

SECTION 6

ARCHITECTURAL DESIGN

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Version	Date	Authors	Summary of Changes
1	19/8/14		Issue to web

6.0 ARCHITECTURAL DESIGN

6.1 General

- In this section the requirement for the Functional Design Brief and a number of architectural design issues are outlined. Space standards, requirements for additional spaces and target building efficiencies are given.

Major projects will mean >\$3M or as directed.

6.2 Functional Design Brief (FDB)

For each major project a detailed Functional Design Brief is to be prepared by the Project Manager in consultation with the consultants and **Project User Group** (PUG). The Strategic brief section of the Functional Design Brief must be approved by the **Project Control Group** (PCG) and submitted to JCU prior to the development of sketch plans.

The Technical brief may form part of the Schematic design report and must be presented at sketch design stage.

The Schematic design report brief must incorporate the project specific requirements of the JCU stakeholders and be revised or updated as the project progresses.

6.3 Contents of Functional Design Brief (FDB)

The following list outlines the general requirements per project. Select what is required and discuss exclusions with JCU.

Strategic Brief

- Overview and Purpose
- JCU context (including Master Plan)
- Design Intent
- Building concept
- Design parameters
- Human Factors

Technical Brief

- Outline of the proposal
- Site position and connections
- Entries
- Circulation
- Foyers
- Space relationships
- Building Efficiency
- Environmentally Sustainable Design (ESD)
- Provision of Building Services
- Crime Prevention through Environmental Design (CPTED)
- Provisions for PWD
- Designed for Safety and health of users and occupants
- BCA and Performance based Assessment
- Site infrastructure changes
- Design Statements per Building Service
- Serviceability access for Maintenance

- Maintainability and life cycle costing
- Landscape
- Schedule of Areas

Programs and Budget Statements**Laboratory Design Briefs**

Laboratory design briefs require particular care. The designer must be fully conversant with applicable legislative requirements. Further, in the briefing process, they must ensure that they clearly understand day-to-day operations, weekly events, monthly, quarterly or annual activities, integrally-stepped procedures, presence or absence of aids, student demand and class requirements (volumes and multiplications), apparatus effects, legal chemical storage requirements and those of good practice (e.g. decanting facilities for flammable goods and the requirement of AS2982.1 that no flammables or volatile chemicals be stored in secondary or tertiary undergraduate teaching laboratories). Special Requirements for Laboratories section deals with these issues in more detail.

Ecological Sustainable Design (ESD) Brief

For each new project and for major refurbishment projects a detailed brief describing the project objectives responding to ecologically sustainable development (ESD) considerations must be prepared. This brief should address such issues as climatic-responsive design, long-term operating performance and life cycle cost assessment, energy efficiency strategies, building materials selection, use of renewable, and energy content of materials, storm water reuse and recyclability of components. In major projects, a building energy brief must be included. Refer Building Design Professions (BDP) Environment Design Guide - Building Energy Brief for Commercial and Public Buildings for details.

Fire Engineering Design Brief (FEDB) – QUT specific requirement – not all projects will require a FEDB, due to campus constraints.

A Fire Engineering Design Brief (FEDB) shall be established by the design consultants at the "Sketch Plan Development" stage, to investigate and evaluate all Fire Safety measures and systems proposed for the building to ensure that all the required criteria are met. In the development of the FEDB, liaise with the JCU Technical Officer Essential Services.

6.4 Building Legibility

Design consideration must be given early in the design process to the legibility of the building and, in particular, the ready visual identification of entry/access points. While this is partly in response to CPTED considerations, it also relates to the convenience of users and effective way-finding on each campus.

Allowance should be made in the design of the external entry facade of the building for the installation of any major signs in conformity with JCU graphic standards - refer to Signage section.

6.5 Solar Control

The orientation and positioning of new buildings must be such that solar control is facilitated, natural lighting to the interior maximized and views from the building are considered.

Particular care should be taken to screen against solar heat gain and glare on the faces of buildings and to avoid problems for adjacent buildings by reflections. The preferred solution is through appropriate shading of external glazing. Refer External Walls and Windows section.

Sun shading and screening shall be included in the building design and provided by features such as slab projections, overhangs, fins and blades etc., of low maintenance materials. Windows on

western facing facades are to be avoided, and eastern facing windows shall be minimised. Windows on the northern façade shall be designed such that the summer sun is excluded, but advantage can be taken of the winter sun. All external doorways, entrances and porches shall have protection from weather, except where precluded by building legislation. Excessive glare from summer and winter sun is to be avoided or controlled. Reflective glass shall not be used, except in exceptional circumstances and only with the express approval of JCU.

