Commissioning & Remedial Works

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Government of South Australia
Health
Central Adelaide
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Acknowledgement of Country

We acknowledge that this land we meet, work, live and play on is the traditional lands of the Kaurna people, and we respect their spiritual relationship with this country.

We pay our respects to their leaders, past, present and emerging and acknowledge that their language, cultural and traditional beliefs held for over 60,000 years are still as important and relevant to the living Kaurna and all Aboriginal people today.

Artwork

Wardli Purrutinthi,"*Place to live or to be alive*"

Designed by accomplished Aboriginal South Australian artist Allan Sumner, a descendant of the Ngarrindjeri, Kaurna and Yankunytjatjara people.

Objectives

- Role of ICP
- Describe commissioning
- Identify core IPC considerations
- Staff training
- Moving plans
- Post-occupancy monitoring & remedial works

My vision of an ICP Building expert

- —Engineering degree
- —Plumbers trade
- —Construction hard hat
- —Interior designer
- —Cleaning and Hospitality Diploma
- —Policy Maker
- —Politician
- —Environmentalist
- —Resilient
- —Hardy
- —Good communicator (comes with politician territory)

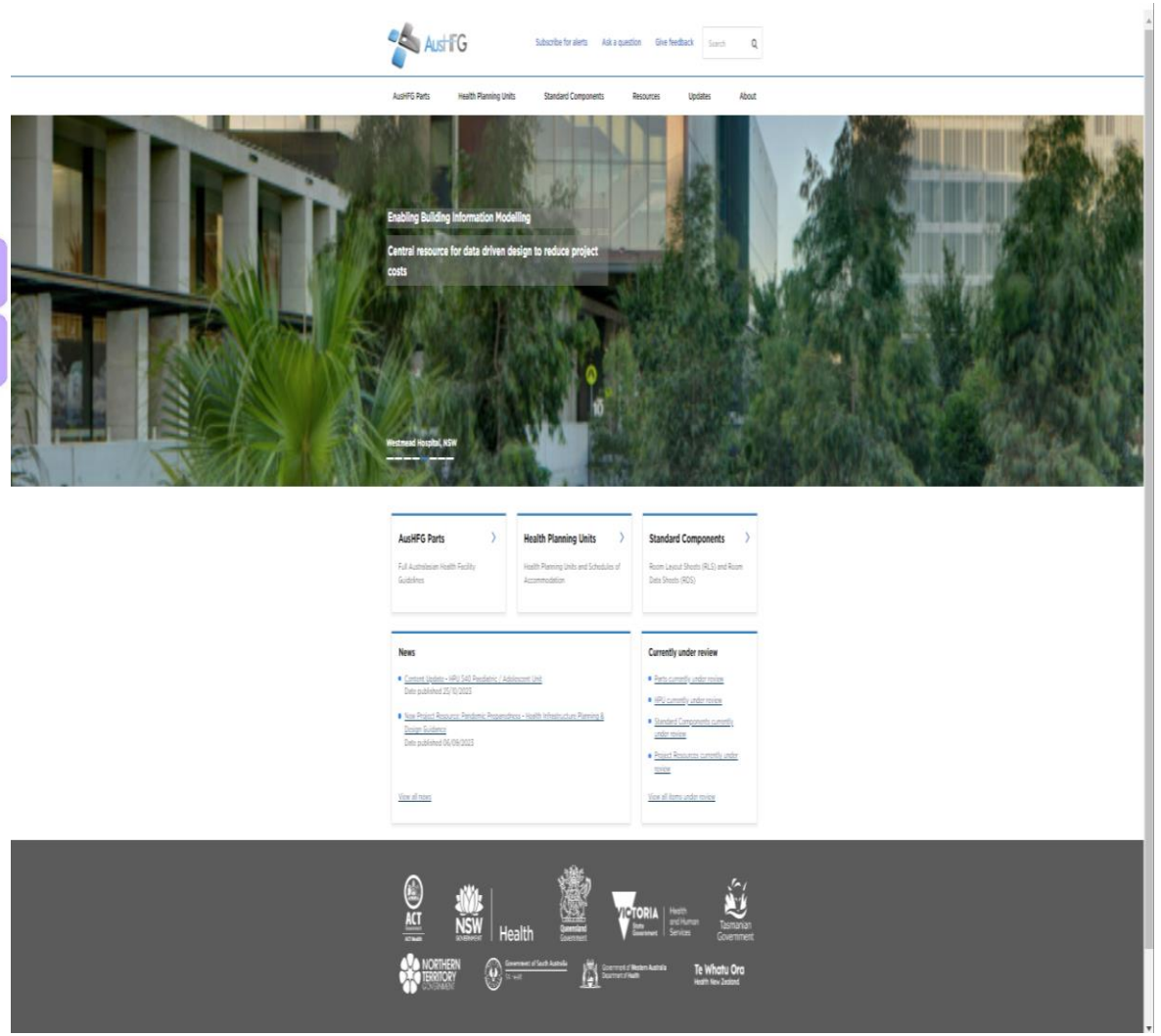
Some days you just need one of these to make sure you are still sane!

