environmental-management		
UQ Campus Planning Site	Development Plans for; St Lucia, Gatton, UQ Experimental Mine Indooroopilly and Heron Island. https://coo.uq.edu.au/operational-areas/property-and-facilities/pf-projects-and-initiatives/campus-planning		
Heritage Management Protocols. (The Great Court St Lucia and Gatton Campus)	No link available (available on request from UQ PM)		
Conservation Plans	No link available (available on request from UQ PM)		