



## 4 Design Recommendations - Critical Areas

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Critical areas are those which are specific to oral health facilities. Comments in this section are intended to provide an insight into the key functions and operational issues relevant to these areas.

Multiple design options have been provided for critical areas. In selecting the most appropriate option, the following are key considerations:

Number of Chairs	This will be the key consideration and will be determined by the wider strategic plans of Queensland Health and individual Oral Health Service Districts.
Service Profile	This will have significant impact on the level of support services required (eg laboratory and sterilisation). The implementation of any hub and spoke arrangement will be of particular relevance as will any outreach (eg school) dental services based at a facility.
New or Refurbished	Optimal design configurations may need to be compromised if an existing building is to be used.
Other Limitations	Limited space, capital funds, staffing resources or recurrent funds will impact on design decisions. Innovative strategies will need to be developed and implemented to ensure functionality and required workflows are maintained.

It is expected that design recommendations outlined in this section will be adopted with regard to these issues. Facility staff will need to be involved in the design process to ensure the end design supports their ability to provide services in an efficient and effective manner.

## Dental Surgeries

### Function

The dental surgery is the basic unit in the design of oral health facilities. The number and type of dental surgeries will be determined largely by the demographic profile of the catchment area, in conjunction with Oral Health Service Districts. Supporting accommodation will need to be adequate for the number of surgeries provided.

The dental surgery is essentially a cubicle or room with a dental chair in which assessment and treatment takes place.

Some administrative functions are undertaken within the dental surgery, however these need to be physically separated from the operative area. Depending on the design option selected, this can be achieved by locating an administrative zone behind a partition (as in open plan example) or in a part of the room remote from the patient treatment zone (as in single chair surgery).

At least one dental surgery will be required to be large enough to accommodate wheelchair and stretcher access. The inclusion of at least one enclosed surgery is encouraged in order to accommodate special needs or distressed patients.

### Design Options

#### *Single room*

The single room design incorporates all services and equipment required for the assessment and treatment of patients in a single room. Single room design is appropriate when:

- ▶ only 1 or 2 chairs will be provided in a facility
- ▶ an existing space lends itself to this form of design
- ▶ privacy for special needs patients is required
- ▶ capacity to accommodate a stretcher or wheel chair is required
- ▶ a William Green (or similar) chair is to be used

#### *Open plan*

In an open plan surgery design, surgeries are arranged in pairs with shared hand washing, X-ray and storage facilities located between them. Paired modules are separated from each other with partial height partitions. Located at the front end of each surgery is the administration area which is physically demarcated with cabinetry and a privacy screen. This is positioned along the central axis of the surgery area with free access either side. These fixtures provide a visual barrier and patient privacy to the surgery area from the internal circulation corridor. Shared general storage facilities and X-ray processing units are located along the internal circulation corridor within the dental surgery unit to service each of the surgery modules.

Advantages of an open plan design include:

- ▶ space efficiency
- ▶ cost efficiencies (through shared resources)
- ▶ a better environment for teaching and supervising dental students
- ▶ easy collection of dirty instruments for sterilisation via direct access to the internal circulation corridor

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## Location

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The dental surgery unit should have direct access to the main circulation corridor of the oral health facility. The unit should also be located adjacent the public waiting area which also feeds into this same corridor. For security control, it is desirable to provide a secure barrier, with staff only access, at the entry point of the main circulation corridor from the public waiting area. The patient is escorted by staff (Dental Assistant) from the waiting area to the dental surgery via the secured corridor. After treatment, the patient can leave the unit on their own using the push-to-exit button beside the secure doors.

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## Workflow

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The dental surgery is essentially a designated dirty area with all sterilising services carried out away from the surgery in a separate Sterilising Area. Contaminated items such as dirty instrument cassettes are deposited in a dedicated cupboard which can be integrated as part of the storage unit provided within the surgery, or can otherwise be placed in a puncture-proof covered container.

Whether single room or open-plan, the typical dental surgery has the dental chair positioned close to the centre of the room or cubicle with the foot of the chair facing away from the entry. This is the preferred orientation of the chair as it addresses both privacy, and modesty concerns for patients

The dentist and dental assistant operate around the head of the chair with the dentist normally positioned on the right side of the patient. A dental assistant's workstation is located behind the head of the chair with allowable operating space, and incorporates the storage of dental materials and equipment, disposable items and a work surface for retrieving and mixing dental materials.