Start?

- What are the risks to consider?
- What resources are available for building
- Who else is building and what are they using?
- Any tips you can glean?
- What tools or checklists are available?
- How do you commission?

Aus Healthcare Facility Guidelines

- Part A: Introduction and Instructions for Use
- Part B: Health Facility Briefing and Planning
  - Health Planning Units
  - Schedules of Accommodation
  - Standard Components
    - Room Layouts
    - Room Data
- Part C: Design for Access, Mobility, OHS & Security
- Part D: Infection Prevention and Control
- Part E: Building Services & Environmental Design
- Part F: Project Implementation



https://healthfacilityguidelines.com.au/ [Accessed on line 01/11/2023]

Australasian Health Facility Guidelines

Part D - Infection Prevention and Control

Update November 2020:

The following key references within AusHFG Part D have since been updated. These revised resources should to be referred to when considering infection prevention and control as part of the planning and design of healthcare facilities. These references will be amended in the next iteration of AusHFG Part D.

Revision: 5.0 Date published: 01/03/2016

Part F Project Implementation, is organised in two sections including:

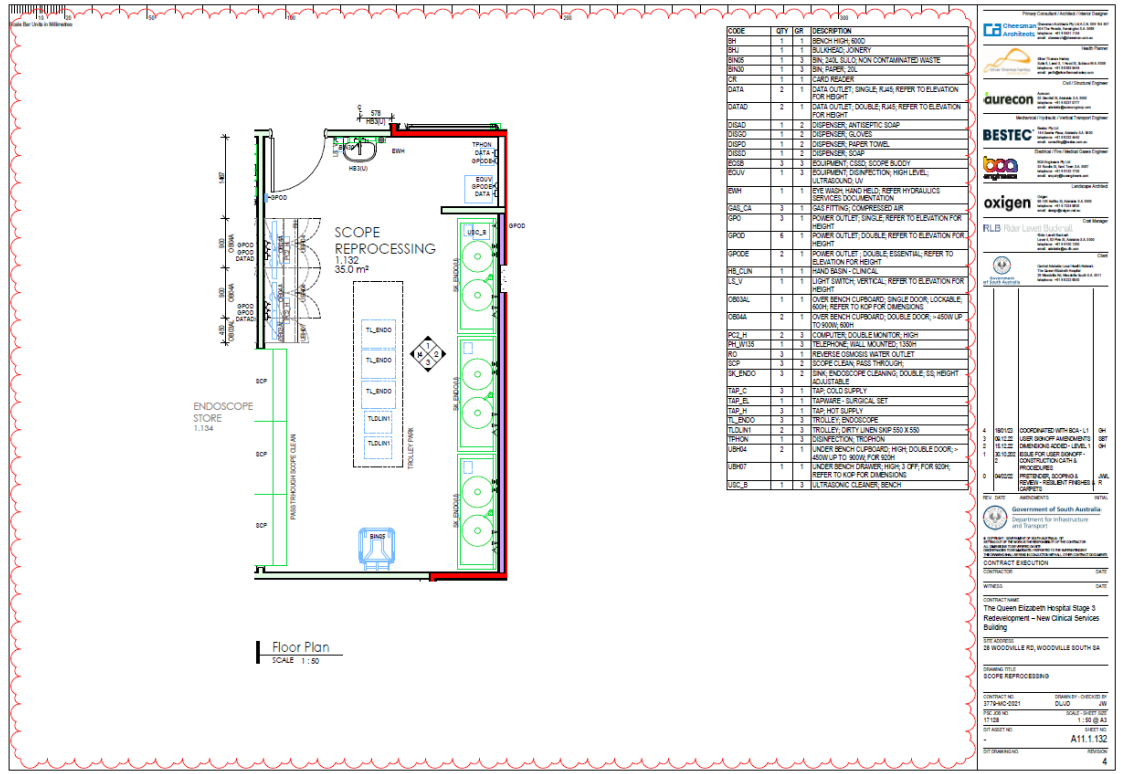
- furniture, fittings and equipment (FFE)
- operational commissioning

