

Part B – Health Facility Briefing & Design
85 Engineering & Maintenance Unit



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International Health Facility Guidelines
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85 Engineering & Maintenance Unit

1 Executive Summary

The hospital to have in house Engineering & Maintenance unit staffed for general maintenance, preventative maintenance, and problem solving for all needs relating to hospital buildings, plant and equipment. The maintenance team has vast organisational knowledge with regards to buildings, plant and equipment and their proactive approach to maintenance substantially contributes to the longevity of the facility, its structures, plant and equipment.

The department works closely with all managers and staff within the health service to ensure the maintenance of hospital buildings, plant and equipment is safe, efficient, remains fully operational and fit for the use intended.

The Maintenance staff are also available after hours to support the ongoing operation of the Health Service should the need arise.

The Functional Relationship Diagram indicates the ideal external relationships with other hospital services. This includes relationships with Hospital Units and Loading Dock.

Design Considerations address a range of important issues including finishes, wall protection and building service requirements. The Schedule of Accommodation is provided using references to Standard Components (typical room templates) and quantities for typical units at Role Delineation Levels (RDL) 3 to 6. The actual number will depend on each facility's service plan.

Refer to the further reading materials at the end of this FPU for supporting documentation.

2 Introduction

All facilities, no matter how large or small will require environmental support services in the form of:

- Maintenance services
- Engineering services
- Cleaning services - external areas, windows & building fabric (refer to Housekeeping Unit for Cleaning of internal areas)
- Waste disposal (refer to Waste Management Unit for specific details)
- Gardening services
- Storage

A Maintenance Service shall be provided. It may be in-house or contracted with an on-call repair service. The complexity of the services provided by the facility will dictate the nature and extent of the Maintenance Service required. The Maintenance Service is provided to effect preventative maintenance and repairs to all elements of the facility from the building fabric to items of specialist equipment.

Areas that require a 24 hour per day 7 day per week 'on-call' maintenance service are:

- Medical gases and suction systems
- Lifts
- Fire systems
- Biomedical equipment
- Any life-support systems
- Emergency power systems
- Boiler plant
- Telecommunications systems including public address, fire warning alarm systems, Nurse/Emergency Call, Duress call systems
- HVAC and BMS systems

The potential life-threatening nature of the failure of any of the above systems justifies a 24 hour service.

3 Functional and Planning Considerations

Operational Models

- Maintenance staff and facilities within the healthcare facility
- Maintenance staff and service outsourced but works within the facility
- Maintenance staff and service outsourced and work outside the facility

The Engineering and Maintenance Unit may consist of the following Functional Areas dependent on the Operational Policy and service demand:

- Workshop areas which may include separate areas for carpentry, mechanical, plumbing and electrical services
- Storage areas for all specialty services/ trades including paint, gardening and flammable liquids
- Office area for administrative and clerical activities
- Staff amenities which may be shared

Workshop Areas

Maintenance Workshop

A general maintenance Workshop shall be provided for repair and maintenance (for both electrical and mechanical service requests). If maintenance is outsourced, a minimum provision for maintenance workshops shall be provided within the facility. Sufficient space is required for a

workbench, drill press, angle grinder, stainless steel trough, tool peg board, storage cabinets. Floor space is also required for the standing of equipment during repairs. Adequate lighting, power and ventilation are required. Note: If Maintenance Services are externally contracted then only a minimal space for a generic workshop and stock area will be required. Maintenance workshops incorporating carpentry, metal fabrication, plumbing, refrigeration or other noise generating trades shall be acoustically isolated from non-maintenance areas.

Biomedical Workshop

A separate workshop may be provided specifically for the storage, repair and testing of electronic and other medical equipment. The amount of space and type of utilities will vary with the type of equipment involved and types of service and maintenance contracts used.

Storage Areas

Store

A storage room shall be provided for the storage of building maintenance supplies. Storage for solvents and flammable liquids shall comply with relevant statutory requirements.

A storage area for Plans and Drawings Storage may also be considered.

Gardener's Facilities

A room or shed shall be provided for the storage of all the necessary gardening equipment and material to comply with the relevant statutory requirements if certain substances such as fertilisers and chemicals are stored.

Staff Areas

Offices

Offices are required for full time management staff including:

- Engineer/ Head of Department with file space and provision for protected storage of facility drawings, records and manuals
- Head Gardener depending on the size of the facility

Meeting Room

- Meeting room for group discussion, training etc. may be provided

Staff Facilities

Staff Facilities will include:

- Hand washing facilities located close to all workshop area
- Toilet, Shower and lockers that may be shared with the main hospital
- Staff Room that may be shared with the main

Functional Relationships

The Engineering & Maintenance Unit should be located on the ground floor to facilitate delivery and dispatch of heavy items of equipment. Access to a loading dock is desirable. The Unit will require ready access to all areas of the hospital and in particular, to plant rooms and areas.

Depending on the size of the Unit and Operational Policy, considerable noise and fumes may be generated by the Unit and care should be taken in locating the Unit relative to other units such as Inpatient Accommodation Units.

- The Room Layout Sheets (RLS's) are indicative plan layouts and elevations illustrating an example of good design. The RLS indicated are deemed to satisfy these Guidelines. Alternative layouts and innovative planning shall be deemed to comply with these Guidelines provided that the following criteria are met:
- Compliance with the text of these Guidelines
- Minimum floor areas as shown in the schedule of accommodation
- Clearances and accessibility around various objects shown or implied
- Inclusion of all mandatory items identified in the RDS

The Engineering & Maintenance Unit contains Standard Components to comply with details in the Standard Components described in these Guidelines. Refer to Standard Components Room Data Sheets and Room Layout Sheets.