6.6 Natural Light

Perimeter rooms are not to block the transmission of natural light into interior corridors or other spaces. Daylight may be borrowed through the use of glazed walls or windows. Glazed walls must be clear glass unless approved by JCU.

6.7 Wind around buildings

For an individual building or groups of buildings, designers need to be aware of the problems of wind turbulence and wind-tunneling.

Site wind patterns must be assessed as part of the design.

6.8 Acoustic Control

Refer to Section 18 Acoustics for detailed requirements.

Consider users needs in relation to comfortable working and studying environments.

6.9 Crime Prevention through Environmental Design

Incorporate "Crime Prevention Through Environmental Design" (CPTED) to enhance security to building/s, car-parks, walkways, bicycle paths and surrounding areas. CPTED initiatives shall reduce the incidence and fear of crime, and an emphasis is placed on factors including but not limited to sightlines, entrapment spots, isolation, loitering, transitional space, and signage. The designer shall consider the behavioural objectives for the subject development and its relationship to neighbouring buildings whether on or adjacent to the campus.

CPTED Principles

All buildings, car parks, walkways, bicycle paths and their immediate environs shall be designed to incorporate Crime Prevention through Environmental Design (CPTED) concepts and strategies to achieve a positive working and learning environment whilst reducing the opportunity for crimes against University property, staff and students.

In general terms, CPTED is a process which reduces the incidence and fear of crime through the effective design and use of the built environment. The application of CPTED concepts and strategies in the design of buildings has direct benefit to the University by reducing losses through theft and vandalism, and enhancing the personal safety of staff and students.

Designers shall familiarise themselves with the application of CPTED concepts and strategies or engage the services of a specialist consultant to ensure that their designs meet the intent of these Guidelines. The "Queensland CPTED Guidelines" are publicly available via the Queensland Police Service web site. It is essential that designers clearly define the behavioural objectives for a given space and ensure that the design and use of that space supports those objectives.

The following design factors shall be given specific attention:

Lighting

See Security section.

Sightlines

The inability to see what is ahead because of sharp corners, walls, topographical features, landscaping, shrubs or columns is a serious impediment to feeling and being safe. These same features provide concealment for crimes such as assault, robbery, burglary, vandalism and graffiti. Designers shall maximize "visual permeability" and opportunities for "natural surveillance" and avoid "blind" corners, especially on stairs, in corridors, and in the location of toilets. All rooms should have glass panels from corridors to increase security and windows should be used to increase observation of external areas.

Entrapment Spots

Entrapment spots are small, confined areas, adjacent or near frequently used routes. They are typically shielded on three sides by opaque barriers such as walls or vegetation. For example, dark recessed entrances, loading docks, gaps in vegetation along paths, toilet airlocks, small courtyards or certain architectural features may create entrapment spots. Entrapment spots are to be avoided either through design, such as maze entry systems in toilets, or by restricting access to the space by using hardware such as grilles. Where an entrapment spot is unavoidable, it shall be lit to a minimum of 30 lux and brought to the attention of **JCU**.

Isolation

Isolated placement of facilities such as toilets, public telephones, car parks, bus stops, pedestrian paths and tunnels, after-hours computer and science laboratories, libraries, etc. can increase fear on the part of the users and the opportunities for crime. Designers shall give careful consideration to mitigating the sense of isolation by using techniques such as incorporating windows to overlook pedestrian routes and locating the above mentioned facilities off high circulation areas where opportunities for "natural surveillance" are enhanced. Toilets shall not be located within isolated corridors or adjacent to a fire exit.

Loitering

Designers shall avoid locating toilets or bathrooms adjacent to public telephones, external seating, vending machines, notice-boards, or any other item which may legitimise loitering in the vicinity of the toilet.

Transitional Space and Signage

The ability to easily navigate the university campus reduces confusion and enhances confidence on the part of students, staff and particularly visitors. Designers shall incorporate techniques such as landscaping, changes in texture and/or colour, placement of furniture, etc. to aid with "legibility" of the site and clearly define the transition from public to semi-public to semi-private to private space. Where signs are used, their meaning shall be clear and unambiguous, and they shall be strategically located at entrances and near the intersections of corridors and paths. Please refer to Signage section.

The successful application of CPTED concepts requires designers to consider not only the proposed building and the activity which it supports, but also its relationship to neighboring buildings and activities whether on or adjacent to the campus. Protective security measures shall be integrated with CPTED strategies, where appropriate, to further reduce crime risks and enhance personal safety.

Access to toilets

Access to toilets for people attending after-hours must be provided. Security and, the logistics of unlocking doors or swipe card access and the path of travel must be considered.

6.10 Circulation

Foyers and Corridors

Foyer size and width of corridors shall be chosen to allow for highlevel use periods, circulation and break-out for gathering and teaching spaces.