An updated revision of Part F (Revision 5.0, 1 March 2016) has been uploaded. This revision reflects only minor changes that have been necessary to ensure consistency across all documents.

Individual Sections

Downloads

Part F: 680 Furniture Fittings and Equipment	***Revision: 5.0***	01/03/2016	PDF
Part F: 950 Operational Commissioning	***Revision: 5.0***	01/03/2016	PDF



Commissioning – what does this mean for the role fo the ICP?

Commissioning and Pre-handover

- Service plans (contractors)
  - Cleaning including chemicals
  - Catering
  - Linen
  - Pest control
  - Waste
  - HVAC including cooling towers, etc
  - IC procedure
- Ventilation
- Water
- Equipment –PQ
- Move plans

Pre-Occupancy

PLANNING, PLANNING and More PLANNING!

Air Balancing, Heating, Ventilation & Air Conditioning (HVAC)

Check as per manufactures instructions also refer to AS/NZ standards (Builder/FMT)

- Air-balancing systems tested to confirm airflows for specs
- Verified relative air pressure (cycles) for all patient care spaces
- All HEPA filters –functioning, within parameters, cleaning/changing schedules established
- Intake/exhaust vents located and as per standard
- Air intakes separated away from outgoing contaminated air

Commissioning – HVAC Specific Areas

Air supply to rooms

- Class S- Standard
- Class P- Positive pressure
- Class N- Negative pressure
- Class Q – Quarantine room (airlock)
- CSSD- Class P
- Technical Suites – Class P
- Lung Function – Class N
- Pathology – certain areas -Class Q
- Pharmacy – certain areas Class P
- Forensic Room- Class P
- Mortuary- Class P

TABLE 1. Air changes/hour (ACH) and time required for airborne-contaminant removal efficiencies of 99% and 99.9%

ACH	Time (min) required for removal efficiency of 99%	Time (min) required for removal efficiency of 99.9%
2*†	138	207
4	69	104
6	**46**	**69**
8	35	52
10	28	41
12	23	35
15	**18**	**28**
20	14	21
50	6	8

Sources: CDC. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care facilities. MMWR 1994;43(No. RR-13).

Australian Standards

AS 1668.2 – Mechanical Ventilation for acceptable indoor air quality

AS 3666 – Air handling and water systems of buildings – Microbial Control

AS 1324 – Air filters for use in general ventilation and air conditioning

Air sampling and surface swabbing – why?

Air Sampling – NATA accredited

MAS100

- Location is important. It is possible that grids may be set up to establish numbers of tests required in areas.
- Air Sampling - MAS100 – Single Plate sample to detect for CFU count.
- Contact tests – RODAC Plate - Single Plate sample to detect for CFU count. Where counts are identified, genus, species, moulds etc to be identified.

Microbiological Air Sampling of Operating Rooms in Western Australian Healthcare Facilities https://www.health.wa.gov.au/~/media/Corp/Documents/Health-for/Communicable-Diseases/Guidelines/Guideline-Microbiological-Air-Sampling-of-ORs.pdf [Accessed on line 02/11/2023]

Surface Swabbing

- Surface Sampling
- – Swab
- – Single Plate sample to detect for CFU count
- Where counts are identified, genus, species, moulds etc to be identified.

