

7.5 Building Controls

Built Form and Architectural Character

The 2012 Campus Master Plan neither prescribes nor proscribes aspects of built form directly, except insofar as the location of building plots and building height controls impose constraints. It nevertheless requires new buildings to respond to both the locale and the context of the buildings already in place on the campus. Tropical vernaculars for the scale of building that will typically comprise the buildings on campus rarely occur. However, several buildings already constructed on campus use timber screens as a method of mediating sunlight and rainfall without precluding air movement, a device commonly found in the tropical residential vernacular and other aspects of a natural response to climate could be translated to a larger building scale.

All future building should reflect contemporary design as interpreted by the architect in consultation with the campus governing body and the planning and environmental considerations identified in the 2012 Campus Master Plan. The design of campus buildings shall not only promote the dignity of the facility, but express both the relative equality and distinct character of each academic area. The buildings already constructed on the University of the Sunshine Coast are generally indicative of a 'Sunshine Coast' character of modern Australian architecture, and provide the existing context to which new development should creatively respond.

It is important that the value the University attaches to environmentally sustainable design (ESD) is made evident through architectural expression. Where a choice exists, that aspect of built form that most clearly demonstrates a commitment to ESD should be chosen over another which, while perhaps equally effective, fails to demonstrate its effectiveness. It is equally important that this requirement is not taken to mean contrived, gratuitous or decorative elements should be introduced in order to advertise ESD. The built form should naturally express its methods and not require an overlay of additional detail to achieve this.

Materials and Colours

Through requiring a consistent attitude to high quality contextual design, the 2012 Campus Master Plan does not require imposing limitations on materials on materials and colours available for campus building design. The existing campus displays a varied palette of colours and materials; however in each case the design approach of the commission has considered the campus context, and 'Sunshine Coast' architectural characteristics.

As a general principle, finishes should be modest in character, while the use of colour and simple articulation of planar surfaces is encouraged, and decorative approaches are discouraged. The intent of this approach is to support more generous spaces and openness in planning and natural lighting, issues which often require substantial proportions of limited building budgets. Notwithstanding the need for a sensitive climatic design using lightweight exterior systems and a shaded interior building mass, areas and surfaces subject to high use pedestrian contact should be of robust character.

Additional criteria for consideration when specifying materials are the ESD principles discussed in section 7.3, the need for minimising PVCs, selection of zero ozone depleting potential insulates and refrigerant choices (e.g.: for air conditioning plant), use of recycled or Forest Stewardship Council certified timber, or timber sourced from sustainably managed plantations, selection of products with the Good Environmental Choice Label, or certified by the Australian Environmental Labelling Association, specifying recycled steel or concrete aggregate, or concrete with fly-ash cement replacement and encouraging the use of materials which minimise site intervention and wastage if they are pre-formed, pre-cast or modular. Finally, the recyclability of materials at the end of their life should be a factor when considering their specification. For example plasterboard, concrete and aluminium may be recycled, when removed from the building in the future.

Low off-gassing materials which do not contribute to the contamination of the indoor environment should also be favoured, for example low volatile organic compound (VOC) paints, adhesives and finishes, and low formaldehyde composite wood products.

Indoor Environmental Quality

The ideal interior environment is not a replica of that which might be found inside a museum showcase: static temperature, static humidity, and controlled light levels. Rather, it is that environment which results from the building fabric and technology mediating the exterior environment to provide acceptable interior conditions for the activities that occur within the building. As a consequence, the conditions of the interior environment will vary over time, while still meeting the 2012 Campus Master Plan's ESD principles (refer section 7.3). For example, natural light may be replaced with artificial light at dusk without there being at any time insufficient light for the activities within the building.

This approach is not always popular with building occupants used to conventional air-conditioned office environments, and it is important that compliance with comfort standards is made evident. This does not mean that the building fabric itself makes such a demonstration; but rather that occupants are made aware that the space has been designed to deliver a thermally comfortable environment.

Air Quality

Selecting paints, finishes and adhesives with low levels of indoor pollutants, especially volatile organic compounds (VOCs), and using low formaldehyde composite wood can contribute to an improvement of indoor air quality.

100% fresh air is offered with natural ventilation, but not typically offered with air conditioned solutions where exhaust air is mixed back into the occupied space. Air conditioning solutions which do not recirculate conditioned air should be encouraged. Natural ventilation solutions typically introduce high quantities of fresh air which well exceed Australian Standards.

Humidity control is also important, especially in more humid sub-tropical climates for mould prevention and comfort.

