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ENGINEERING SYSTEMS

Review of Environmental Factors

WORLD CLASS END OF LIFE PROGRAM

TAMWORTH HOSPITAL

Prepared for: Health Infrastructure NSW

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Revisions

Revision	Description	Date	Prepared by	Approved by	Signature
A	DRAFT REF	20/05/2025	RE	Rhys Edwards	
B	DRAFT REF	21/05/2025	RE	Rhys Edwards	
B	REF	06/06/2025	RE	Rhys Edwards	

Review Panel

Division/ Office	Name
Building Services / Sydney	Rhys Edwards

Unless otherwise advised, the parties who have undertaken the Review and Endorsement confirm that the information contained in this document adequately describes the conditions of the site located at Tamworth Hospital, NSW.

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1 Executive Summary

ACOR Consultants Pty Ltd (ACOR) has been engaged by Health Infrastructure NSW (HINSW) to assist the design team with the concept design of the World Class End of Life Care Program (WCEoLP) relating to Hydraulic, Fire Protection, Electrical and Mechanical Services. The activity consists of the addition of a new facility adjacent to the existing Palliative Care unit at Tamworth Hospital.

ACOR has investigated, through on-site investigations and consultation with the hospital engineering staff, and is continuing to undertake confirmation of the condition, capacity, compliance, reliability and efficiency of the existing supplies within and immediately surrounding the existing building.

The report, where information is available, will describe the existing infrastructure, existing services infrastructure, strategies, enabling works and diversions, staging requirements, and details of proposed services internal to the new development.

Throughout the development of the service systems design, we have assessed several options and the final selected design parameters preferred by the project team, HINSW and the Hunter New England Local Health District (LHD).

The overall design strategies for the project will consider and review key design strategies including:

- Existing Services infrastructure
- Enabling works (if required)
- Upgrades of existing services equipment for compliance and energy efficiencies
- Environmentally Sustainable Design (ESD) Options and environmental best practice
- Safety in Design for construction and maintenance
- Risk assessment

In carrying out our preliminary assessments we have found:

1.1 Hydraulic Services

The existing infrastructure:

- has adequate capacity for sewage within the site
  - existing services are located near the proposed works which will require modification/extension and diversion
- has adequate capacity for potable water within the site
  - the existing water supply piping is located within the ceiling space of the existing ground floor
  - modifications and extensions will be required to allow connection to the proposed areas think
- has adequate capacity to retain the use of the existing potable hot water generation plant and reticulating pipework
  - the existing water supply piping is located within the ceiling space of ground floor
  - modifications and extensions will be required to allow connection to the proposed areas.
- The existing fire hose reel system is fed from the domestic cold-water system. Initial checks indicate that the proposed space is not covered and requires a new fire hose reel (FHR). This is due to its current location near the fire stairs.
  - The FHR will be checked for coverage as the design progresses

1.2 Fire Protection Services

The existing infrastructure:

- There is existing automatic fire sprinkler system provided throughout the building in compliance with AS2118.1-1999. The existing fire sprinkler system was designed to the following hazard classifications:
  - Ordinary Hazard 2 for Loading Dock
  - Light Hazard for general hospital area
  - Ordinary Hazard 1 for plant room

  The existing fire sprinkler system comprises the following components:
  - Grade 2 towns main water connection
  - Fire sprinkler booster assembly located at the site main entrance.
  - Installation 1: Lower ground floor
  - Installation 2: Ground floor
  - Installation 3: Level 1
  - Installation 4: Level 2
  - Installation 5: Level 3
  - Installation 6: Roof plant room
  - Installation 7-11: Spare
- With the option 1c to be adopted, the existing sprinkler system shall be extended to the new proposed area to suit the architectural layout.
- There is existing fire hydrant system provided throughout the building in compliance with AS2419.1-2005.
  - Internal fire hydrants are provided within the existing hospital buildings to achieve compliant coverage.
- The existing hospital building is provided with the fire detection and alarm system in compliance with 1670.1-2004. The fire detection system comprises the following components:
  - Main FDCIE Notifier-AFP2800 with 57 detection zones located on the ground floor main entry lobby
  - Fire fan control panel
  - Manual call points
  - Mimic panels
  - Alarm Signal Equipment (ASE)

With the option 1c to be adopted, the existing fire detection system shall be extended to the new proposed space to provide required fire detection protection.

- The existing hospital building is proved with Emergency Warning and Intercom System in compliance with AS1670.4-2004. The EWIS system comprises the following components:
  - Main EWCIE Notifier Inertia-2000 with 27 EWIS zones located adjacent to the main FDCIE
  - Warden Intercom Phones
  - EWIS speakers

With the option 1c to be adopted, the existing EWIS system shall be extended to the new proposed space to provide required evacuation alarm signal.

- Fire extinguishers are provided throughout the building in compliance with AS2444-2001
- ACOR to receive any Fire Engineering Reports for the existing site / building

1.3 Electrical Services

The existing infrastructure:

- Essential and Non-Essential switchboards are present within the footprint of the site
- UPS supply is present nearby, however noted not likely to be capable of supplying new UPS loads of project works pending further analysis
- Communications rooms are present approx. 90m distance from footprint of site, as such are not suitable for direct supply of the space's communications requirements. A new communications room will be required for the project.
- Nurse call will be implemented and align with new systems being installed elsewhere on site as part of concurrent projects.
- Security systems will be installed in alignment with existing systems, in positions as nominated by brief documentation.

1.4 Mechanical Services

The existing infrastructure:

- The existing infrastructure of the hospital building is provided with water-cooled chillers and cooling towers for building cooling, and gas-fired boilers for heating. However, the chillers are not in satisfactory working conditions although the boilers may have some spare capacity.
- The new build of the palliative care facility will be served by new mechanical services systems, however, the existing part, where modifications are required under this scope, will continue to be served by the existing infrastructure with modifications.

The proposed provision:

- It is proposed to provide an air-cooled variable refrigerant flow (VRF) air conditioning system to serve the new facility, including palliative care bedrooms and supporting areas.
- Patient rooms will be slightly positively pressurised in relation to the adjoining corridors.
- The existing communications room 000634 is cooled with an air conditioning system, it is envisaged the additional equipment load can be cooled by the existing system (to be confirmed by LHD).
- The new facility will be provided with medical oxygen, medical air, and medical suction services supplied from the existing sources of the hospital.
- A new outside air supply system will be provided to supply fresh air to various areas in accordance with the code.
- A new exhaust system will be provided to serve the bedroom ensuites, dirty utility, and the like to comply with the code.

The main design objective is to confirm the availability and compliance of the existing engineering service infrastructure for the proposed building works and to ensure minimal disruption to existing hospital operations, cost effective construction methodology is used and compliance with statutory building codes and health facility best practice is achieved.

1.5 Site Service Infrastructure Assessment

The refurbished building will be designed to be serviced as a standalone building with services interconnections into the existing, site infrastructure.

Connection into Authority assets is not required for this project.

The existing infrastructure services adequacy is summarized within the table below:

Table 1 Internal Infrastructure Services Adequacy Summary – Hydraulic and Fire Services

Description	Sewer	Domestic Water	Natural Gas	Wet Fire Service	Dry Fire services
Internal Services Capacity limits	Adequate Existing sewer is located directly adjacent the proposed footprint.	Adequate	Adequate	Adequate	Adequate
Condition	Good No reports of major breakdown or unreliability Existing drains will be removed and replaced as required	Good Existing pipes will be modified and extended	Good No reports of major breakdown or unreliability	Good AS2419.1 2005 was used for the existing development AS2118.1-1999 was installed for the existing development	Good Existing fire detection and EWIS system appears in a good condition and well maintained
Interface Issues	Nil With the exception that the existing sewer will require extension to the proposed option	Nil	Nil	Nil The existing system is capable of meeting code requirements for the new development	Nil The existing system is capable of meeting code requirements for the new development

Table 2 Internal Infrastructure Services Adequacy Summary – Mechanical and Electrical Services

Description	Air Handling	Heating and Chilled Water	Power and Lighting	ICT
Internal Services Capacity limits	Existing infrastructure is inadequate, new systems are proposed.	Existing infrastructure is inadequate, new systems are proposed.	Likely Adequate pending further assessment of loads	Inadequate, new communications room required
Condition	N/a. New systems are to be provided.	Chillers are showing signs of aging, machines are prone to have maintenance issues.	Existing boards installed 2011 and noted to be in serviceable condition.	Existing IT services in good condition though located too far from project area for compliant cabling to service scope.