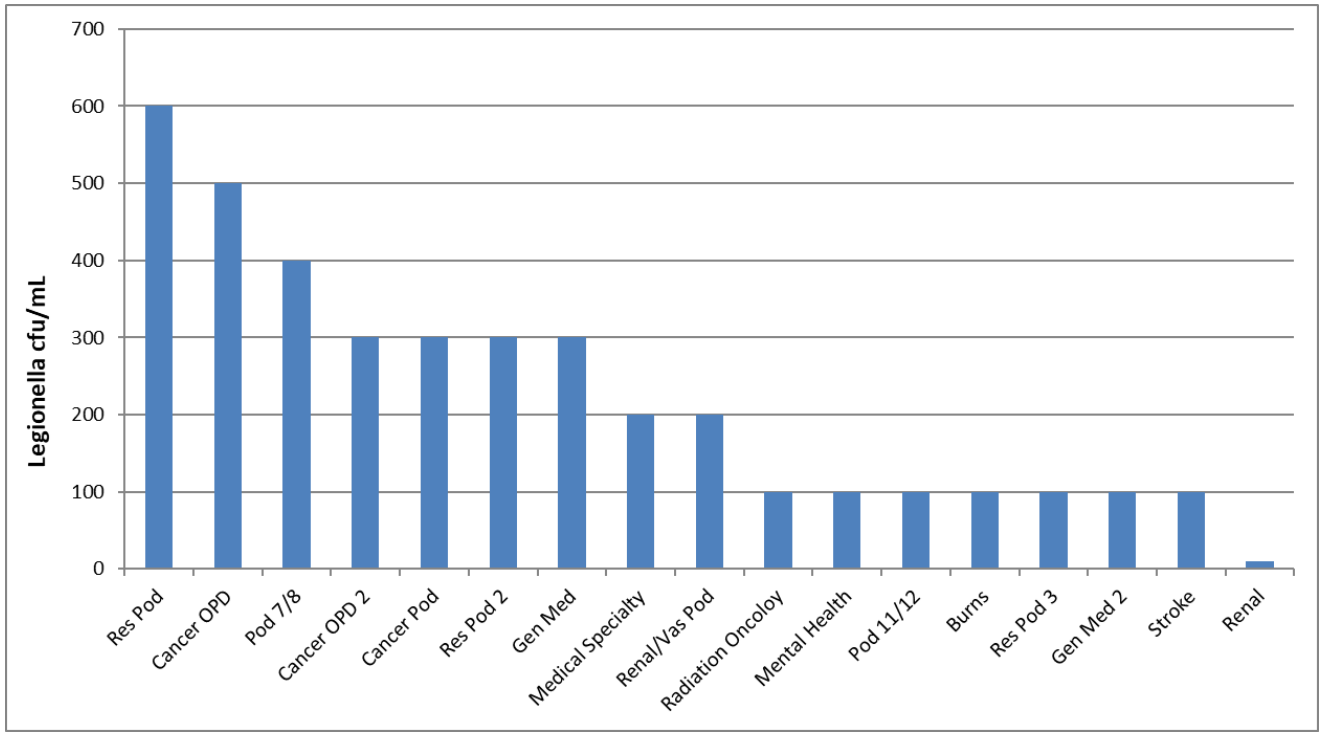
Plumbing Systems

- Check as per manufactures instructions/refer to AS/NZ standards (Builder/FMT)
  - Sinks meet standard for room and purpose as per AHCFG
  - All taps opened to ensure draining effectively
  - All plumbing lines checked to ensure no dead legs
  - All pipes flushed simultaneously and super chlorinated
  - Backflow preventers installed on water supply outlets to prevent future backflow of water

Water Testing

Consider:

- Testing-where?
- Reverse Osmosis (RO)water
- Legionella
- Filters – point of use hot/chilled water
- Ice machines



