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GOVERNMENT OF DUBAI

هيئة الصحة بدبي
DUBAI HEALTH AUTHORITY

DHA Health Facility Guidelines 2019

Part B – Health Facility Briefing & Design

430 – Waste Management Unit

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Executive Summary

Waste Management Unit is a designated area of a healthcare facility which is staffed by a multi-disciplinary team whose roles include collection, transport, processing, disposal, managing and monitoring of waste materials generated from the facility. Hospital waste can be divided into five broad categories including infectious and pathological waste, sharp waste, pharmaceutical waste, radioactive waste and general waste.

The Waste Management Unit should be located on ground level away from publicly accessible areas and areas involved in food preparation and storage. The location should be adjacent to the 'Dirty' Loading Dock for easy access by waste collection trucks. The Unit should be fitted with security fittings such as door locks, keypad/card access, CCTV and motion

sensor in accordance to its operational policy and not accessible to the public.

The functional zones of the Unit will include general waste storage, recyclable waste storage and separated areas for clinical waste storage and soiled linen holding. Refrigerated storage is also common for keeping waste that may generate offensive odour if kept in standard ventilated rooms. Where radioactive substances are used within the facilities, radioactive waste storage must be provided.

The Schedules of Accommodation are provided using references to Standard Components (typical room templates) and quantities for typical units at all Role Delineation Levels (RDL) 1 to 6. Users should follow the principles established in these guidelines if they wish to create units of different sizes and configurations.

Further reading material is suggested at the end of this FPU but none are mandatory.

Users who wish to propose minor deviations from these guidelines should use the **Non-Compliance Report** (**Appendix 4 in Part A**) to briefly describe and record their reasoning based on models of care and unique circumstances. The details of this FPU follow overleaf.

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430. Waste Management Unit

1 Introduction

Waste Management Unit is a designated area of a healthcare facility which is staffed by a multi-disciplinary team whose roles include collection, transport, processing, disposal, managing and monitoring of waste materials generated from the facility. Hospital waste can be divided into six broad categories:

- General Waste
- Infectious and Pathological/ Medical Waste
- Sharp Waste
- Pharmaceutical Waste
- Radioactive Waste
- Cytotoxic Waste (dedicated bins; may be in the same room as clinical waste bins)

The Waste Management Unit should have the following features:

- Easily accessible from all functional areas
- Accessible from within the unit and externally
- Fitted with security fittings such as door locks, keypad/card access, CCTV and motion sensor depending on operational policy
- Located away from food and clean storage areas
- Not accessible to the public

2 Functional & Planning Considerations

2.1 Operational Models

The Waste Management Unit will generally operate during the day with limited entry provisions after hours.

3 Unit Planning Models

The configuration of the Waste Management Unit will be dependent on:

- Types of waste to be stored and disposed
- Frequency of waste collection
- Processing of waste to be undertaken at the healthcare facility if any

The Waste Management Unit should be located on ground level away from publicly accessible areas and areas involved in food preparation and storage. The location should be adjacent to the 'Dirty' Loading Dock for easy access by waste collection trucks.

3.1 Functional Zones

The Waste Management Unit will include the following Functional Areas:

- Enclosed dust free workstation with a workbench, telephone and computer outlet to undertake recording and reporting functions; it should have visual control of the waste handling facility
- General wet/ food waste holding area
- Loading Dock and area with provision for front or rear load bins
- Clinical waste holding and cool room
- Paper and recyclable materials collection
- Clean bin storage area; a variety of bins need to be stored pending distribution to the hospital

units

- Designated adequately drained bin & equipment washing area

The following Functional Areas are optional requirements:

- An area for bin receiving with room for pull tug and cart trolley access and bin sorting
- A waste weighing and recording station, which includes a floor level digital weighbridge and bar code recorder. This area will be required if waste handling policy includes weighing and tracking.
- An upright freezer may be required to store tissue pending dispatch for incineration.
- A radioactive waste storage

Note: Waste collectors of various specialties are typically license by Dubai Municipality.