In both single room and open-plan surgery design, the provision of the dental assistant's workstation and adequate shared storage units for equipment and disposable items is specifically designed for user accessibility, space efficiency, infection control and easy maintenance of a clean, clutter-free work environment.

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## Infection Control

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The general design of dental surgeries is based primarily on infection control principles with a trend towards a more stream-lined design to improve infection control. This is achieved by minimising the number of surfaces likely to be exposed to aerosols. Concealing equipment (other than those associated with the dental chair) or removing certain items (such as the X-ray viewer and administration area) away from the zone of aerosol contamination.

The following infection control features are recommended as appropriate:

- ▶ The use of an instrument cassette system
- ▶ Separate storage cupboards for clean and dirty cassettes and equipment
- ▶ Provision of storage cupboards to conceal most equipment
- ▶ Slide-out work tops used as preparation areas, concealed in storage unit
- ▶ Hands-free opening storage units for contaminated items, e.g. drawer for sharps bin, dirty cassette cupboard
- ▶ X-ray unit concealed in storage unit with sliding or fold-away doors

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## Construction and Finishes

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### *Walls*

Wall surfaces should be smooth and easy to clean. Walls above sinks are to be protected with splashbacks. In the larger facilities, where there is a likelihood of high volume trolley movement it is desirable to provide wall protection, e.g. corner guards, wall vinyl.

### *Ceilings*

Ceilings are to be either flush-set or pre-finished plasterboard tiles.

### *Floors*

Floors are to be finished with low maintenance vinyl sheeting, coved at walls. Non-slip vinyl is to be used in wet areas.

### *Work surfaces*

Work benches are to be durable and constructed of non-porous material with integral splashbacks at walls for easy cleaning.

### *Doors*

Doors are to be adequately sized to ensure public accessibility, as well as ease of trolley movement, and access for lifting hoist if required. One and a half door size opening is desirable.

### *Windows*

External, operable windows should be provided to maximise natural lighting and provide external views. Sill height should be at an appropriate height to ensure patient privacy. Double glazing with internal venetian blinds should also be considered.

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## Services and Environment

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Services and environment control in dental surgeries should include:

- ▶ General comfort air conditioning to the dental surgery area.
- ▶ Compressed air, gas and vacuum pipe work reticulated to the dental chair in each surgery area.
- ▶ Body Protection to the patient treatment area in accordance with the requirements of AS 3003.
- ▶ Ceiling mounted minor surgical luminare where an examination light is not supplied as an attachment to the dental chair. Where required, the surgical luminare shall comply with the following:
  - Minor surgical type.
  - Narrow beam.
  - Single lamp type with glare shield.
  - 50,000 LUX at 1 m.

Exact model to be approved by users.

The ceiling mounted dental examination light will extend into the patient treatment area (as defined in AS 3003) and will therefore require separate RCD protection as follows:

