

# Australasian Health Facility Guidelines

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Part E - Building Services and Environmental  
Design  
0006 - Mechanical

Uncontrolled when printed

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#### **Australasian Health Facility Guidelines**

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## 06 MECHANICAL

### 06.01 Scope

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Mechanical services that should be considered in the Design Brief include:

- air cooling and heating services;
- building automation control systems;
- compressed air systems;
- energy management systems;
- fume and dust extraction systems;
- heat recovery systems;
- pneumatic transport systems;
- refrigeration (cool and freezer rooms);
- smoke control systems;
- steam systems;
- ventilation services;
- sterilizer equipment; and
- water treatment and microbial control systems.

### 06.02 General

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Each planning unit and special functional area within Health Care Facilities is covered by regulation, policy, or industry standards.

Early consideration should be given to provision for the following:

- car park ventilation and exhaust;
- contaminated exhaust air
- clean air systems (e.g. operating theatres);
- duplex systems for critical areas;
- emergency power for critical area HVAC;
- infection control;
- kitchen exhaust;
- smoke control [refer to Fire Services];
- ventilation systems; and
- cytotoxic room ventilation.

The following functional criteria should be considered:

- energy efficiency and conservation;
- flexibility;
- passive security measures; and

- reliability.

In addition to heating, cooling and ventilation, occupant comfort factors should include acoustic control.

### 06.03 Design

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Climatic conditions are a known variable; however building position and orientation require careful consideration. The concept of energy/ performance modelling should be considered

The principal building design elements that influence HVAC systems comprise:

- active or passive solutions;
- building occupancies and loadings;
- external walls and roof;
- HVAC zone layout; and
- orientation.

The external envelope is the element most subject to variation throughout the design process. A variety of functions are served by the external wall design, these include; day lighting, view, external noise control, privacy control, thermal insulation and solar shading. Late changes to reduce costs e.g. the removal of external sun shading can have a major effect on the HVAC design.

Mechanical engineering systems occupy a significant proportion of the floor area allowance for services, and often suffer from inadequate space provision and inappropriate location. Adequate sizing of services risers and attention to the coordination of services risers with circulation routes will enable flexibility in planning options especially in later stages.

Inadequate height allowance in ceiling voids cannot be rectified easily in the later design stages without affecting cost. For this reason an accurate assessment of the structural system in the early stages is essential, including factors such as post disaster classification.

Other Services factors to consider are:

- central plant, including;
- chilled water supply;
- plant capacity;
- upgrade and replacement of existing equipment.existing services;
- provision of adequate space and facilities (incl. services, hoists etc.) for maintenance;
- plant access/egress (avoiding treatment areas; and
- underground services.