

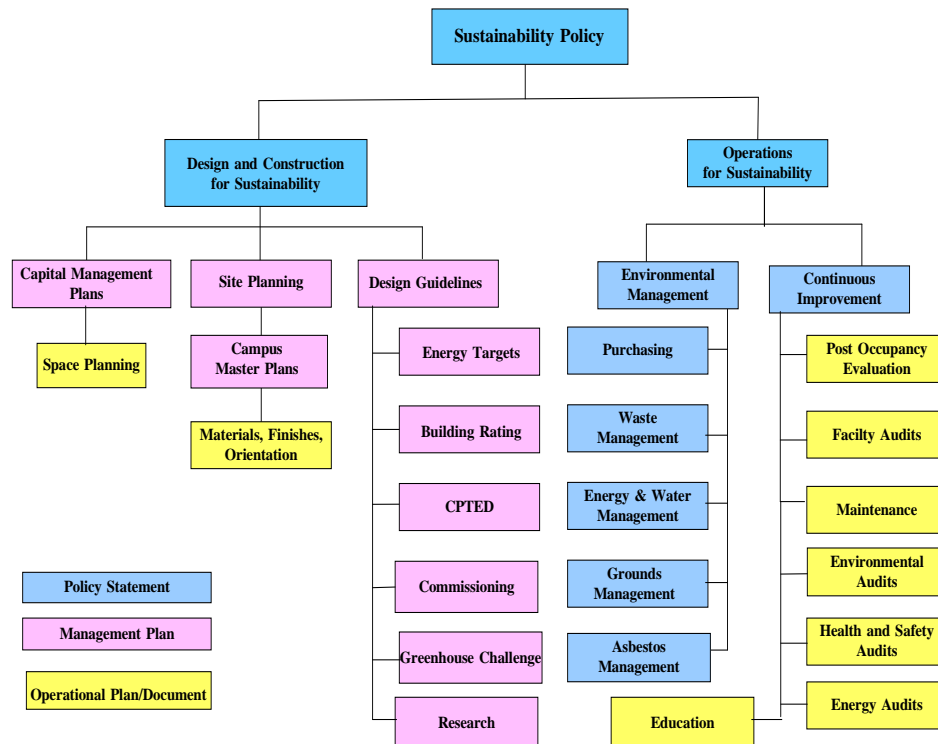
3.00 Designing for Sustainability

3.01 General

CLF is committed to sustainable development through many of its practices and policies, both written and un-written.

Sustainable development has been defined as '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*'. (from 'Our Common Future', Report to the World Commission on Environment & Development – 1987)

The range of application of a well-developed sustainability policy is shown in the following diagram.



3.02 Sustainability Principles

CLF applies the principles of sustainable design, construction and management as far as is practicable within its resources to the full range of its activities.

Design and Construction - GU adopts the Capital Management Plans developed by CLF, which are based on rational space planning which seeks to minimise the construction of new facilities to those which are absolutely necessary for the University's expansion and development. Wherever possible existing buildings are recycled and modified for new purposes rather than being demolished and reconstructed.

The Space Planning and Management Model is a computerized system, based on standard space allocations for similar functions. It is a bottom-up system of space planning which minimises the creation of space for unplanned activities.

Design Guidelines - These Design Guidelines & Procedures have been developed to establish a range of measures, both passive and active, which impact on the design and operation of GU facilities to achieve energy efficiency, water use minimisation, and the creation of buildings which

provide a pleasant, comfortable and functional environment for students and staff in which to learn, teach or work. These measures include:

- orientation, fenestration and sunshading requirements to minimise the impact of climate
- balancing excessive solar heat gain and collecting natural lighting into the building.
- insulation to roofs and walls
- use of central energy plants to minimise energy usage for air conditioning
- use of central control and monitoring systems to optimize building operations for minimum wastage
- specification of energy-efficient building services
- water conservation requirements for toilets, showers and irrigation systems
- selection of materials which have low or no VOC emissions and which can be recycled
- the adoption of 'Crime Prevention through Environmental Design' (CPTED) as a method of using good design and low technology to provide good security
- the specification of indigenous species for replanting of vegetation on sites so as to minimise the need for excessive artificial irrigation following establishment of the plants
- requirements for environmental site management which regulates waste management, erosion control, pollution control on construction sites.