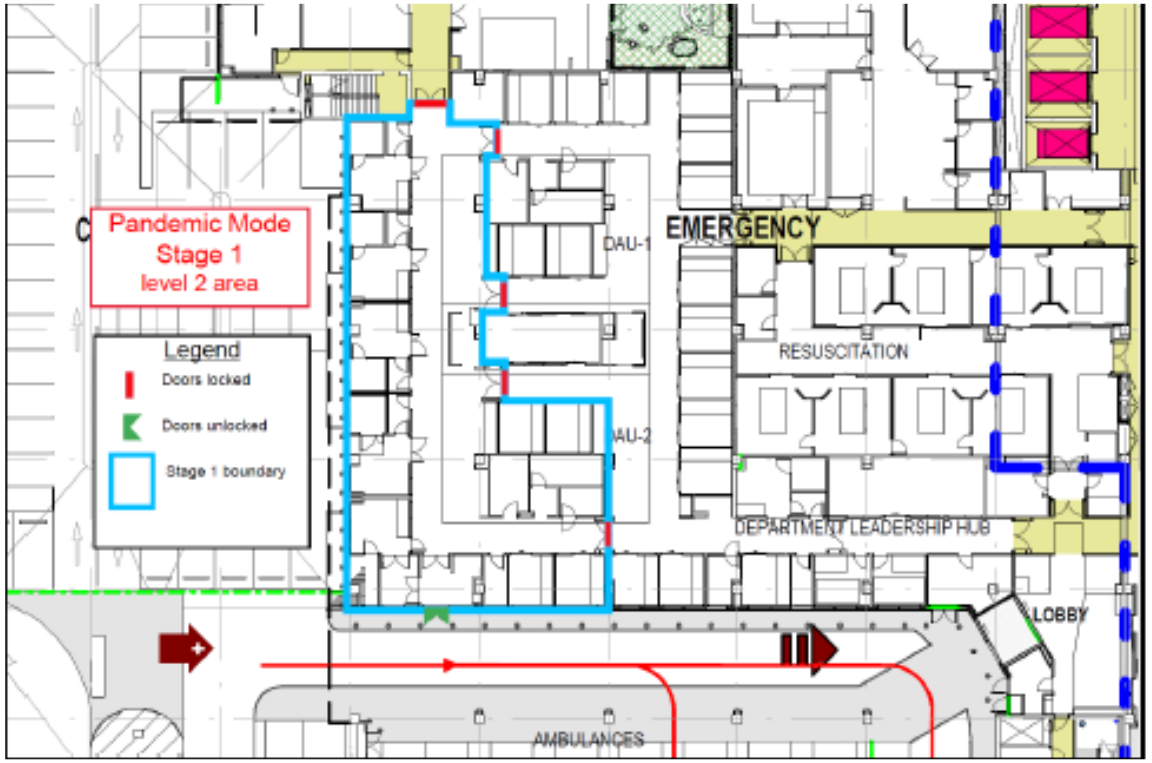
Theatres/CSSD/Scope areas

Essential Criteria

- Air sampling and environmental sampling
- Verify PQ testing to ensure sterilisers and washers are working
- Scope reprocessor – water testing
- Air drying cabinets, compressed air systems– ISO 8573 Parts 2-9 validation
- Surfaces intact
- Segregation of clean and dirty areas
- Placement of hand hygiene products/dispensers (critical)
- Storage systems - functioning

ISO 8573-1:2010	Dirt				Water		Oil
	Maximum number of particles per m³			Mass concentration mg/m³	Vapor pressure dewpoint	Liquid g/m³	Total oil (aerosol liquid and vapor) mg/m³
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron				
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20000	≤ 400	≤ 10	-	≤ -70°C/-94°F	-	0.01
2	≤ 400000	≤ 6000	≤ 100	-	≤ -40°C/-40°F	-	0.1
3	-	≤ 90000	≤ 1000	-	≤ -20°C/-4°F	-	1
4	-	-	≤ 10000	-	≤ +3°C/+37.4°F	-	5
5	-	-	≤ 100000	-	≤ +7°C/+44.6°F	-	-
6	-	-	-	≤ 5	≤ +10°C/+50°F	-	-
7	-	-	-	5 - 10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

Air Quality Standards ISO 8573.1 & ISO12500 [Accessed on line 02/11/2023]



Mechanical Systems

- **Systems designed to allow:**
  - **Easy access into maintenance systems, especially where risks for infection (Theatre ceiling cavity)**
  - **Equipment repairs/maintenance can be undertaken with minimal disruption to patients**
  - **HVAC system has capacity to be isolated into zones to respond to emerging infectious diseases**

Structural checks

Ceiling, wall & floor surfaces:

- Properly finished, appropriate to areas and usage, at correct height & compatible with cleaning products.