Description	Air Handling	Heating and Chilled Water	Power and Lighting	ICT
Interface Issues	Nil	Nil	Nil	Nil

2 Introduction

The development is the extension of the existing Palliative Care Unit adjoining the existing Hospital. The below image represents the location of Site.

Image 1 - Proposed site location

The purpose of this document is to establish an engineering design strategy and highlight potential risks and opportunities for building engineering services for the project.

This report will consider:

- Internal site infrastructure location, capacity, compliance, reliability efficiency and condition
- Augmentation of existing infrastructure to cater for refurbishment
- Staging, interface and hospital disruption issues
- Enabling Works
- Proposed building engineering services for the building
- ESD
- Safety in Design
- Risk Assessments
- Construction cost estimates.

This report is based on:

- Design drawings prepared by BVN Architects
- Bushfire Risk Assessment report compiled by Firebird ecoSultants Pty Ltd
- Review of existing available site services documentation provided by Capital Insight to the design team
- Site visits and discussions with hospital engineers and maintenance staff
- Liaison with design team consultants and project managers
- HINSW requirements
- Site Visit attendance:
  - Site Visit 1 (6 October 2023)
  - Site visit 2 (31 January 2024)
    - Site inspection to review latent conditions
    - Met with LHD Project Officer Tamworth Redevelopment
    - Met with Project Managers (Capital Insight)

3 Standards and Design Guides

3.1 Australian Standards and Codes

The following lists the primary standards and codes our design approaches are reliant upon:

- NCC 2022 (being the current version at the time of writing this report)
- Plumbing Code of Australia (PCA) – 2022
- AS 3500 Plumbing and Drainage Suite of standards – 2022
- AS 5601 Gas Installations – 2022
- AS 3718:2005 Water Supply Tapware
- AS 4187:2014 Reprocessing of reusable medical devices in health service organizations
- AS 2419.1 Fire Hydrant Installations – 2022
- AS 2118.1 Fire Sprinkler Installations – 2017
- AS 2441 Fire Hose Reels – 2005
- AS 1670.1 Fire Detection and Alarm Systems - 2018
- AS 1670.4 – Sound System and Intercom System for Emergency Purposes – 2018
- AS 1668.1-2015 The use of ventilation and air-conditioning in buildings – Fire and smoke control in multi-compartment buildings
- AS 1668.2-2012 The use of ventilation and air-conditioning in buildings – Mechanical ventilation in buildings
- AS 1680 Interior Lighting (series)
- AS 2865-2009 Confined spaces

- AS 2896-2021 Medical gas systems – installation and testing of non-flammable medical gas pipeline systems
- AS/NZS 3666-2011 Air Handling and water systems in Buildings – Microbial Control
- AS/NZS 3823-2013 Performance of electrical appliances –minimum energy performance standard (MEPS) requirements
- AS 4254.1-2012 Ductwork for air-handling systems in buildings – Flexible duct
- AS 4254.2-2012 Ductwork for air-handling systems in buildings – Rigid duct
- AS 4426-1997 Thermal insulation of pipework, ductwork, and equipment – Selection, installation, and finish
- AS/NZS 5149-2016 Refrigerating systems and heat pumps – Safety and environmental requirements
- AS/NZS 3000:2018 Wiring Rules
- AS 3003:2018 Electrical Installation patient areas
- AS 3008:2017 Electrical installation selection of cables
- AS 2293.1:2018 Emergency Escape lighting and escape signs for buildings.

3.2 Authority and Regulatory Bodies

The following lists the primary authorities and regulatory bodies our design approaches are reliant upon:

- EP&A – ACT & Regulation
- Tamworth City Council (Council)
- Department of Fair Trading
- Fire and Rescue NSW.

3.3 NSW Health Policy and Health Infrastructure Engineering Services Guidelines

This report will rely upon the following guidelines and policies, however, the full suite of the HI guides and policies will be applicable:

- NSW Health Policy Directives
- Design Guidance Note No. 5 – Engineering Scope Definition
- Design Guidance Note No. 6 – General Design Principles
- Design Guidance Note No. 13 – Project Team Guidance Relating to Coordination with ERG
- Design Guidance Note No. 16 – Legionella Risk – Delayed/Staged Occupation
- Design Guidance Note No. 20 – Design Deliverables
- Design Guidance Note No. 24 – Importance Levels for Hospital Buildings
- Design Guidance Note No. 30 – Site Investigations – Project Opportunities and Constraints
- Design Guidance Note No. 31 – Water Testing and Compliance
- Design Guidance Note No. 42 – Publicly Accessible Toilets in Healthcare
- Design Guidance Note No.58 – Environmentally Sustainable Development dated 18 March 2021
- NSW Health – Engineering Services Guidelines GL2016_020
- Australasian Health Facilities Guideline (AHFG)
- Hospital acquired infections – Engineering down the risk – Handbook – HB 260 – 2003.

4 Alternative Solutions Proposed

The following alternate solutions are being proposed for the new building(s) which are outside of the NCC or the HINSW Engineering Services Guidelines (ESG):

- Omission of FHR to communication rooms, plantrooms and the like
- Rationalisation of fire rating to openings between fire compartments
- Fire egress path from upper floors to existing fire stairs exit path at ground level

5 Bushfire Risk Assessment

ACOR has read the draft report compiled by Firebird ecoSultants Pty Ltd, dated 02/05/2025 and have found that based on the Bushfire Assessment Level (BAL) of BAL-LOW, the building services design adequately achieves compliance.

6 Scope of Services

ACOR will include the following aspects:

6.1 Hydraulic Services and Fire Protection Engineering Services

- Sewer drainage.
- Sanitary plumbing and drainage.
- Potable water
  - Hot and Cold.
- Non-Potable water
  - Hot and Cold.
- Fire hydrants.
- Fire hose reels.
- Portable fire extinguishers.
- Smoke detection and alarms.
- Emergency warning and intercommunication system.
- Automatic fire sprinkler system
- Fire drenchers

6.2 Mechanical Services

- Ventilation to all occupied spaces.
- Exhaust to ensuites, toilets, dirty utility, and the like.
- Air conditioning to all occupied spaces.
- Medical gas supply as required (medical air, oxygen, and medical suction are available).
- Electrical supply to all new mechanical services equipment.
- Control via building management system (BMS) of all new mechanical services equipment, electrical equipment, energy metering, water metering and the like.

6.3 Electrical Services

- Distribution Switchboards
  - Potential Supply Origin
  - UPS and Generator Backup Options
  - Body Protected Areas.
- Communications services.
- Security Services
  - CCTV
  - Access Control
  - Duress System.
- Nurse Call System.
- Lighting
  - General Lighting
  - Emergency and Exit Lighting.

7 Description of the Existing Hydraulic Engineering Services

This section sets out to describe the existing condition, compliance and capacity of the existing site infrastructure for Hydraulic Services network.

7.1 Existing Sanitary/Trade Waste Plumbing and Drainage Systems

At present, we do have existing services drawings.

As the site was constructed only recently, the existing sanitary plumbing has been installed using un-plasticised polyvinyl chloride (uPVC) or High Density Polyethylene (HDPE)

Where new systems are to connect to any existing drainage, they are to be inspected and tested to ensure compliance and or suitability. The vetting of the connections will be carried out during the schematic design phase once the interface between new and existing are established.

It is envisaged that new trade waste apparatus or extension of the existing system is not required as part of this project.

7.2 Existing Domestic Potable Cold Water

The existing domestic water supply for the building comprises:

Internally reticulating services main within the ceiling spaces throughout the hospital with connections to the various fixtures.

7.3 Existing Domestic Potable Hot Water

Domestic hot water to the existing building is supplied via a dedicated hot water plant.

The existing building is supplied with a hot water distribution network with point of use water temperature control branching off a recirculated loop located in the ceiling spaces. It is assumed the existing plant is in good condition and has adequate capacity to serve the proposed refurbishment.

7.4 Existing Backflow Prevention Devices

The Authority mains are fully protected from cross connection potential by the means of backflow prevention devices located at the water meters.

New back flow prevention valves will be installed for zonal and individual requirements where necessary. Typically, they will be located within the Dirty Utility Rooms.

7.5 Existing Natural Gas

There is no natural gas supply to this site.

8 Description of the Existing Fire Protection Engineering Services

This section of the report sets out to describe the existing condition, compliance and capacity of the existing site infrastructure for the fire protection services network.

8.1 Existing Fire Hydrant Protection

The existing fire hydrant water supply system to the building has the following:

- external fire hydrants on the ground floor level
- internal fire hydrant within the fire stairs

The on-site fire hydrants throughout the site are a mix of external dual head fire hydrant pillars and internal fire hydrants. All fire hydrants appear to be in compliant locations commensurate to the standard and codes of the time when they were installed.