3.1.1 Clinical Waste Storage

Clinical waste includes human or animal tissue, blood and body fluids, pharmaceutical products, syringes, needles, dressings or any other waste which can be hazardous or may cause infection to any person who comes in contact with it. The three groups of clinical waste include:

- healthcare wastes which pose as a risk of infection (including human tissue, sharps, items in contact with body fluids, etc.)
- healthcare wastes which pose as a chemical hazard (including formaldehyde, gluteraldehyde, mercury, etc. which disposal is governed by local OH&S regulations)
- pharmaceuticals and medicinally-contaminated wastes which contain pharmaceutically-active agent (including expired drugs, partially administered medications, vaccines and discarded items used in the handling of pharmaceuticals)

Sharps are healthcare waste that could cause cuts and punctures wounds including needles, needle part of a syringe, scalpel, broken glass ampoules and the patient end of infusion sets. This waste must be segregated from 'soft' clinical waste and stored in robust colour coded receptacles which are clearly identifies the presence of sharps prior to being disposed by the authorised waste management contractor.

The Clinical Waste Storage is reserved for healthcare clinical waste only. The storage space should be:

- well-lit and ventilated
- adjacent to 'Dirty' Loading Dock
- located away from food preparation and general storage areas
- located away from routes used by the public
- totally enclosed and secure
- a temperature and humidity-controlled area
- provided with separate storage areas for sharps receptacles, anatomical and pharmaceutical waste
- sited on a well-drained, impervious surface
- readily accessible by authorised staff
- kept locked when not in use
- secure from entry by animals and free from insect or rodent infestations
- provided with staff washing facilities
- clearly marked with warning signs
- appropriately drained to a sewer (if approved by local regulations)

3.1.2 Soiled Linen Holding

Bagged soiled linen in trolleys should be temporarily stored prior to collection by external linen supplier if the Linen Service is outsourced. The room should have a staff handwashing basin and the door should be lockable.

3.1.3 Bins and Equipment Washing Bay

A specific area, with adequate drainage, for washing bins and equipment should be located between the dirty and clean storage areas.

3.1.4 Refrigerated Storage

Waste in storage must not create offensive odour to pose as a nuisance to staff and visitors of the facility. Upright freezers may also be used in place of walk-in cool rooms, depending on the provisions determined by the operational policy. To prevent odours forming in hot weather, clinical waste should be stored in refrigerated storage prior to collection. Refrigerated storage should be fitted with a device to open the door from the inside and duress alarm to alert staff as a precaution against people from being trapped.

3.1.5 Radioactive Waste Storage

Radioactive waste should be handled in a safe manner to ensure that all staff have minimal exposure to radiation. A Radiation Safety Officer will be responsible for the safe handling, storage and transport of radioactive waste. Radioactive waste must be stored in leak proof containers in a specifically identified area for the storage of radioactive waste separate from clinical and general waste storage.

The handling, storage and disposal of radioactive materials must comply with requirements of the Federal Authority for Nuclear Regulation (FANR) and other relevant local regulations.

3.1.6 General Waste Storage

Waste that are assessed and/or classified as inert or solid waste should be stored in a room separate from clinical waste for collection by outside contractors to be sorted, processed and recycled elsewhere.

3.1.7 Recyclable Waste

Recyclables such as cardboard, paper, plastic or glass which are composed of materials or components, capable of being remanufactured or reused. Items are considered recyclable if facilities are available to collect and reprocess them. The Leadership in Energy and Environmental Design (LEED) equivalent code applies to the handling of recyclable waste in Dubai.

3.1.8 Liquid Waste Storage/ Discharge

Liquid waste that is unsuitable for discharge into a sewer or waterways such as those from decontamination showers and laboratory wastes must be contained to prevent leakage and stored in a bunded area. Liquid waste may be legally discharged into a sewer or waterways only in accordance with local sewerage authority requirements. Also refer to Part E – Engineering Guidelines for further specifications.

4 Functional Relationships

4.1 External Relationships

The waste handling area will be frequently serviced by site and contractor's vehicles removing waste in carts and front- loading bulk bins. It is important that adequate traffic access is provided for delivery and removal of all wastes. The access roads need to be adequate and turning areas uncongested. Noise levels may be significant during waste collection periods.

Bulk waste bin movement around the site and during the disposal process may require that the bins are accessed from a raised dock. A variable level platform may be considered as an option.

Servicing of waste and linen storage areas should be undertaken via thoroughfares that avoid regular public, patients and staff facilities. Particular attention should be made to avoiding food handling and high-profile public areas. A service lift devoted to materials movement within the hospital is highly recommended.