Natural Light

Daylight is desirable in almost any learning or working environment. It provides a direct benefit to the users of the building by connecting the occupant with outside, improving the general light quality, the perception of colour and allowing the body's natural circadian rhythms to function. Some countries are recognising the importance of these benefits through natural light requirements in occupational health and safety (OH&S) legislation. Natural light is a key factor in improving occupant productivity and concentration, both of which are important considerations for an education facility.

Artificial Lighting

Lighting specifications should consider the visual comfort of staff and students by selecting lighting solutions which encourage high frequency or electronic ballasts which avoid low frequency flicker and provide good colour rendering indexes.

Views

Views are important for allowing both long-distance vision and a visual connection with the outdoors for building occupants. Retaining visual connection to the outdoors is being increasingly acknowledged as an important factor in

enabling people to retain a sense of the time of day and seasonal change when indoors. The colour rendering properties of glazing should be considered for their impact on views during glass selection.

Glare Control

Direct sun in the working plane can cause discomfort to staff and students by causing glare. To mitigate this problem, adequate external shading should be included as part of the architectural designs. The installation of internal blinds or screens will also assist in glare reduction.

Thermal Comfort

The provision of comfort to occupants is a balance between the convective, evaporative and predominantly radiant effects of the indoor environment. Appropriate choices of materials and levels of insulation should be made to control radiant heat through the construction of the building envelope. Air conditioning is required for comfort, though systems enabling building occupants to control the operability of the air conditioning systems are encouraged to prevent air conditioning occurring when doors or windows are have been opened. These systems can enable a modulation of the strategies for achieving thermal comfort, responsive to seasonal temperature and humidity variations. This approach to controlling thermal comfort in buildings has already been introduced in some places on campus, and should be implemented elsewhere on campus.

Noise Control

The control of noise in a learning environment is crucial to the productivity of staff and students. Acoustically engineered solutions are recommended for university spaces which are located adjacent to public areas and are at risk of experiencing noise annoyance. Noise control is particularly important for naturally ventilated buildings.

Occupant Control

Offering staff and students control of their own environment improves occupant satisfaction considerably. Internal blinds, air conditioning vents with manually operated open and closed positions and lighting controls such as one light switch per office are all aspects of the indoor environment which can be designed with occupant control in mind.

Internal Layout

University academic buildings can readily defeat ESD objectives; for example, a typical, closed academic's office can easily make it impossible for natural ventilation to be effective. It is therefore essential that the principles contained in the 2012 Campus Master Plan are incorporated into specific building briefs, and not added as a set of subsequent and subsidiary design principles.

The internal layout of university spaces should be designed to maximise interaction between staff and students. Internal layout opportunities which encourage more staff interaction include inter-floor staircases and open plan offices. Access to windows and views should be equally distributed by locating public areas adjacent to windows and partitioned spaces away from windows. Cross ventilation (for those buildings which are naturally ventilated) should be maximised by not obstructing louvres or other aperture types.

While it may seem that occupation health and safety risk criteria are not inherently quantifiable, in practice it will be sufficient to demonstrate, by comparison with buildings already constructed on campus and with buildings constructed on other University campuses, how these principles have been satisfied.

Verandas, Covered Walkways and Shade

The nature of the climate and the aspirations of the University dictate that, to the maximum degree possible, circulation between buildings should be by means of a system of verandas and covered walkways. Interruptions to this system, other than for the requirements of service vehicle access routes, should be avoided. While verandas and covered walkways will provide necessary building shade and protect people from the sun, the primary purpose is to protect people from rain without forcing them to use interior circulation systems.

It is essential that all frontages to the open campus green are formed from verandas at ground level, in order that the circulation systems already established on campus are not interrupted. A similar requirement exists for buildings fronting the lake. It is desirable that buildings in other locations recognise these requirements and make similar contributions to the campus circulation strategies.

Refer Diagram 7.5.1

Green Walls

The 2012 Campus Master Plan endorses the use of natural vegetation as a screen or vertical surface grown against buildings in order to reduce their heat load through minimising the direct sun exposure of their external surfaces. This strategy could involve the provision of a variety of support structures, such as wires or trellises to assist with the growth of vines or other appropriate climbing plants.

Provision for Works of Art in Buildings

It is the intention of the 2012 Campus Master Plan to support and extend the inclusion of works of art and craft within the University environment. This includes the requirement to identify locations for works of art or craft within each building during the design process for review and collaboration with the University Art Committee.

Art and craft works may be acquired from direct commissions, purchases, or the result of on-campus visiting artists. Gifts may also be accepted, depending on the appropriateness, merit, and accomplishment of the work, and as determined by the University.

Notwithstanding other University requirements, it is the policy of the 2012 Campus Master Plan that each building should provide within its envelope hanging space for at least one significant work of art, and hanging space for less significant works in public thoroughfares.





Diagram | 7.5.1

Verandas, Covered Walkways and Shade