8.2 Existing Fire Hose Reel Protection

Existing fire hose reels appear to be in compliant positions (subject to full BCA assessment). Fire hose reels are known to be fed off the domestic water supply and are generally co-located with the internal fire hydrants. The existing fire hose reels remain in service.

8.3 Portable Fire Extinguishers

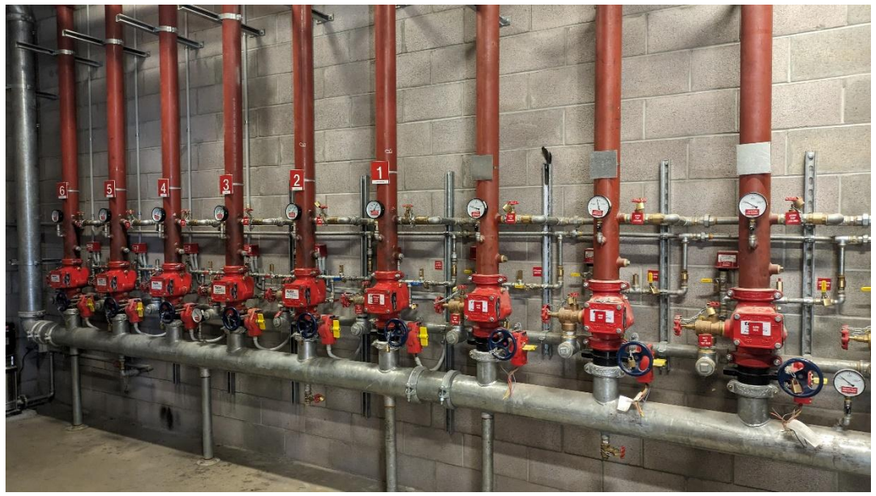
Existing portable fire extinguishers appears to be provided in accordance with AS2444-2001

8.4 Existing Automatic Sprinklers

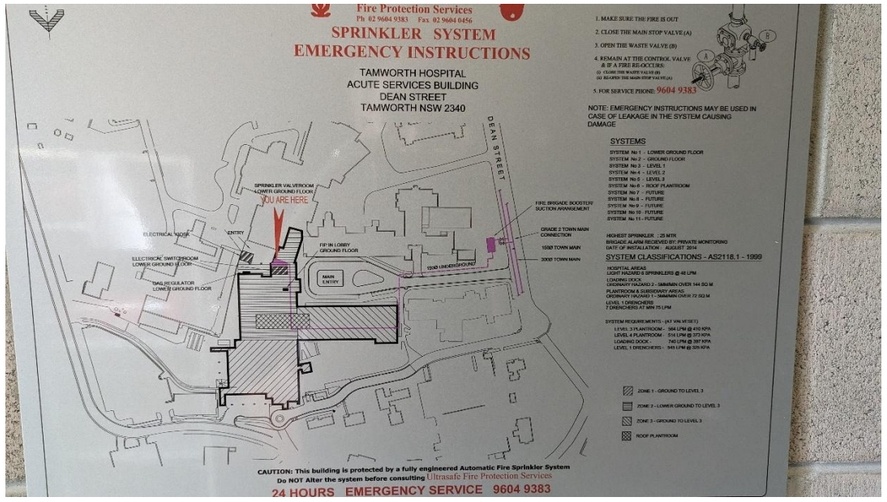
- There is existing automatic fire sprinkler system provided throughout the building in compliance with AS2118.1-1999. The existing fire sprinkler system was designed to the following hazard classifications:
  - Ordinary Hazard 2 for Loading Dock
  - Light Hazard for general hospital area
  - Ordinary Hazard 1 for plant room

  The existing fire sprinkler system comprises the following components:
  - Grade 2 towns main water connection
  - Fire sprinkler booster assembly located at the site main entrance.
  - Installation 1: Lower ground floor
  - Installation 2: Ground floor
  - Installation 3: Level 1
  - Installation 4: Level 2

- Installation 5: Level 3
- Installation 6: Roof plant room
- Installation 7-11: Spare



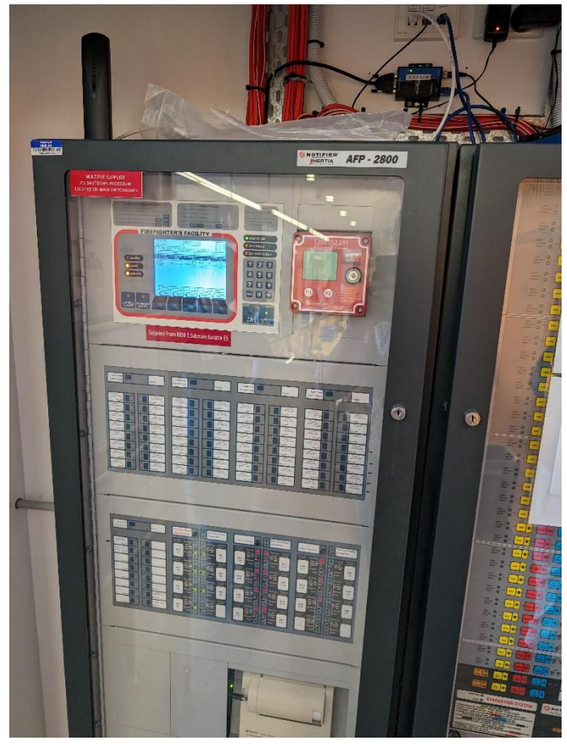
Photograph 1 – Sprinkler control valves assemblies



Photograph 2 – Existing sprinkler block plan

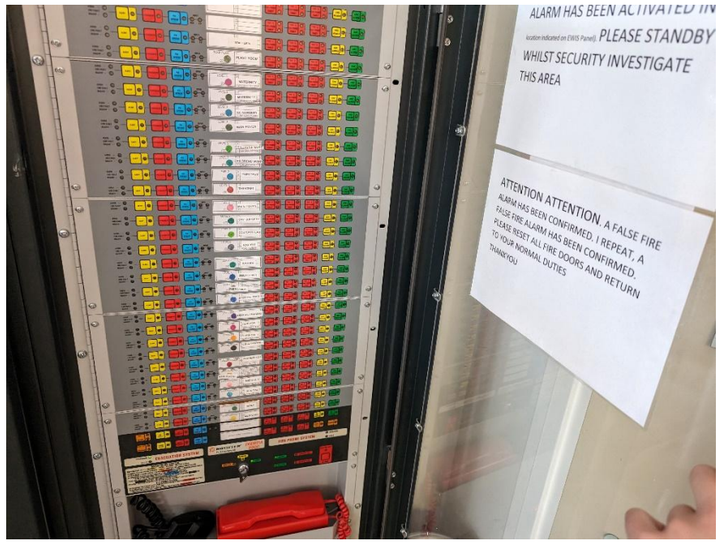
8.5 Existing Fire Detection and EWIS System

- The existing hospital building is provided with the fire detection and alarm system in compliance with 1670.1-2004. The fire detection system comprises the following components:
  - Main FDCIE Notifier-AFP2800 with 57 detection zones located on the ground floor main entry lobby
  - Fire fan control panel
  - Manual call points
  - Mimic panels
  - Alarm Signal Equipment (ASE)



Photograph 3 – Main FDCIE and FFCP

- The existing hospital building is proved with Emergency Warning and Intercom System in compliance with AS1670.4-2004. The EWIS system comprises the following components:
  - Main EWCIE Notifier Inertia-2000 with 27 EWIS zones located adjacent to the main FDCIE
  - Warden Intercom Phones
  - EWIS speakers



Photograph 4– Main EWCIE

This system appears to be in good working condition and has capacity for extension.

9 Description of the Existing Mechanical Engineering Services

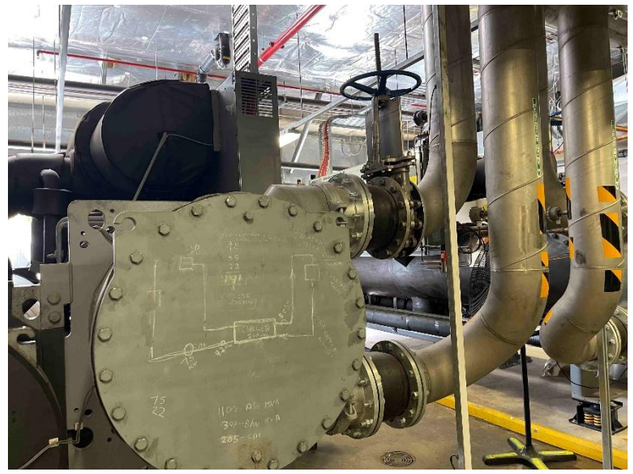
This section of the report sets out to describe the existing condition, compliance and capacity of the existing site infrastructure for the mechanical services network.