5 Schedule of Accommodation

The Schedule of Accommodation (SOA) provided below represents generic requirements for this unit. It identifies the rooms required along with the room quantities and the recommended room areas. The simple sum of the room areas is shown as the Sub Total. The Total area is the Sub Total plus the circulation percentage. The circulation percentage represents the minimum recommended target area for internal corridors in an efficient and appropriate design.

Within the SOA, room sizes are indicated for typical units and are organized into functional zones. Not all rooms identified are mandatory therefore, optional rooms are indicated in the Remarks. These guidelines do not dictate the size of the facilities, therefore, the SOA provided represents a limited sample based on assumed unit sizes. The actual size of the facilities is determined by Service Planning or Feasibility Studies. Quantities of rooms need to be proportionally adjusted to suit the desired unit size and service needs.

The table below shows a SOA for role delineation RDL 3 to 6.

Any proposed deviations from the mandatory requirements, justified by innovative and alternative operational models may be proposed within the departure forms included in Part A of these guidelines for consideration by the health authority for approval.

Engineering and Maintenance Unit

Room/ Space	Standard Component Room Codes	RDL 3 Qty x m²			RDL 4 Qty x m²			RDL 5/6 Qty x m²			Remarks
Workshop/ Storage Areas											
Store - Plans/ File	stgn-10-i stgn-12-i stgn-14-i	1	x	10	1	x	12	1	x	14	Optional. With suitable drawers, cabinets In a flammable cabinet
Store - Flammable Liquid	stfl-i	1	x	9	1	x	9	2	x	9	
Workshop - Biomedical	ws-bm-i similar	1	x	20	1	x	20	1	x	30	
Calibration/ Testing Shop	cal-test-30-i similar	1	x	20	1	x	20	1		30	Optional
Workshop/ Store - Gardener	wss-gar-i similar	1	x	12	1	x	12	1	x	20	Optional
Workshop/ Store - Painters	wss-pt-i similar				1	x	10	1	x	15	Optional. Store flammable liquids in appropriate cabinets
Workshop - Carpentry	wk-ca-i	1	x	20	1	x	30	1	x	50	Optional. Including storage
Workshop – Mechanical/ Plumbing	wk-mc-i similar wk-pl-i similar	1	x	20	1	x	30	1	x	40	Optional. Including storage
Workshop - HVAC	wk-fp-i similar	1	x	20	1	x	30	1	x	40	Optional. Including storage
Workshop - Electronics	elab-i	1	x	10	1	x	15	1	x	20	Optional
Store – Medical Gas	stfl-i similar	1	x	15	1	x	15	1	x	15	
Welding Booth	wlb-i	1	x	10	1	x	10	1	x	10	Optional
Store - Engineering	stgn-20-i similar	1	x	15	1	x	15	1	x	15	Spare Parts
Store - Central Stock	stgn-20-i similar	1	x	20	1	x	30	1	x	50	Optional
BMS room	off-s9-i similar	1	x	25	1	x	25	1	x	25	
Office Areas											
Office - Single Person	off-s9-i off-s12-i	1	x	9	1	x	12	1	x	12	Director of Engineering
Office - Single Person	off-s9-i off-s12-i				2	x	12	4	x	12	Optional, For engineers; qty according to Operation Policy
Office- 2 person Shared	off-2p-i				1	x	12	2	x	12	Optional, For engineers; qty according to Operation Policy
Office - Workstations	off-ws-i	1	x	5.5	2	x	5.5	4	x	5.5	For staff: qty according to Operation Policy
Stores - Files	stfs-8-i stfs-10-i	1	x	8	1	x	8	1	x	10	
Meeting Room - Medium/ Large	meet-9-i meet-l-15-i	1	x	9	1	x	15	1	x	15	Optional
Reception/ Clerical	recl-10-i	1	x	10	1	x	10	1	x	10	
Waiting	wait-10-i	1	x	10	1	x	10	1	x	10	
Shared Areas											
Bay - Cleaning	bcl-1.5-i	1	x	1.5	1	x	1.5	1	x	1.5	
Staff Lounge	srm-15-i	2	x	15	2	x	15	2	x	15	Separate Male/Female
Toilet – Staff (Male / Female)	wcst-i	2	x	3	2	x	3	4	x	3	Separate Male/Female
Staff Amenities	NS										See Public & Staff Amenities Unit
Sub Total		164			172.5			210.5			
Circulation %		15			15			15			
Area Total		189			198			242			

Please note the following:

- Areas noted in Schedules of Accommodation take precedence over all other areas noted in the Standard Components.

- Rooms indicated in the schedule reflect the typical arrangement according to the sample bed numbers.
- All the areas shown in the SOA follow the No-Gap system described elsewhere in these Guidelines.
- Exact requirements for room quantities and sizes shall reflect Key Planning Units (KPU) identified in the Clinical Service Plan and the Operational Policies of the Unit.
- Room sizes indicated should be viewed as a minimum requirement; variations are acceptable to reflect the needs of individual Unit.
- Offices are to be provided according to the number of approved full-time positions within the Unit.

6 Further Reading

In addition to Sections referenced in this FPU, i.e. Part C- Access, Mobility, OH&S, Part D - Infection Control, and Part E - Engineering Services, readers may find the following helpful:

- Australasian Health Facility Guidelines, Part B Health Facility Briefing and Planning, Rev 6, 2016; refer to website <https://healthfacilityguidelines.com.au/part/part-b-health-facility-briefing-and-planning-0>
- Guidelines for Design and Construction of Health Care Facilities; The Facility Guidelines Institute, 2010 Edition; refer to website www.fgiguideines.org