Plumbing fixtures, etc.

- Caulked to the wall/floor surface to prevent water seepage & mould growth; negative pressure rooms – sealed surfaces/ceilings, nor egress of air.

Cleaning

- **Builders Clean**
  - Clean with detergent and water followed by a bleach clean undertaken by the builder
- **Clinical Clean**
  - Undertaken by the facility owner – double clean with a 2-step product

Hotel Services

- Cleaning and staffing schedules established
- Appropriate numbers of:
- Linen skips
- Linen trolleys
- Waste containers – dry, wet, medical waste
- FF&E -can tolerate cleaning solutions/ Do they have SOPS/FAQs/Training requirements?
- Existing/old equipment has been checked and cleaned
- PPE stations and imprest stocking

Furniture, Fixtures and Equipment

- Storage prior to build ?
- Promote easy maintenance/repair and cleaning (must withstand facility-approved cleaning and disinfectant products)
- Do not support microbial growth
- Non-porous, smooth surfaces
- Monolithic ceilings (i.e., constructed without fissures, cracks and crevices)
- Furniture upholstered with impervious material
- Wall finishes washable
- In areas where plumbing fixtures are present, wall finishes moisture resistant i.e. ensuites
- Sign holders attached to doors/walls and easily accessible
- Sharps containers installed
- Equipment intact and easily cleaned

Staff Training

- Workflows including patient scenario testing i.e. EBOLA
- Room simulation training – Isolation rooms/ante rooms
- Operating theatre equipment
- CSSD equipment

Moving Plans

Ramp Down Planning

- Develop risk stratification for patient movement
- Create Transmission Based Precautions (TBP) movement packs – contact, droplet and airborne, with attached signage
- Education to all staff

Ramp Down 6 week lead time:

Week 3

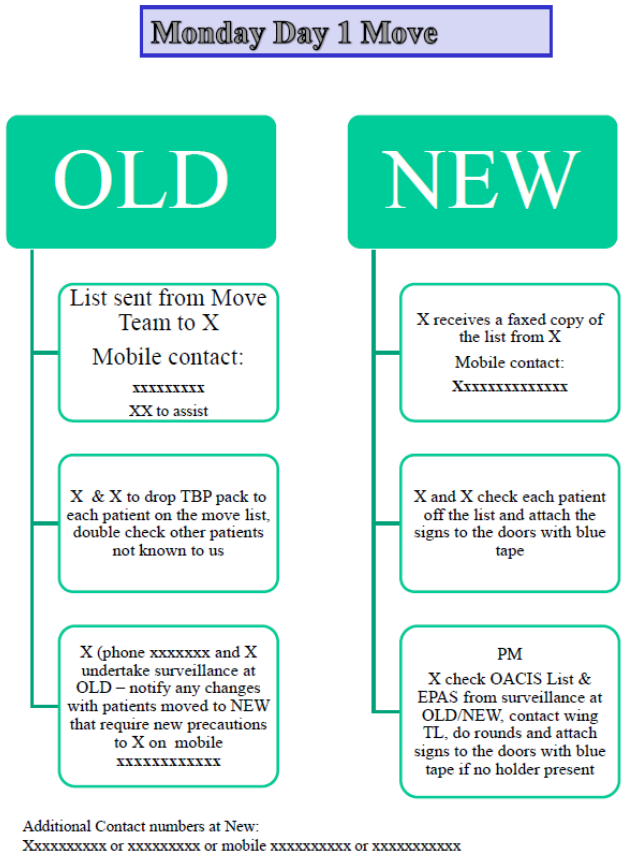
- IPCU move in 3/52 before inpatients
- Map site and IT systems functionality checks

Week 1

- Risk stratify current patient cohort based on MRO/Infectious status
- Ensure PPE, cleaning and HH product accessibility at new hospital established

Example Move Day

- Flowchart re daily moves and closer of old hospital
- Risk stratification re patient moves