4.2 Internal Relationships

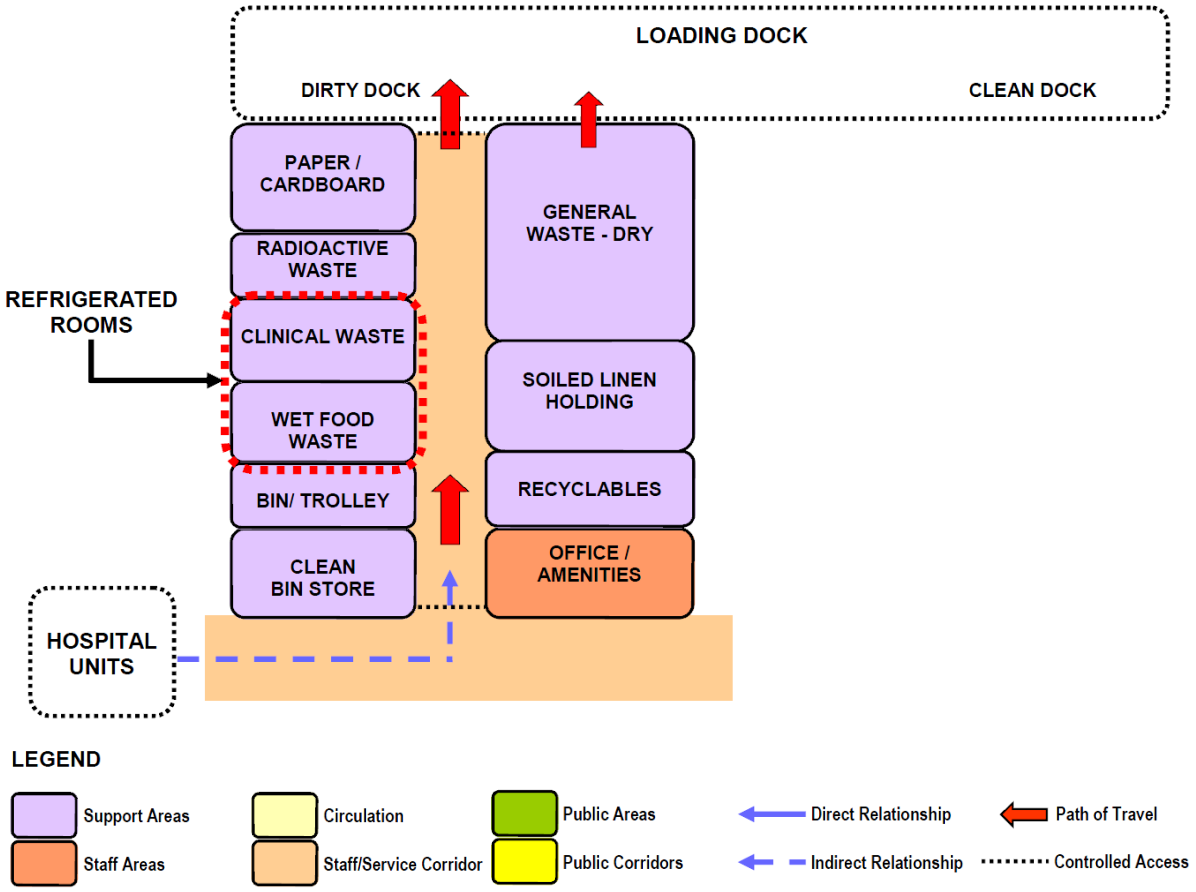
Contaminated waste bins should be located in strategic collection points for all clinical areas in all FPUs. Collection points such as Disposal Rooms or Dirty Linen Holding in each FPU need to be easily accessible to the staff responsible for disposing of wastes, as well as to those servicing the facility in removing and replacing the bins.

Separate robust, colour-coded bins will be required for the disposal of sharps, pathological/ medical waste, cytotoxic and radioactive materials. These bins are to be stored in separate designated areas within the Waste Management Unit prior to collection and disposal.

A Dirty Corridor should be provided for transport of waste which should not be used for transport of clean materials such as food items and general supplies for the facilities.

The Waste Management administration area should be located where visual control of the loading dock can be achieved.

4.3 Functional Relationship Diagram



5 Design Considerations

5.1 Environmental Considerations

5.1.1 Acoustics

Acoustic performance and sound levels shall be designed to contain the noise from waste management equipment such as waste compactors and bin/equipment washers to an acceptable level so as not to affect the functioning of adjacent departments.