9.1 Cooling System

The existing cooling system to the building is provided with three (3) water cooled electric chillers located in the ground floor plant room. These are Carrier make machines with 2 x 1,680kW and 1 x 480kW cooling capacity. Heat rejection from the chillers is via condenser water pipes connecting to two (2) cooling towers located on the roof plant enclosure.

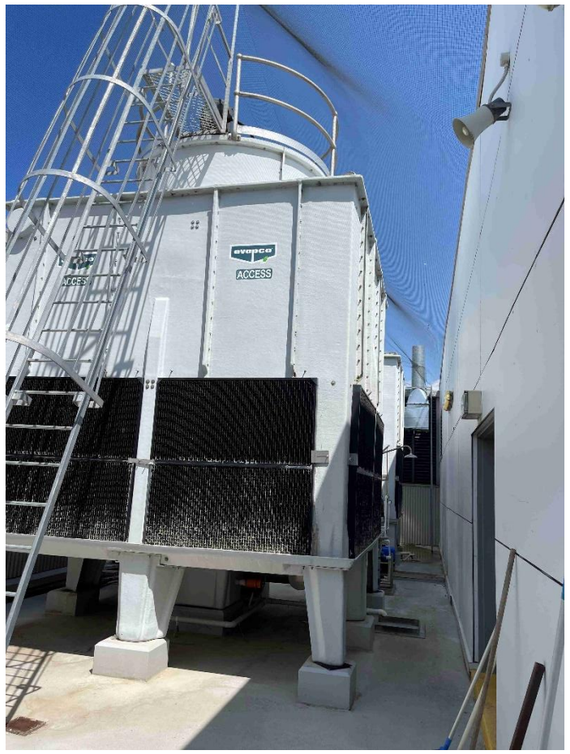
There is spare space in the roof enclosure for a third cooling tower, however the ground floor chiller plant room is already full, where ventilation is not adequate according to the facility management staff. At the time of site visit one large chiller was faulty probably due to overheated plantroom. A hired air-cooled chiller was in place to assist the remaining chillers to provide cooling to the hospital building.

Chilled water pipes are reticulated to various air handling plant rooms and connected to cooling coils of the air handling plants.



Photograph 5 – Chiller plant room and Chillers

Photograph 6 – Chilled Water Pumps



Photograph 7 – Cooling Towers

Photograph 8 – Temporary Air-cooled Chiller

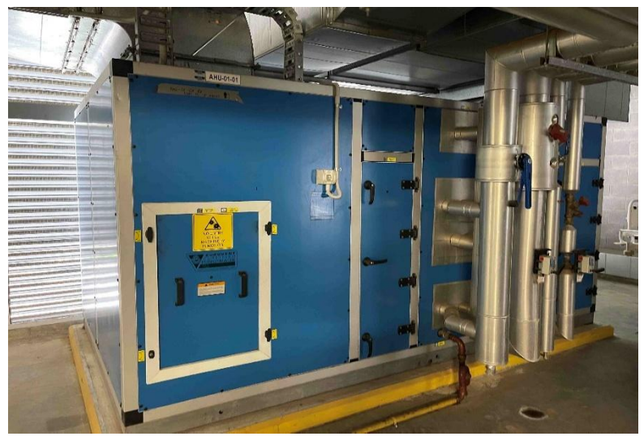
9.2 Heating Hot Water System

Heating hot water is generated with 2 gas-fired heating generators of ICI make, located in the roof boiler room. Heating hot water pipes are reticulated to various air handling plant rooms and connected to heating coils of the air handling plants. These heating equipment and air handling equipment are only 8-year old and are considered satisfactory for continuing operation.

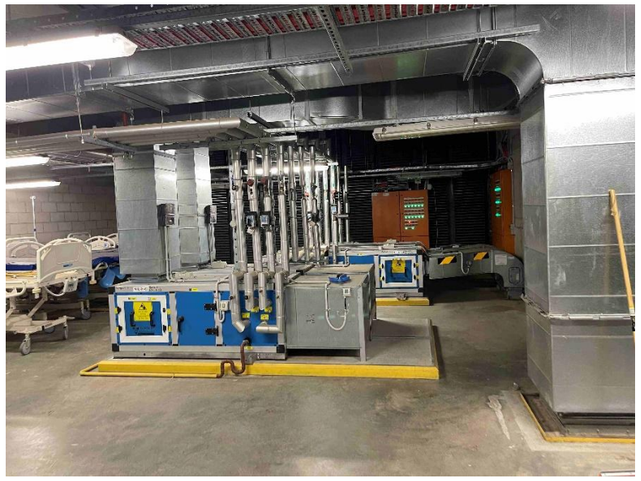
Photograph 9 – Gas-fired heating hot water generators

9.3 Air Handling System

The hospital building is in general supplied with conditioned air via air handling units and fan coil units completed with cooling coils and heating coils. However, it is envisaged that there is no infrastructure including air handling units and/or water pipes around the ground floor proposed palliative care unit. As-built drawings and water schematic drawings are required to confirm this speculation.



Photograph 10 – Air Handling Units



Photograph 11 – Fan Coil Units

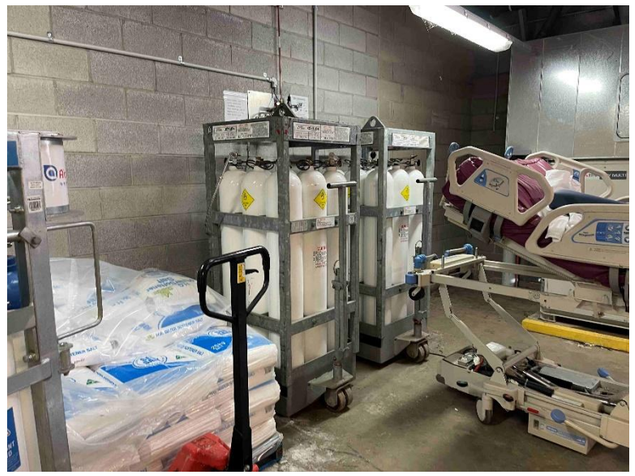
9.4 Pneumatic Tube Conveying System

Pneumatic tube system has been installed in the existing palliative care ward. This system can be extended to the new palliative care area if required.

Photograph 12 – Pneumatic Tube Distribution System

9.5 Medical Gases

Medical breathing air, medical oxygen gas supply, and medical suction are currently available from the reticulated network in the building. Extension to the new palliative care wards can be connected to these existing piping network.



Photograph 13 – Oxygen Gas Bottles in Plantroom

Photograph 14 – Vacuum Plant in Plantroom

Photograph 15 – Medical Air Compressor in Plantroom

10 Description of the Existing Electrical Engineering Services

This section sets out to describe the existing condition, compliance and capacity of the existing site infrastructure for the electrical services network.

10.1 Distribution Switchboards

Existing distribution boards (DB-G-07 and EDB-G-07) are present in the adjoining area of the project scope in a hallway cupboard. The installation appears compliant with current Australian Standards and includes provision for both Essential (generator backed) power and general power supplies.

The switchboards are noted to have spare pole space likely sufficient for project needs, metering contained within the boards indicate that substantial supply capacity is available at these switchboards.

DB-G-07 is noted to be supplied from Main Switchboard 2 with a 150A supply shared between DB-G-07, DB-L1-07 and DB-L3-06 by tee-off boxes.

EDB-G-07 is noted to be supplied from Main Switchboard 1 (with Generator backup by transfer switch) with a 125A supply shared between EDB-G-07, EDB-L1-07 and EDB-L3-06 by tee-off boxes.