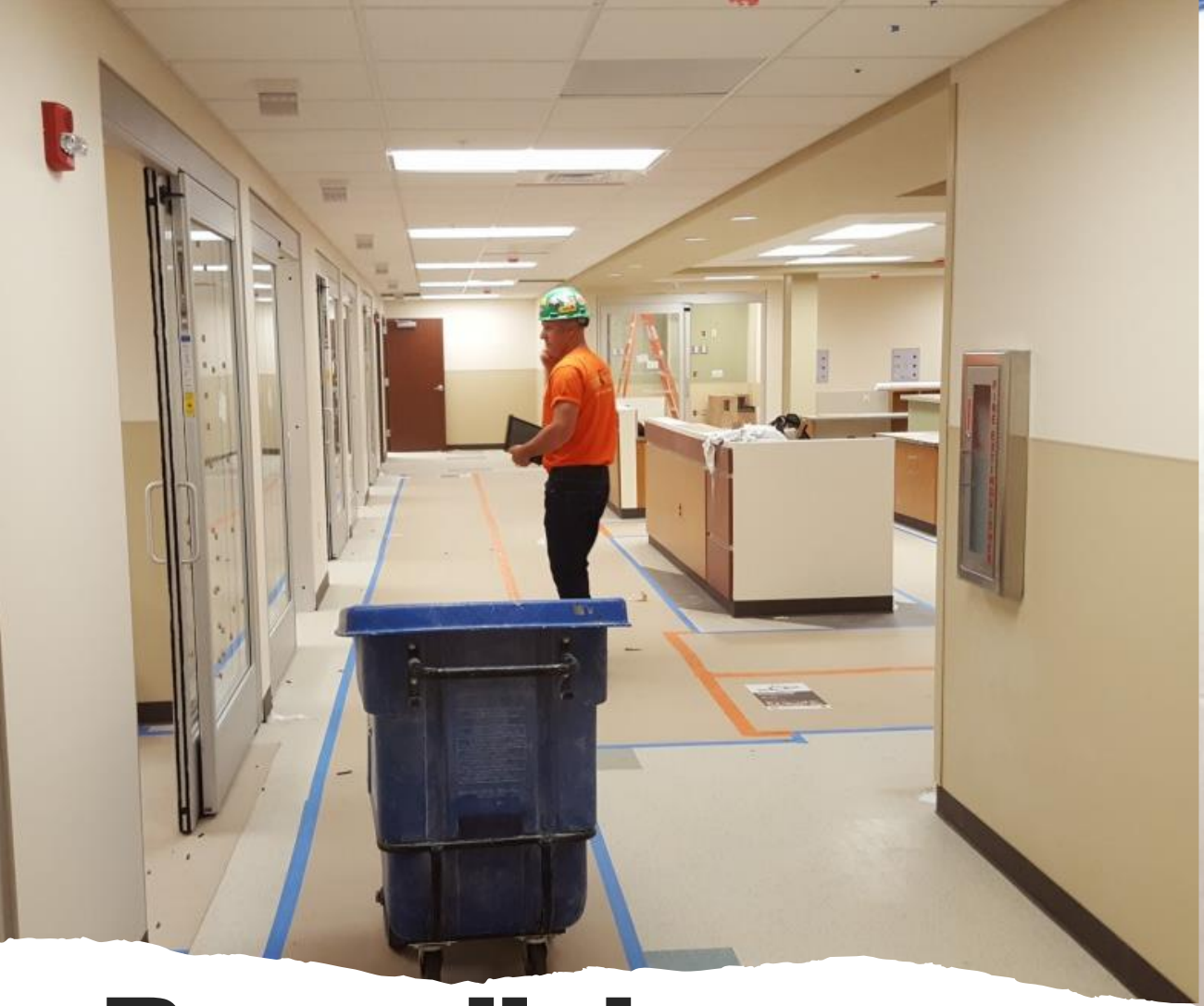
SAAS DEPARTURE FROM RAH	RAH Directorate	Patient Surname	Patient Forename	Patient UR (APMS)	Patient DOB	new HOSP WARD	new HOSP BED	SAAS ARRIVAL TIME AT new RAH	Infection Control / Comments
08:15	Surgery	Patient 1	Patient 2	000000	30.09.69	6F	067	08:25	VRE
08:30	Medicine	Patient 1	Patient 2	000000	21.05.85	6G3	187	08:40	AIRBORN PRECATIONS
08:30	Medicine	Patient 1	Patient 2	000000	20.11.26	8E	15	08:40	AIRBORN
09:25	Medicine	Patient 1	Patient 2	000000	23.07.56	8E	6	09:35	MRSA
09:25	Medicine	Patient 1	Patient 2	000000	10.04.78	8G1	129	09:35	DROPPLET
09:40	Surgery	Patient 1	Patient 2	000000	08.09.64	5G	198	09:50	MRSA, VRE, Hep C, Tally Acute (green)
09:50	Cancer	Patient 1	Patient 2	000000	29.09.81	7E1	005	10:00	VRE
10:10	Medicine	Patient 1	Patient 2	000000	24.01.89	8E	11	10:20	VRE/MRP
10:20	Cancer	Patient 1	Patient 2	000000	20.09.82	7E1	006	10:30	VRE/ FluA / Cyto
10:20	Medicine	Patient 1	Patient 2	000000	23.06.61	8F2	99	10:30	MRSA