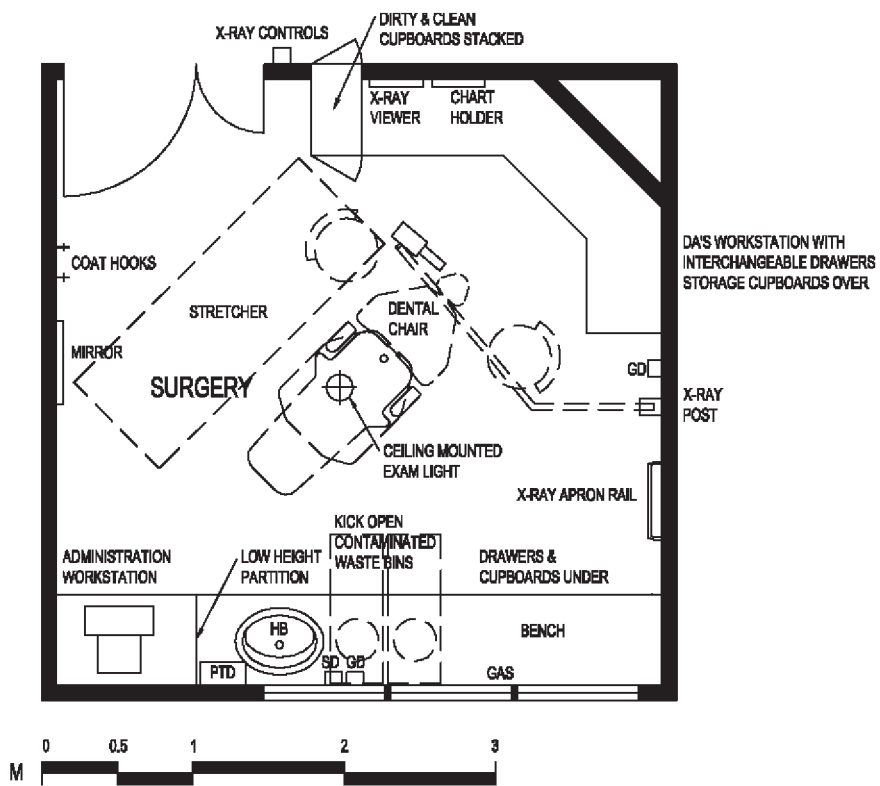
- 10 mA/10ms sensitivity.
- Wall mounted within room.
- ▶ Colour corrected fluorescent lights where colour shading of teeth is undertaken. Electrical and medical gas services to the dental chair shall reticulate via the ceiling space of the floor below, or if this is not feasible, through flush floor ducting or concealed conduits in the structural slab. All relevant technical data is to be obtained from the dental chair supplier/installer including 'equipment footprint(s)' and concealed services located accordingly.
- ▶ Shielding (lead-lining to walls) in the vicinity of the x-ray unit if required. Biomedical and Technical Services are to be liaised with to discuss specific requirements.
- ▶ Appropriate supply to x-ray unit. Specific x-ray power requirements are to be ascertained from the equipment manufacturer. Circuit breakers are to be provided to suit electrical load and in-rush requirements. Conduit and/or control requirements are to be provided to the adjacent room to manufacturers requirements. Additional wall mounted pole supports may be required for some x-ray units.

## Single Room Dental Surgery

### Room Data Sheet

Functional Information			
<b>Functions:</b>	Dental assessment and treatment.		
<b>Relationship:</b>	Direct access to secure corridor. Easy access to patient waiting.		
<b>Floor Area:</b>	16 m <sup>2</sup>		
<b>Occupants:</b>	Patients: 1	Staff: 2	Visitors:
<b>Time of Use:</b>	Business hours (8.00am to 5.00pm)		
Construction and Finishes			
<b>Floors:</b>	Sheet vinyl.	Skirtings:	Coved vinyl.
<b>Walls:</b>	13mm plasterboard flush set.		
<b>Ceiling:</b>	Acoustic tile ceiling.	Height:	2700mm
<b>Doors:</b>	Entry: solid core, door + half (870mm + 520mm) stretcher access. Between surgeries: solid core sliding door (870mm).		
<b>Door Hardware:</b>	Rebated passage set, barrel bolts, door stop. Sliding door set.		
<b>Windows:</b>	Double glazed aluminium framed (openable) with internal venetians.		
<b>Signage:</b>	Room identification.		
Services and Environment			
<b>Lighting:</b>	Fluorescent (colour corrected).		
<b>Power:</b>	GPO's as required. Direct connection to dental unit.		
<b>Communications:</b>	Wall mounted telephone / intercom.		
<b>Gases:</b>	Compressed air, vacuum, town gas.		
<b>Sanitary Fixtures:</b>	Hand basin with wrist action taps.		
<b>Environmental Control:</b>	Air conditioning.		
<b>Acoustics:</b>	STC 40		
Furniture and Equipment			
<b>Loose Furniture:</b>	2 chairs.		
<b>Built In Furniture:</b>	Dental chair. Benches and cupboards – project specific.		
<b>Equipment / Fittings:</b>	Wall mounted X-ray unit. X-ray viewer. Chart holder. Computer. Hanging rail for X-ray apron. Liquid soap dispenser. Paper towel dispenser. Glove dispenser. Mirror.		