Site Planning - GU engages in periodic site planning reviews in order to minimise waste through unforeseen and unplanned development. As part of the site planning process, particular attention is given to environmental issues with the intent of minimising the impact of ongoing development on the natural environment. Master Plans have been developed for each campus and are used to guide development over time. These Master Plans are reviewed whenever there is a perceived major change in conditions, both internal and external, affecting the University.

The results of these reviews are demonstrated by the following:

- compact development of the Nathan, Mt Gravatt and Gold Coast campuses maximises the retention of the forest environment and at the same time reduces the impact and cost of reticulating site services such as electricity, water, sewerage and communications systems
- development of the South Bank campus recycles previous development sites thereby reducing the impact on the environment through greenfield development
- development of the Logan campus recycles a previously cleared site while at the same time reintroduces vegetation to areas cleared for farming. The development has also identified some small areas of remanent vegetation which is worthy of protection
- site planning for the Southern Precinct of the Gold Coast campus includes a commitment to environmentally sustainable development and acknowledgement of Native Title issues.

Energy Management - GU's Energy Management Policy actively seeks to eliminate waste and to improve the efficiency of energy use, so that University funds may be directed to the primary function of teaching and research consistent with the development of the University.

The methods which will be adopted to achieve these objectives will be determined within the financial limitations of the University and with regard to the likely savings to be achieved.

Water Management – GU seeks design principles and initiatives in its buildings which embrace current technology and practices to minimise or avoid the use of water. Such principles include;

- the installation of tanks to harvest rainwater for reuse in the building
- water efficient sanitary fixtures and tapware
- waterless urinals
- eliminate the need for landscape irrigation systems through careful plant selection

Waste Reduction - GU requires that the amount of construction waste going to landfill is minimised, and resources are conserved through avoidance, reuse and recycling.

These principles are to be incorporated into the design of its buildings through careful material selection and dimensioning to utilise standard material sizes in building fabric and fittings.

Material Selection - GU is continually evaluating material alternatives to optimise their total life cycle performance. This includes material property alternatives complying with the following;

- a high recycled content
- locally/regionally produced
- made from rapidly renewable agricultural byproducts (as opposed to petroleum based products)
- ability to be reused, recycled, or that are biodegradable
- maximum durability based on anticipated life of interior construction, equipment, finishes and furnishings.

3.03 Energy Simulation (*mandatory requirement*)

Computerised building energy simulations shall be conducted by the Consultants on any building having a designed total gross floor area of 1,000m² or more. The requirements of Section J of the BCA shall be the minimum benchmark for energy efficiency.

The simulation shall dynamically model the building envelope thermal effects, and the operation of major energy consuming equipment such as HVAC, lighting etc.

Results of the simulation shall provide information about the performance, capital and running cost implications as well as energy use profiles of at least two design options. The simulation shall be provided to CLF at the early design planning stage with a view to selecting the preferred option before finalisation of the developed sketch plans and cost estimates.

The design team shall liaise with the CLF mechanical and electrical engineers regarding further reviews that may be required to confirm that the design of the building and services has achieved the energy consumption projections of the simulation.

3.04 Central Control & Monitoring System

GU's buildings are controlled and managed through a Central Control & Monitoring System (CCMS) on each campus. All available functions of the CCMS are to be programmed into the various systems such as temperature reset, special days, load shed and optimum start/stop.

Specific control and monitoring requirements are outlined in the following Sections of this document;

- **Section 17** Hydraulic Services
- **Section 18** Mechanical Services
- **Section 19** Fire Services
- **Section 20** Electrical Services
- **Section 23** Lifts

3.05 Sustainable Design Compliance Matrix

All Head Consultants or Contractors are required to submit a completed 'Sustainable Design Compliance Matrix' as part of their Developed Design proposal or Total Project Sum Submission for new buildings or major refurbishment projects.

The object of the Matrix is to demonstrate that designers have considered all the sustainability issues that impact on the project, and to nominate if their design addresses those issues or provide the reasons why they have not been adopted.

A copy of the Matrix is contained in **Section 32.00 Standard Forms**.