Vertical Transport

Vertical transport (Lifts) shall be provided in all multi-level buildings.

External ramps as a means of interconnecting floors are not an acceptable alternative to providing a lift.

Stairs

Refer to Section 12 Staircases-Ramps-Ladders

6.11 Office Fit out and Services

This section should be referenced by consultants and University end users in conjunction with *Section 6.12 Space Standards*

Enclosed Offices

Partitions

Generally enclosed offices will be formed with floor to ceiling partitions as follows:

- Partitions to the front and sides of an enclosed office are to maximise the use of full height glazing.
- The front partition will be fully glazed with no blinds, film or un-authorised signage.
- The side partitions will be partly glazed allowing for a component of the partition to be solid to accommodate building services where necessary.
- Glazing to side partitions should generally be free from blinds, film or un-authorised signage except where an office is adjacent to a meeting, conference or training room. In this instance a plain, translucent film may be applied to the shared partition (between 450mm and 1850mm above the floor) to provide a level of visual privacy but maintain transfer of light.

Doors

- Where possible, doors to enclosed offices should be avoided
- Where there is a requirement for a door, a full height, glazed sliding or hinged door should be used
- Doors are to be free from blinds, film or un-authorised signage

Furniture

Refer *Section 9.12 Office Furniture*

Services

- For enclosed offices provide 4 double GPO and 2 data outlets
- For workstations in open work space areas provide a minimum of 2 double GPOs, a telephone outlet, and 2 data outlets.

Indicative layouts demonstrating fitout components for a standard 11m² enclosed office are provided on the following pages.

JCU Office images



6.12 Rest Rooms

Toilets shall be provided to meet Code requirements and the expected occupancy of the building after consultation with the users.

Shower Facilities

Provide shower facilities in each new building to meet Code requirements and to suit users needs. Minimum requirement is for a combined Unisex PWD shower facility, located at or near ground level.

6.13 Service Space Requirements

Cleaners' Rooms

Provide one 6m² room in each building to be used as a Cleaners' Store. This space is required to store consumables and equipment including mop and broom racks, Adjustable shelving (4 lineal meters) to be provided and shall contain a cleaners' sink with a cold water supply only.

Unless otherwise determined by JCU, other cleaner's rooms each 2m² will be required on each floor to store cleaning equipment only. A cleaner's sink is not required for these rooms. JCU should be consulted during the Design stages to discuss locations and requirements. Doors shall open out.

Bike Storage and ventilated wet-gear Storage

Comply with Qld Development Code (QDC) requirements for End of Trip Facilities. Discuss additional needs for lockable bicycle storage with JCU and for the provision of a secure storage and locker areas for sporting gear.

Facilities Room

A room of 6m² in area must be provided unless otherwise advised by JCU.

Valve Room

A valve room accessible from outside the building shall be provided at Ground Level in which all main services isolation valves, meters, irrigation controls, RPZD etc. shall be located. This valve room may be incorporated into a service duct.

Service and Storage Areas

Adequate provision is to be made for the secure and ventilated storage of gas bottles where required, refer Special Requirements for Laboratories section.

Each building shall be provided with a combined general and recyclable waste collection station at each level. The stations shall be easily accessible to the occupants and preferably be located in a recess to a corridor wall. The number of general and recyclable waste bins at each station shall reflect the volume and type of waste generated by the activities on that level.

Where the provision of industrial waste containers and wheelie bin storage is associated with a project, particular care is to be taken in the design of these areas to ensure unrestricted access for waste collection vehicles while at the same time providing suitable visual screening from the campus generally.

Adequate provision is to be made for the secure and ventilated storage of gas bottles where required.

Plant Rooms

Adequate space for Plant Rooms shall be allocated in the design of the building, and these shall be shown in the Preliminary Design drawings. Plant Rooms shall not be used as air plenums forming part of the air-side system, or as store rooms.

Walls, floor and ceiling of all plant rooms shall be painted unless otherwise directed by JCU.

Plant Rooms shall be sized appropriately and the location of plant, ductwork etc. shall be designed to allow for clear and safe access around plant for maintenance requirements. Plant rooms containing electrical or mechanical services switchboards shall maintain a minimum of 600mm clearance with the doors open in accordance with AS/NZS 3000.

Vending Machines

Give consideration to design of common area external spaces adjoining 24 hour accessible facilities, learning centres, commercial buildings, etc. for installation of vending machines by others. Make allowance for power and data, lighting, water and drainage. Consider issues associated with vending machines such as loitering (near toilets/showers etc.). Vending machines are to be located near the service side entry of a building to assist with future delivery van re-stocking.

Vending machines shall only be located in areas approved by JCU and in all cases must be aesthetically integrated into the space.