Indicative Plan



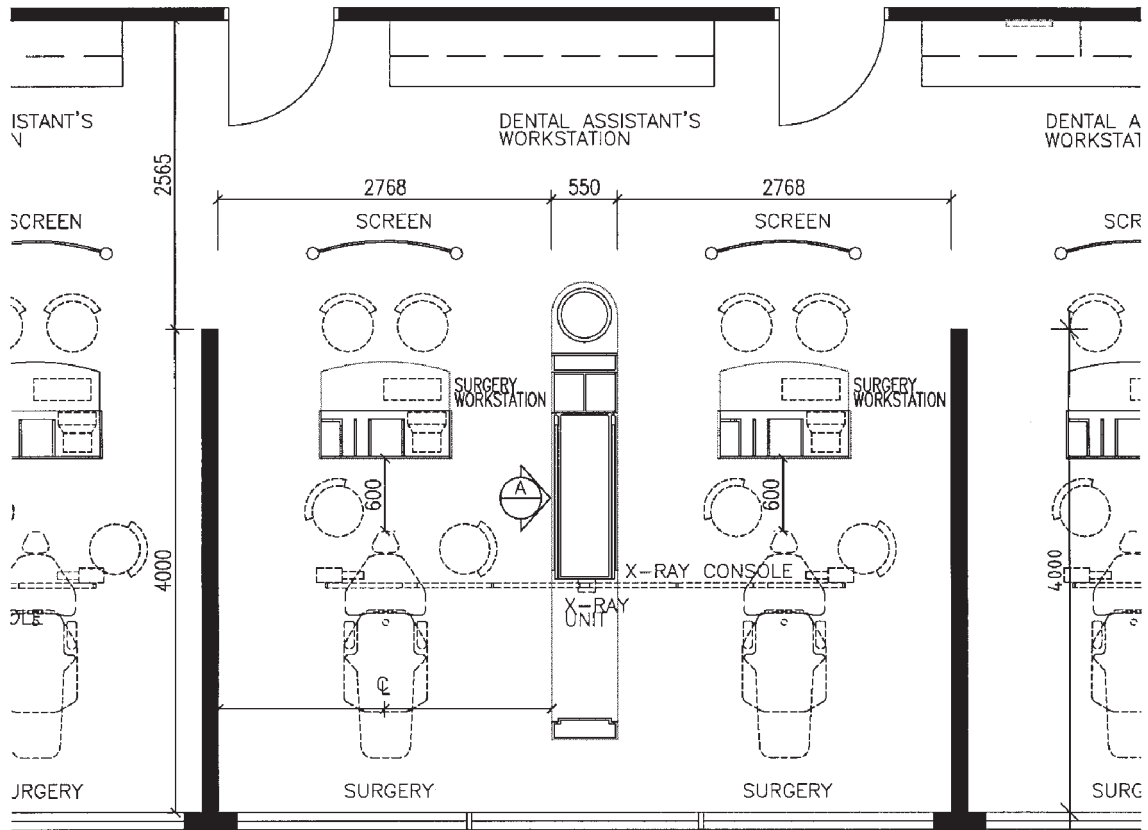
LEGEND	
HB .....	HAND BASIN
SD .....	SOAP DISPENSER
PTD.....	PAPER TOWEL DISPENSER
GD.....	GLOVE DISPENSER

## Open Plan Dental Surgery

### Room Data Sheet

Functional Information			
Functions:	Dental assessment and treatment.		
Relationship:	Direct access to secure corridor. Easy access to patient waiting.		
Floor Area:	15 m <sup>2</sup>		
Occupants:	Patients: 1	Staff: 2	Visitors:
Time of Use:	Business hours (8.00am to 5.00pm)		
Construction and Finishes			
Floors:	Sheet vinyl.	Skirtings:	Coved vinyl.
Walls:	13mm plasterboard flush set.		
Ceiling:	Acoustic tile ceiling.	Height:	2700mm
Doors:	N/A		
Door Hardware:	N/A		
Windows:	Double glazed aluminium framed (openable) with internal venetians.		
Signage:	Cubicle identification.		
Services and Environment			
Lighting:	Fluorescent (colour corrected).		
Power:	GPO's as shown. Direct connection to dental unit.		
Communications:	Wall mounted telephone / intercom.		
Gases:	Compressed air, vacuum, town gas.		
Sanitary Fixtures:	Hand basin with wrist action taps.		
Environmental Control:	Air conditioning.		
Acoustics:	STC 40		
Furniture and Equipment			
Loose Furniture:	2 chairs.		
Built In Furniture:	Dental unit. Benches and cupboards – project specific.		
Equipment / Fittings:	Wall mounted x-ray unit. Chart holder. Liquid soap dispenser. Paper towel dispenser. Glove dispenser. Pin & white board. Mirror.		

Indicative Plan



Floor Plan