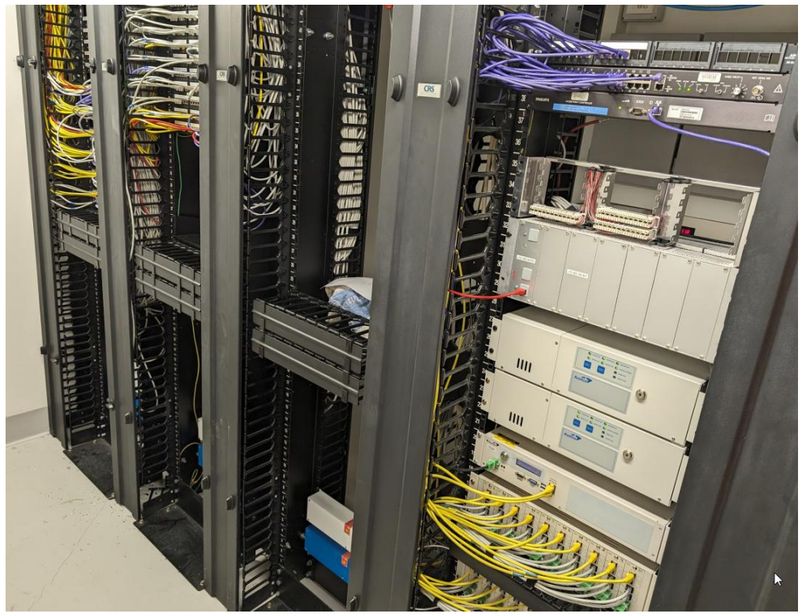
Photograph 16 – Existing Distribution Switchboards DB-G-07 & EDB-G-07

10.2 Communications services

An existing communications room is present on the same level and in proximity to the proposed scope.

The existing communications room is room 00634.

The existing racks contain substantial spare space and capacity and appear to be sufficient for the project needs without additional racks or other significant adjustments. Additional active equipment may be required to service the project scope to be installed within these existing racks.



Photograph 17 – Communications Room 00634 Racks

10.3 Security Services

10.3.1 CCTV

CCTV coverage is to be designed as an expansion to existing systems to provide coverage to the new scope area.

Specific points of coverage are to be nominated by relevant stakeholders to provide a basis for ACOR's designs.

The existing head end system is to be expanded to incorporate the new cameras as necessary.

10.3.2 Access Control

Existing Electronic Access Control Systems (EACS) are present throughout the remainder of the local building. It is anticipated that the existing EACS head end system will have capacity to expand to cater for the new project. This will include for provision of additional localised access restrictions using existing badges/cards as necessary.

A consistent user experience is proposed to be installed, utilising existing head end infrastructure.

10.3.3 Duress System

The duress system for the new scope area is proposed to be an expansion of existing duress systems installed in the facility. The proposed system head end is proposed to be expanded to incorporate the new push button points, and integrate with existing alarming systems, a consistent user experience is proposed to be installed.

10.4 Nurse Call System

A nurse call system expansion will be provided for the new scope areas. It is proposed that existing nurse call systems may be expanded within the local communications room and a outlets/call points will be provided to align with existing infrastructure to provide a consistent user experience.

10.5 Lighting

10.5.1 General Lighting

General lighting is proposed to be provided in alignment with AS1680 requirements and HFG guidelines. Nominally the design intent is to follow conventions adopted in the adjoining areas, noting recessed LED troffers and downlights in a 4000K Lighting arrangement.

Switching is noted to generally be by manual switching and motion sensors where appropriate. Switch locations will be in alignment with HFG guidelines.

10.5.2 Emergency and Exit Lighting

Emergency and Exit lighting are noted to be present throughout the remainder of the hospital.

It is expected that existing monitoring systems where present may be readily expanded to suit the proposed project works.

11 Proposed Engineering Works

This section sets out to describe the proposed works associated with the new systems within the building.

Staging is typically a key factor in considering when and how to changeover from the existing infrastructure to the new infrastructure to provide the ability to carry out replacement tasks without majorly disrupting the remaining operations on the existing campus. With the cold shell arrangement and provision of base building infrastructure to suit future planning, it is envisaged that disruptions will be negligible.

11.1 Fire Rating Through Building Elements

Fire stop collars will be provided at each point where non-metallic pipes pass through fire rated floors or walls or other fire rated elements to meet the requirements of C3 of the NCC-2022.

Where metallic pipes pass through fire rated floors or walls or other fire rated elements a fire and smoke stopping system will be used to meet the requirements of C3 of the NCC-2022.

Where services that are not listed in C3.9 of the NCC-2022 they will need to be installed within fire isolated exits such as passages, corridors or stairs the service will be fire separated from the fire isolated exits in accordance with the NCC-2022.

As sanitary fixture outlet pipes, TMVs Medical Gas Panels, in wall water pipes and in-wall cisterns etc. cannot be fire stopped to meet the requirements of C3 of the NCC-2022, they will not be installed within structural, smoke or fire walls. The architect is to document a service wall to ensure no elements will be installed within structural, smoke or fire walls.

A fire penetration schedule, with installation compliance certification must be provided prior to practical completion by the contractor(s).

11.2 Acoustic Treatment

Acoustic lagging will be provided as prescribed by the Acoustic Report for the Project. Acoustic insulation will have zero ozone depletion potential to comply with the project ESD strategy as identified in the ESD Report compiled and meeting HINSW's DGN 058. To meet these strategies, SoundLag 4525C acoustic lagging or equivalent will be applied to the pipework. All required acoustic treatment layouts will be documented during the Schematic Development phase for review and approval by the Acoustic Engineer.

11.3 Earthquake Resistance

All the Hydraulic and Fire Protection Services within the new building scope are required to be designed to allow for building/seismic movement and expansion requirements.

The bracketing and restraints for these systems will be designed to comply with:

- The NCC 2022
- AS 1170.4 Structural design actions Earthquake actions in Australia and all related design parameters:
  - Design category = TBC
  - Hazard factor Z = TBC
  - Site sub soil class = (T.B.C following detailed geotechnical investigations)
  - Probability of Exceedance = TBC
  - Importance level = 4

Expansion provisions will be made for the services that cross above structural movement joints and will comply with:

- The NCC.
- The Structural Engineer's design criteria.

The expansion provisions within the services shall account for a movement of at least +/-50mm.

Consultation with and approval from the Structural Engineer will be required for seismic restrains and expansion provisions.

11.4 Disaster Management

Whilst the Tamworth Hospital is not classified as a disaster recovery centre, it is a Regional Trauma centre and consideration for disaster management for the project should be applied and shall be consistent with HINSW ESG. The following items should be provided:

- N+1 for ancillary plant
  - Recirculating pumps.
- Services pipework and plant restrained in accordance with the IL 4 category (seismic).

11.4.1 Environmentally Sustainable Design Initiatives

The following ESD measures are being considered to be implemented to achieve a target comparable with 5 Star Greenstar and the DGN058 framework:

- Metering of water supplies including hot water metering.
- Increased thickness of thermal insulation on all hot water supplies
  - 25 mm thick in lieu of 19 mm thick.
- Recyclable materials selection.
- Rainwater harvesting for an alternative water supply source
  - Landscape irrigation
  - Water closet flushing for staff and visitor areas only.
- Reducing reliance on gas fired appliance to transition into an 'electrified' site approach.
- Efficient piping layouts.
- Best practise uPVC pipework.
- Motion detection controls on lighting.
- Energy efficient lighting selection.

The following ESD measures are to be explored to achieve aspirational targets to align with the LHDs "planetary sustainability" approaches:

- Increased thickness of thermal insulation on all hot water supplies (38 mm thick).

11.5 Future Capacity and Expansion

11.5.1 Hydraulic Services

The hydraulic services will not be provisioned with capacity to allow for future expansion. As it is a reasonable expectation that the future capacity has been built into the base building provisions.

It is worth noting that the ESGs are silent in terms of future capacity and expansion for hydraulic services.

11.5.2 Fire Services

The Fire Services will not be provisioned with capacity to allow for future expansion. As it is a reasonable expectation that the future capacity has been built into the base building provisions.

11.5.3 Mechanical Services

The Mechanical Services as it is provided in the existing installations will not be expanded to accommodate future expansion. However, reasonable margin will be provisioned with new equipment such as air conditioning system, ventilation fans and the like as per normal practice.

11.5.4 Electrical Services

As the project will utilise existing spare capacity in local assets, it is anticipated that spares and future provisioning will not be anticipated as required for the project.

Where feasible, it is suggested that any spare capacity remaining be retained and be made readily accessible for future works.

Any new cable reticulation pathways are to be designed with spare capacity for future works where requested.

11.6 Hydraulic Services

11.6.1 Sanitary plumbing and drainage

New sanitary drains will be constructed to the requirements of AS3500.2 and Council requirements.

The zone of works will be connected back to the existing base building provisions and the drainage pipes will connect to all the fixtures within the project. Existing drains are located in the ceiling void of the ground floor, above occupied spaces. Access to these occupied spaces is required and will result in disruptions to operations. Management of the disruptions will adhere to the LHD procedures.

Inspection and maintenance openings will be located to consider infection control issues.