5.2 Ergonomics/ OH&S

The Waste Management Unit should be designed with consideration to ergonomics to ensure an optimal environment. Turning circles for large waste bins and wider corridors are to be considered

to allow for two-way traffic. Manual handling may not be eliminated in the Unit; however, a well-designed and equipped work area will eliminate injuries resulting from manual handling.

Refer also to **Part C - Access, Mobility, OH&S** of these Guidelines.

5.3 Safety and Security

The Waste Management Unit should not be accessible to the public. Card access, intercom or CCTV cameras are to be provided at the Loading Dock and external access for visitor control to the Unit. Where required, concave directional mirrors along corridors and bends should be provided to avoid collision of oversized trolleys, motorised transporters and staff.

Emergency stop button should be installed for large equipment such as waste compactors to prevent entrapment. Exhaust should be provided in rooms for storing and recharging of pallet jacks, motorised transporters and other equipment depending on battery type to avoid build-up of noxious gases.

5.4 Finishes

Where appropriate painted block work walls are recommended in areas where large bins and trolleys are to be stored to resist chipping and breakage of wall lining.

The following factors shall be considered:

- Aesthetic appearance
- Acoustic properties
- Durability
- Fire safety
- Ease of cleaning and compliant with infection control standards
- Suitable floor finishes with respect to slip resistance, movement of large equipment and impermeable to fluids in wet areas

For further details refer to **Part C – Access, Mobility and OH&S** and **Part D – Infection Control** in these Guidelines.

5.5 Fittings, Fixtures & Equipment

Sturdy and robust door and wall protection are recommended to withstand impacts from large waste bins and trolleys. Timber or rubber wall guards and corner guards, and stainless-steel door and frame protection will resist bumps from large equipment better than PVC or vinyl wall and door protection.

Water proof fixture and fittings are to be installed in all wet and dirty areas for easy cleaning and disinfecting. Cool rooms for waste storage are to be fitted with proprietary cool room or built on site as per industry requirements and local regulations.

Refer also to **Standard Components Room Data Sheets and Room Layout Sheets** for Furniture, Fittings and Fixtures requirements.

5.6 Building Service Requirements

This section identifies unit specific services briefing requirements only and must be read in conjunction with **Part E - Engineering Services** for the detailed parameters and standards applicable.

Building service requirements for the Waste Management Unit will include the following:

- The temperature with the waste handling area should be maintained at a temperature that helps control odours; ideally a negative pressure environment should be provided to contain the spread of odours. Temperature monitor and alarm should be connected to Biomedical Services to alert staff of any malfunction.
- Hot and cold water outlets with a hose spray are the minimum requirements to be provided for cleaning waste holding areas and bins as required.

- A high-pressure wash-down unit should be provided for the adequate cleaning of the area.
- Drainage from this area may include disinfectants; therefore, liquid wastes may require special treatment prior to discharge.
- Walls and floors should be sealed to withstand the frequent wash downs and the floors graded to allow run off.
- All power points provided in the waste storage, equipment washing and disposal area should be waterproof to allow for thorough cleaning of floors and walls.
- Lighting should be adequate to allow staff to see clearly especially in waste storage areas and corridors.

5.6.1 Information and Communication Technology

The Waste Management Unit requires reliable and effective IT / Communications service for efficient operation of the service. The IT design should address:

- Voice/ data cabling and outlets for phones, fax and computers
- CCTV surveillance if indicated

5.7 Infection Control

Walls and floors in areas used for waste storage should be sealed to allow easy cleaning.

Storage bays for Personal Protective Equipment (PPE) such as heavy-duty gloves, safety shoes, protective face visors or goggles should be conveniently located to improve staff compliance thereby avoiding preventable risks. Heavy duty gloves, such as Nitro gloves, are requried to handle cytotoxic waste.

Consideration should be given to separate clean and dirty workflows in all waste collection areas.

5.7.1 Hand Basins

Hand-washing facilities should be located adjacent to the waste collection areas where clinical waste is handled.

Hand basins should comply with **Standard Components for Bay - Handwashing** and **Part D - Infection Control**. Refer to the **Standard Components, RDS and RLS** of these guidelines for additional information.