Monitoring

Monthly Building reports

- **HVAC**
- **Water**
- **Cleaning**
- **Procurement**

Patient Surveillance reports



Remedial Building and what to expect!

Remedial Works

- Post occupancy and life of building works

- Changes to workflows necessitating changes to the building design including retro fitting

- Floods from water and sewerage leaks

- Upgrades in HVAC systems
- Upgrades in equipment

Steps

Project Team- stakeholders

- Review plans & provide recommendations

Determine level of risk and mitigation strategies

- Patient cohort within zone- risk assessment tool
- Dust control
- Debris removal
- Water interruptions
- Mould abatement (water/sewerage flooding)
- PPE for contractors
- Inspection

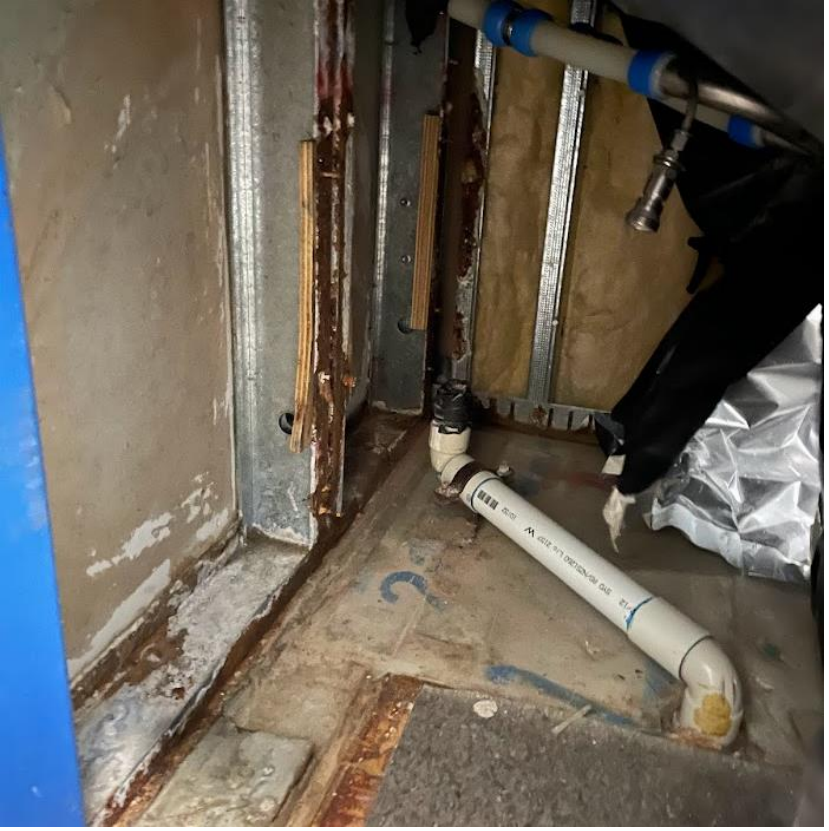
Steps

Environmental monitoring

- Auditing compliance – walk through inspections
- Vermin control (flies and insects)

Completion

- Builder and clinical clean
- Inspection



Examples

- Risk mitigation strategies required
- Review of works on completion

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