Venting to waste pipes will be provided to maintain fixture trap seals and adequate flow throughout the systems.
A combination of air admittance valves (AAVs) and hard piped venting will be provided to all fixtures and fittings.

The drainage systems will be specified with pipework constructed using uPVC. Any areas where pipework is to receive hot discharge or high acidity levels (eg; Condensing boilers for heating hot water), High Density Polyethylene (HDPE) will be used. Generally, the use of HDPE will be limited to Plantrooms and Dirty Utility Rooms.

Any drainage pipework traversing above sound sensitive areas will be acoustically treated.

Gravity drainage will be utilised/adopted.

Any pipe penetration through fire and smoke walls will be appropriately treated to maintain fire separation and structural integrity.

Table 3 Sanitary Plumbing and Drainage Specific requirements

Description	Comments
Minimum pipe size	Inground = DN100 mm Aerial Drainage - DN65 mm
Minimum pipe grade	65 mm = 2.5 % 100 mm = 1.65 % 150 mm = 1.00 % 225 mm = 1.00 %
Inspection openings	In accordance with AS3500.2 and located on every WC branch)

11.6.2 Trade waste plumbing and drainage

It is envisaged that trade waste will be required for the dirty utility room.

11.6.3 Roof water plumbing and drainage

It is envisaged that new works will be required for the building extension.

11.6.4 Incoming Potable Water Filtration and Treatment

The quality of the incoming potable water is unknown, however, with it being supplied by Council it should be compliant with the Australian Drinking Water Guidelines (ADWG).

We don't expect the water quality to deteriorate and therefore to need any treatment. However, as a precautionary measure, we could request localised water samples and send to third party laboratory to be analysed. It is expected that results won't be known until part way through the concept planning phase.

11.6.5 Domestic Potable Water (Cold)

New domestic water supply will be constructed to the requirements of AS3500.1, Council and HINSW requirements.

Potable water will be extended throughout the zone of works, above ground and typically within the corridor ceiling spaces. The potable water supplies will be segmented, with provision of isolation to suit departmental zones.

The water supply will be distributed to achieve:

- 350 kPa (dynamic) at the most disadvantaged tap outlet.
- 1.5 m/sec velocity through the pipes located within the proposed building.

Subsidiary meters will be provided to major water uses such as:

- The floor area / department

All subsidiary meters will be connected to the building management system for the monitoring of department and/or area water consumptions as well as to identify areas where non-standard usage occurs i.e. leak detection. The water metering helps to identify water usage so that non-critical areas of the facility can be manually isolated in a staged manner under a disaster scenario or failure of service(s).

Table 4 Cold Water Supply Specific Requirements

Description	Comments
Maximum pressure at fixture outlets	500 kPa (as stipulated in AS3500.1)
Minimum (dynamic) pressure at fixture outlets	350 kPa (project criteria)
Minimum pressure at fire hose reel	210 kPa (plus or minus 10 kPa)
Maximum cold water flow velocities (internal of the building)	1.5 m/sec
Maximum cold water flow velocities (external of the building)	3.0 m/sec
Loading Unit diversity. **As pipe sizing based on AS3500.1 Loading units "falls outside" the requirements for large healthcare buildings, the following diversities will be applied to loading unit calculations**	Building – 50 % of total loading units Floor – 60 % of total loading units for that floor Branch connections – 100 % of total loading units connected.
Isolation Valves	Isolation valves are to be provided to allow staged shut down for maintenance or emergency whilst minimizing disruption to other, non-affected, operational areas.
Subsidiary Meters	Connected to BMS

11.6.6 Potable Water Supply (Hot/Warm)

New domestic hot and warm water supply will be designed to AS3500.4, Council and HINSW ESG requirements.

The hot water generation for the potable water will be provided from the existing plant.

All hot water will be recirculated through the building on a distribution flow and return loop. All pipework shall be installed with thermal insulation of no less than 25 mm thickness. Subsidiary hot water meters to be located on the flow and return side of the loops and connected to the BMS. The return lines will be fitted with isolation valves, balancing valves and non-return valves. The non-return valves will prevent any bi-directional flow from entering the sub-loop system causing an imbalance.

All subsidiary meters will be connected to the building management system for the monitoring of floor water consumptions as well as to identify areas where non-standard usage occurs i.e. leak detection. The water metering helps to identify water usage so that non-critical areas of the facility can be manually isolated in a staged manner under a disaster scenario or failure of service(s).

The hot water distribution loop will be recirculated at 65 °C with a return velocity of no more than 1.0 m/sec.

The warm water distribution loop will be recirculated at 50 °C with a return velocity of no more than 1.0 m/sec.

Backflow prevention on water supplies to all dirty utility fixtures and fittings will be provided to prevent cross-contamination.

All ablutionary fixtures, or groups of fixtures, will be supplied from the warm water circuitry.

Domestic hot & warm water supply will aim to follow the route of the cold water supply within the refurbished building.

It is paramount that any hot water dead legs be in accordance with the NSW Health Policy Directive - PD2015_008 "Water Requirements for the Provision of Cold and Heated Water". This directive requires dead legs to be limited to a pipe branch having a water volume of 2 L or less. This directive aims to minimize energy, water usage and the proliferation of legionella bacteria.

It is expected water will take approximately a maximum of 20 seconds in a 10 m section of DN20 mm pipe to arrive at the tap outlet. (Dependent upon fixture tapware flow rate).

Table 5 Domestic Hot Water Supply Specific requirements

Description	Comments
Maximum pressure at fixture outlets	500 kPa
Minimum pressure at fixture outlets	350 kPa
Maximum "dead leg" volume	2 litres from main branch to fixture
Peak Delivery Requirements	Calculated on a 1 hour peak period
Maximum hot water flow velocities	1.2 m/sec
Maximum hot water return velocities	1.0 m/sec (designs should aim for 0.6m/sec)
Loading Unit diversity. **As pipe sizing based on AS3500.1 Loading units "falls outside" the requirements for large healthcare buildings, the following diversities will be applied to loading unit calculations**	Building – 50 % of total loading units Floor – 60 % of total loading units for that floor Branch connections – 100 % of total loading units connected.
Isolation Valves	Isolation valves are to be provided to allow staged shut down for maintenance or emergency whilst minimizing disruption to other, non affected, operational areas.
Subsidiary Meters	Connected to BMS

11.6.7 Natural Gas

The proposal is for no natural gas to be provided to the project so that it aligns with the ESD initiatives and HINSWs appetite for electrification.

11.6.8 Fire Hose Reels

The fire hose reels for the building extension will be placed in positions compliant with the requirements of the BCA consultant (and the Fire Safety Engineer's Alternate Solutions Report), NCC 2022 and AS 2441:2005. Fire hose reels are to be placed generally within 4 m of required exits to provide full coverage to the new building and such that fire hose reels do not extend through fire rated and smoke doors.

Small, fire rated rooms such as the communications rooms, switch rooms and the like, in accordance with a Deemed to Satisfy (DtS) approach are to be provided with FHRs. However, this is a costly method. It should be considered to use an Alternative Solution, where in substitution of FHRs will be portable fire extinguishers (supplied and installed by the fire services subcontractor). This approach needs to be written into the Fire Safety Engineering Report.

11.6.9 Plant and Ancillary Equipment Schedule

The LHD shall be consulted with to determine if they are satisfied with the existing manufacturers that have been used in the base building. For consistency it is recommend that like for like items are used.

11.7 Fire Protection

11.7.1 Automatic Fire Sprinkler Protection

The proposed extension area will be protected by the sprinkler system throughout from the existing system installed in the main hospital building (Installation 2). All new installation shall be compliant with the requirements of the BCA consultant (and the Fire Safety Engineer's Alternate Solutions Report), NCC 2022 and AS2118.1-2017.

New wall wetting sprinkler heads to be provided to the glazing opening for the egress/boundary protection as per the requirement of fire engineering report. The wall wetting sprinkler heads shall be fed from the automatic fire sprinkler system and completed with an isolation valve.

The sprinkler head shall be quick response type to match the existing installation.

11.7.2 Fire Hydrant System

Additional internal fire hydrants will be provided throughout the extension area to be compliant with the requirement of the BCA consultant (and the Fire Safety Engineer's Alternate Solutions Report), NCC 2022 and AS2419.1-2021.

All new hydrants will be fed from the existing fire hydrant system within the main hospital building. New internal fire hydrants will be located either within the fire isolated stairs or within 4m from the required non-fire isolated exit as per AS2419.1-2021 to provide full coverage to the new building. Note if supplementary fire hydrants are required on the floor to achieve full coverage, an Alternative Solution is required to address the deviation from the DtS.