5.7.2 Antiseptic Hand Rubs

Antiseptic hand rubs should be located so they are readily available in waste holding and in high traffic areas.

The placement of antiseptic hand rubs should be consistent and reliable throughout facilities. Antiseptic hand rubs are to comply with **Part D - Infection Control**, in these guidelines.

Antiseptic Hand Rubs, although very useful and welcome, cannot fully replace Hand Wash Bays, both are required.

For further information related to Infection Control refer to **Part D – Infection Control** in these Guidelines.

5.7.3 Pest & Insects Control

Waste storage areas must be designed to prevent the harbourage of vermin and insects. Some examples of preventative measures include provision of suitable waste receptacles, application of mesh to drains, installation of flushing drains and insect zapper near entry to waste storage. Pest Control is typically outsourced, and facilities should follow the advice of pest control contractors.

6 Standard Components of the Unit

Standard Components are typical rooms within a health facility, each represented by a Room Data Sheet (RDS) and a Room Layout Sheet (RLS).

The Room Data Sheets are written descriptions representing the minimum briefing requirements of each room type, described under various categories:

- Room Primary Information; includes Briefed Area, Occupancy, Room Description and relationships, and special room requirements)
- Building Fabric and Finishes; identifies the fabric and finish required for the room ceiling, floor, walls, doors, and glazing requirements
- Furniture and Fittings; lists all the fittings and furniture typically located in the room; Furniture and Fittings are identified with a group number indicating who is responsible for providing the item according to a widely accepted description as follows:

Group	Description
1	Provided and installed by the builder
2	Provided by the Client and installed by the builder
3	Provided and installed by the Client

- Fixtures and Equipment; includes all the serviced equipment typically located in the room along with the services required such as power, data and hydraulics; Fixtures and Equipment are also identified with a group number as above indicating who is responsible for provision
- Building Services; indicates the requirement for communications, power, Heating, Ventilation and Air conditioning (HVAC), medical gases, nurse/ emergency call and lighting along with quantities and types where appropriate. Provision of all services items listed is mandatory

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 Waste Management 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.

6.1 Non-Standard Rooms

Non-standard rooms are rooms are those which have not yet been standardised within these Guidelines. As such there are very few Non-standard Rooms. These are identified in the Schedules of Accommodation as NS and are separately covered below.

6.1.1 Bin Washing Area

The Bin Washing Area will provide an area and facilities for washing of bins as required. It is usually a bay with no doors. The following should be considered:

- Finishes of room should be suitable for wet areas. Eg. vinyl or tiles
- Provide a wall mounted retractable hose reel with a pressure spray for cleaning the bins
- Provide a floor drain
- Access to a hand wash basin within the Unit

6.1.2 Waste Holding - Clinical

A room for clinical waste bins storage. A hand wash basin may be provided within the room.

Alternatively, having must be other hand washing facility within the Unit.

Wall protection should be provided. Homogeneuous vinyl or tiles to the floor and walls are acceptable.

If located off an external wall, consider provision of roller shutter on the external wall for ease of bins collection.

Proper ventilation to containand avoid spreading of odour out of the room.

6.1.3 Waste Holding - General Dry

A holding area for dry general waste storage. A waste compactor can be located here.

Wall protection should be provided. Homogeneuous vinyl or tiles to the floor and walls are acceptable.

If located off an external wall, consider provision of roller shutter on the external wall for ease of bins collection.

6.1.4 Waste Holding - General Wet

A holding area for wet general waste storage. A waste compactor can be located here.

Wall protection should be provided. Homogeneuous vinyl or tiles to the floor and walls are acceptable.

If located off an external wall, consider provision of roller shutter on the external wall for ease of bins collection.

6.1.5 Waste Holding - Paper and Cardboard

A room for holding paper and cardboard waste in bins, awaiting collection. If in a separate room, hand washing facilities should be provided inside the room.

6.1.6 Waste Holding - Radioactive

The Radioactive Waste Store provides for the safe holding of waste radioactive substances used within the hospital prior to collection by outside contractor.The room should be lockable.

Additional Design Considerations:

- Radiation shielding to be advised by Radiation Consultant.
- The floors and walls should be constructed of a material that is easily decontaminated, with no gaps or crevices.
- Vents and traps for radioactive gases should be provided if such are used.