11.7.3 Fire Detection System

The existing addressable fire detection system is proposed to be extended to the new proposed area. All new works to be installed in accordance with AS1670.1-2018. New detection zone will be assigned to the new proposed area and report back to the main FDCIE. New mimic panel will be installed within proximity to the nurse's station.

The fire detection and alarm system shall interface between the detectors and shut down mechanical ventilation systems.

The existing fire fan control panel will be modified to suit the new mechanical smoke control system as required.

Smoke and heat detectors shall be provided throughout the building with all concealed spaces exceeding 800 mm provided with smoke detectors.

11.7.4 Emergency Warning and Intercommunication System

A new emergency warning and Intercommunication systems (EWIS) shall be installed in accordance with AS1670.4:2018, extending from the existing base building provisions (installed 2014).

The EWIS panel shall be activated by Manual Call Points (MCP) spaced at 30 m intervals along the corridors, activation of active emergency fire equipment (eg; fire sprinkler pump) or manual operation at the FIP. Each MCP shall be at 1 m (maximum) above floor level and shall have a minimum of 600 mm clearance around it.

A WIP phone will be located within each fire compartment, typically at the nurse station.

The emergency evacuation plan will be developed in consultation with the user groups in a future design phase.

11.7.5 Portable Fire Extinguishers

Portable fire extinguishers are to be provided to comply with the requirements of NCC provisions and AS2444:2001. Generally, the portable fire extinguishers will be spaced at 15 m intervals along the path of travel and will be CO2 type. Additional fire extinguishers will be provided at electrical switchboards and plantrooms.

11.8 Mechanical Services

11.8.1 Existing Installations

All existing air handling plant, pipework and ductwork in proximity to the proposed new palliative care facility are not provided with spare capacity, no existing installations will be used for the new facility except for the modifications of the existing connection areas.

11.8.2 New VRF Air Conditioning

New direct expansion refrigeration air conditioning systems will be provided. The systems will be high-efficiency variable refrigeration flow (VRF) systems with air-cooled condensing units connected to multiple numbers of fan coil units for the rooms and spaces in the building. This provision does not require connection to the existing chilled and

heating hot water systems. The components include external condensing units, indoor ducted fan coil units in ceiling space, supply air ducts, return air ducts, outside air ducts, ceiling supply air outlets, and return air grilles.

The condensing units are proposed to be located in the existing plantroom on Level 1 right above the existing palliative care ward. The units will sited close to external louvres for air intake and discharge air at a higher level of the louvres.

The proposed VRF air conditioning system will be of heat recovery type which enables simultaneous heating and cooling in various rooms. Cooling in one space will eject heat via the refrigeration system to heat another space which requires heating, enhancing high energy efficiency. The system with multiple indoor fan coil units also enables individual temperature control in each room.

11.8.3 Communications Room Air Conditioning Systems

The existing communications room is expected to be sufficient for ICT equipment for the new facility, and no additional cooling is required (subject to confirmation from LHD). However, it is understood that the existing air conditioning system is not provided with redundancy, the services designer should be notified if redundancy is required.

11.8.4 Ventilation and Exhaust Systems

Outside air provision is proposed to meet the code requirements. Exhaust systems will be provided to all toilets, ensuites, dirty utility rooms, and the like. These systems will be arranged to provide a slightly positive room pressure in the bedrooms and also overall positive pressure throughout the building.

11.8.5 Fire and Smoke Separations

All penetrations through fire and smoke walls are to be treated to maintain the FRL and smoke separation of the walls.

11.8.6 Electrical and Controls

A new mechanical services switchboard will be provided in the air conditioning plant room to power the new equipment. Upgrade of power supply, if necessary, will be coordinated with the electrical trade.

Controls to the new equipment and systems will be via the existing BMS along with local controls such as wall-mounted control panels for air conditioning in rooms.

11.8.7 Medical Gases

Medical gases including oxygen, medical breathing air, and suction from the existing provisions will be provided in the bedrooms in the new refurbishment. These will be integrated with electrical services in medical services panels (MSP's).

11.9 Electrical Services

11.9.1 Distribution Switchboards

11.9.1.1 Potential Supply Origin

It is proposed that the existing switchboards DB-G-07 and EDB-G-07 be retained and used for the provision of power to the project.

Maximum demand calculations and verification of existing infrastructure's capability to service the project have been undertaken.

11.9.1.2 UPS and Generator Backup Options

The existing EDB-G-07 is noted to have generator backup supply available for the entirety of the switchboard, supplied from Main Switchboard 1.

It is not proposed that UPS supplies be adjusted for this project, the existing UPS arrangement providing supply to the communications room is to be retained.

11.9.1.3 Body or Cardiac Protected Areas

Body Protected and Cardiac Protected Areas require considerably different power distribution arrangements as outlined in AS3003.

It is anticipated that ward areas are to be Body Protected, provided with locally controlled 10mA RCDs in accordance with Australian Standards. Requirements of Cardiac Protected Areas are noted as not required for this project.

11.9.2 Communications services

It is proposed that the existing communications room in adjacent portion of the building be retained for the project, and additional active equipment be installed as needed to service the new project.

11.9.3 Security Services

11.9.3.1 CCTV

CCTV is proposed within the corridors and circulation spaces of the project. These systems are intended to tie into the existing CCTV systems widely installed in the building via backbone cabling connection.

11.9.3.2 Access Control

Access Control is anticipated to be an expansion of the existing systems installed within the building. It is expected that additional door controllers and scancard readers will be required, and reprogramming works will be required to provide separated access control requirements to the spaces.

It is expected that new door controllers will be housed within the new communications room and tied back to the existing head end access control equipment located on site.

11.9.3.3 Duress System

Any new duress alarm components are anticipated to be an expansion of the existing duress alarm system installed in the remainder of the hospital.

Duress alarms are proposed to be installed in spaces nominated by the stakeholders of the project. It is anticipated that at least one duress alarm button be provided per ward, with additional duress alarm buttons at nurse stations and areas of interaction with patients.

The signalling is anticipated to feed back to an existing alarm panel, integrating with the existing system.

11.9.4 Nurse Call System

The Nurse Call System is proposed to be an expansion of existing systems within the hospital. Expansion equipment is proposed to be located within data gathering panels within the new communications room.

The expanded system to match the existing system and provide outgoing feeds to nurse call equipment in the new scope area, while integrating and communicating with the existing nurse call system.

The intention is to provide a consistent operation and appearance with the remainder of the hospital's Nurse Call System.

11.9.5 Lighting

11.9.5.1 General Lighting

It is proposed that new lighting systems be provided throughout the project scope. New lighting is anticipated to be composed of:

- Recessed or surface mounted LED Panels throughout general spaces and wards.
- LED Downlights within smaller spaces such as amenities.
- LED Battens within plant areas and BOH spaces.

It is proposed that new lighting be controlled by manual switch and motion detection.

Lighting within wards is proposed to be dimmable, with local dimming controls at bedsides.

All lighting throughout all areas of the project are to be a minimum of 90CRI to provide a consistent colour rendering index throughout the facility.

11.9.5.2 Emergency and Exit Lighting

It is proposed that new emergency and exit lighting be installed throughout the facility, all existing fittings are to be removed. The new fittings are to match the brand/system as installed elsewhere within the building and integrated with the existing computer monitored system for the emergency and exit lighting.

Coverage is intended to be provided to the facility in accordance with AS2293.1.

12 Spatial Requirements

The table below identifies the spatial allowances required within the new building:

Table 6 Spatial Provisions within the Building

Plant / Spatial Item	Location	Area
Fire hose reel and fire hydrant cabinet/recess	Within 4 m of required fire exit	0.4 m D x 0.9 m W x full height
Reduced Pressure Zone Devices	Dirty Utility and Clean Up rooms at 1.2 m AFFL	0.5 m W x 0.9 m H x 0.09 m D (in stainless steel recessed box)
Electrical Distribution Cupboards	Retain existing	Retain existing
Comms Room	Retain Existing	Retain Existing.
Outdoor Air Conditioning Condensing Units – VRF System	Plant room – existing on Level 1	4m x 2.8m footprint, using existing external louvres for outside air intake and condensing air discharge.

13 Constraints and Opportunities

The table below identifies our assessment for the Constraints and Opportunities:

Table 7 Constraints and Opportunities

Constraint	Opportunity
TBA	TBA

14 Project Risks

The list below outlines current project risks:

- Equipment locations subject to ongoing coordination with the design team, led by the Architect
- Unknown capacities of upstream electrical infrastructure
- Mechanical services as-built drawings and documentation of the area of concern are not available at the time of this report, the actual capacities and operational conditions of the existing equipment to be re-used cannot be ascertained.
- Acoustic consideration of new air-cooled condensing units
- Compliance to HINSW Guidelines

15 Budget Estimate Costs

15.1 Hydraulic Services

The estimated cost for the Hydraulic Services is prepared by the Project Cost Planner.