7 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 sum of theroom areas is shown as the Sub Total as the Net Area. The Total area is the Sub Total plus the circulation percentage. The circulation percentage represents the minimum recommended target area for corridors within the Unit in an efficient and appropriate design.

Within the SOA, room sizes are indicated for typical units and are organised into the 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 Schedule of Accommodation are developed for particular levels of services known as Role Delineation Level (RDL) and numbered from 1 to 6. Refer to the full **Role Delineation Framwork** (**Part A - Appendix 6**) in these gduielines for a full description of RDL's.

The table below shows alternative SOA's for role delineations from RDL 1 to 6 of varying sizes.

Any proposed deviations from the mandatory requirements, justified by innovative and alternative operational models may be proposed and record in the **Non-Compliance Report** (refer to **Part A - Appendix 4**) with any departure from the Guidelines for consideration by the DHA for approval.

7.1 Waste Management Unit

ROOM/ SPACE	Standard Component Room Codes	RDL 1/ 2 Qty x m2			RDL 3 Qty x m2			RDL 4 Qty x m2			RDL 5/6 Qty x m2			Remarks
Waste Storage Area														
Bay - Handwashing, Type B	bhws-b-d	1	x	1	1	x	1	1	x	1	2	x	1	Refer to Part D
Bay - Emergency Shower	bese-d	1	x	1*	1	x	1	1	x	1	1	x	1	*Optional
Bin Washing Area	NS							1	x	10	1	x	15	Optional. May be done off site.
Cool room - Clinical Waste	corm-d similar							1	x	20	1	x	30	Optional. Upright freezers are also acceptable
Store - Clean Bins	stgn-14-d similar stgn-20-d	1	x	8*	1	x	10	1	x	15	1	x	30	Optional
Waste Holding - Clinical	NS	1	x	10	1	x	15	1	x	20	1	x	40	Includes sharps bin storage
Waste Holding - General Dry	NS	1	x	10	1	x	12	1	x	40	1	x	60	Adjust size if paper, cardboard & recyclable waste to be stored in the room.
Waste Holding - General Wet	NS				1	x	10	1	x	20	1	x	40	
Waste Holding - Paper and Cardboard	NS	1	x	8	1	x	10	1	x	20	1	x	45	Optional, May be located in General Waste Store
Waste Holding - Radioactive	NS							1	x	10	1	x	15	If Radioactive substances are used in the Facility
Waste Holding - Recyclable	waco-d similar							1	x	10	1	x	20	Optional. Maybe located with Paper and Cardboard Storage.
Support Areas														
Loading Dock - Dirty	lodk-d similar				1	x	*	1	x	*	1	x	*	*External area; size as required.
Office - Single Person	off-s9-d off-s12-d				1	x	9	1	x	9	1	x	12	Note 1; Manager
Office - Workstation	off-ws-d				1	x	5.5	1	x	5.5	2	x	5.5	Waste Management personnel. Optional; may be located at HKP
Shower - Staff	shst-3-d							1	x	3	1	x	3	Optional. May be provided in centralised Staff Amenities.
Toilet - Staff (Male/ Female)	wcst-d				2	x	3	2	x	3	2	x	3	Separate for male and female, or shared with staff amenities close by
Sub Total				**38**			**79.5**			**190.5**			**330**	
Circulation %				**20**			**20**			**20**			**20**	
Area Total				**45.6**			**95.4**			**228.6**			**396**	

Please note the following:

- Areas noted in Schedules of Accommodation take precedence over all other areas noted in the Standard Components
- Offices are to be provided according to the number of approved full-time positions within the Unit
- Rooms indicated in the schedule reflect the typical arrangement according to RDL
- 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

8 Further Reading

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

- International Health Facility Guideline (iHFG) www.healthdesign.com.au/ihfg
- Ministry of Health UAE, Unified Healthcare Professional Qualification Requirements, 2017, refer to website: https://www.haad.ae/haad/tabid/927/Default.aspx
- The Facility Guidelines Institute (US), Guidelines for Design and Construction of Hospitals, 2018. Refer to website: www.fgiguidelines.org
- The Facility Guidelines Institute (US), Guidelines for Design and Construction of Outpatient Facilities, 2018. Refer to website: www.fgiguidelines.org
- Safe management of healthcare waste Version:2.0: England. March 2011, Department of Health, refer to website: https://www.gov.uk/government/collections/health-building-notes-core-elements