15.2 Fire Protection Services

The estimated cost for the Fire Protection Services is prepared by the Project Cost Planner.

15.3 Mechanical Services

The estimated cost for the Mechanical Services is prepared by the Project Cost Planner.

15.4 Electrical Services

The estimated cost for the Electrical Services is prepared by the Project Cost Planner.

Appendix A - Hydraulic Services Drawings

WORLD CLASS END OF LIFE PROGRAM TAMWORTH HOSPITAL
DEAN STREET, NORTH TAMWORTH NSW 2340
HYDRAULIC SERVICES

DRAWING LIST

DRAWING No.	DRAWING NAME
WCP-ACR-DRW-HYD-TAM-01A-0000001	COVER SHEET
WCP-ACR-DRW-HYD-TAM-01A-0000002	GENERAL NOTES
WCP-ACR-DRW-HYD-TAM-12B-0000004	DRAINAGE PLAN - GROUND FLOOR
WCP-ACR-DRW-HYD-TAM-12B-0000005	DRAINAGE PLAN - ROOF
WCP-ACR-DRW-HYD-TAM-12B-0000006	WATER RETICULATION PLAN - GROUND FLOOR
WCP-ACR-DRW-HYD-TAM-12B-0000007	WATER FIXTURE SUPPLY PLAN - GROUND FLOOR
WCP-ACR-DRW-HYD-TAM-STF-0000007	TYPICAL DETAILS

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

North

Scale

Client

NSW GOVERNMENT Health Infrastructure

Managing Contractor

capital insight

Architect

architectus

Project

WORLD CLASS END OF LIFE PROGRAM
TAMWORTH HOSPITAL

DEAN STREET, NORTH
TAMWORTH NSW 2340

NOT FOR CONSTRUCTION

ACOR Consultants Pty Ltd
Suite 2, Level 1, 33 Herbert Street
St Leonards NSW 2065
T: +61 2 9438 5098

Drawing Title

HYDRAULIC SERVICES
COVER SHEET

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-01A-0000001	E

GENERAL HYDRAULIC NOTES

1 CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO COMMENCEMENT OF WORK.

2 CONTRACTOR SHALL ARRANGE FOR ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.

3 ON COMPLETION OF PROPOSED WORKS ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KREBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS UNLESS NOTED OTHERWISE.

4 MAKE SMOOTH TRANSITION TO EXISTING SERVICES AND MAKE GOOD WHERE REQUIRED.

5 WHERE NEW WORKS ABUT EXISTING THE SUB CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.

6 CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER OR IN CLOSE PROXIMITY TO THESE SERVICES. HAND EXCAVATE IN THESE AREAS.

7 THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL AND COMMUNICATIONSECURITY DRAWINGS AND SPECIFICATIONS.

8 CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER NON CORROSIVE CONNECTION BETWEEN DISSIMILAR PIPEWORK.

9 ALL ELEVATED SERVICES PIPEWORK SHALL BE CLEARLY LABELED IN ACCORDANCE WITH REQUIREMENTS OF AS3500 AND AS1345.

10 ALL ELEVATED SERVICES SHALL BE CHARGED AND TESTED PRIOR TO CONCEALMENT.

11 ALL SERVICE CONDUITS SHOWN ARE INDICATIVE ONLY AND FINAL PIPE AND CONDUIT DETAILS AND LOCATIONS ARE TO BE OBTAINED BY THE SUB CONTRACTOR COORDINATING WITH AND GAINING CONFIRMATION FROM THE RELEVANT SERVICES.

12 ELECTRICAL CONDUITS FOR HYDRAULIC SERVICES PLANT AND EQUIPMENT SHALL BE ORANGE HEAVY DUTY RIGID TYPE IN ACCORDANCE WITH CATEGORY 'A' OF AS3000 AND AS DESCRIBED IN THE ELECTRICAL SPECIFICATION AND DOCUMENTATION.

13 CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED TO ALL BENDS, TEES, END POINTS AND ALL OTHER FITTINGS THAT MAY IMPART LOADS INTO THE ADJACENT GROUND. THRUST BLOCKS SHALL BE CONSTRUCTED TO AS3500 REQUIREMENTS AND LOCAL WATER AUTHORITY STANDARDS AND TO SUIT THE BEARING OF THE SOILS IN WHICH THEY ARE CONSTRUCTED.

14 ON COMPLETION, ALL PIPEWORK SHALL BE SUBJECT TO A PRESSURE TEST REQUIRED BY MANAGING CONTRACTOR. ANY DEFECTS FOUND IN THE SYSTEM SHALL BE REMEDIED AND THE TEST RE-APPLIED.

15 PIPEWORK RETICULATING / PASSING THROUGH CLASSROOMS, CONFERENCE ROOMS, ENCLOSED AREAS AND AREAS NOMINATED BY THE ACOUSTIC CONSULTANT SHALL BE ACOUSTICALLY INSULATED TO SATISFY THE NATIONAL CONSTRUCTION CODE (NCC) AND ACOUSTIC ENGINEER'S REQUIREMENTS.

16 TRENCHES THROUGH EXISTING ROAD AND CONCRETE AREAS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50mm IN BITUMINOUS PAVING. REINSTATE WITH ADDITIONAL REINFORCEMENT AND DOWELING AS REQUIRED BY STRUCTURAL ENGINEERS.

17 CONTRACTOR SHALL PROVIDE ALL TIMBERING, SHORING AND SHUTTERING AS NECESSARY TO CONSTRUCT PIPEWORK INCLUDING THE REMOVAL OF SAME UPON COMPLETION OF PIPEWORK.

18 CONTRACTOR SHALL OBTAIN ALL AUTHORITY APPROVALS AND PAY ALL FEES.

19 ALL WORK TO BE IN ACCORDANCE WITH THE RELEVANT WATER AUTHORITY, FIRE AND RESCUE NSW, AS3500, AS2118, AS2444, AS2419 AND RELATED STANDARDS AS APPROPRIATE.

20 CONTRACTOR TO PROVIDE 'AS BUILT' DOCUMENTATION UPON PRACTICAL COMPLETION OF THE PROJECT AND SHALL BE IN CAD FORMAT (AUTOCAD) AND REVIT 3D MODELING.

21 ORIGIN OF LEVELS: AUSTRALIAN HEIGHT DATUM.

22 ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.

23 ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND OR AN APPROVED GRANULAR MATERIAL AND COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289 E1.1.

24 ALL SERVICES THAT CROSS FOOTINGS ETC. SHALL BE BACKFILLED WITH GRANULAR MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 95% M.M.D.D.

SANITARY DRAINAGE AND STORMWATER NOTES

1 COORDINATE PRECISE LOCATION OF SEALED FLOOR TRAPS AND TRADE WASTE STACK PROVISIONS WITH MANAGING CONTRACTOR.

2 CONTRACTOR TO PROVIDE ANY ADDITIONAL EXCAVATION (INCLUDING IN ROCK), BACKFILL OF PIPES, FITTINGS AND ALL JUMP-UPS TO LOCAL AUTHORITY REQUIREMENTS INCLUDING THOSE TO BRANCH DRAINS.

3 ALL MANHOLES GREATER THAN 1.2m DEEP SHALL BE CONSTRUCTED WITH STEP IRONS TO LOCAL WATER AUTHORITY REQUIREMENTS.

4 DRAINS TO BE SUPPORTED ON OR FROM SOLID GROUND. LOCATION AND DEPTH/INVERT LEVEL OF BRANCH SHALL BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORK.

5 DRAINS UNDER BUILDINGS SHALL BE RETESTED WHERE DIRECTED BY MANAGING CONTRACTOR.

6 INSPECTION OPENINGS SHALL BE PROVIDED AT:
- THE PROPERTY BOUNDARY;
- ON EACH WC OR BRANCH;
- AT MAXIMUM OF 30m INTERVALS SPREAD EQUAL DISTANCE WHERE POSSIBLE;
- IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ALL JUMP-UPS;
- AS REQUIRED BY THE AUTHORITY FOR INSPECTION AND MAINTENANCE;
- ALL INSPECTION OPENING AND CLEAR OUTS SHALL EXTEND TO FINISHED SURFACE LEVEL.

7 PROVIDE 80mm COMPRESSIBLE EXPANDED FOAM MATERIAL OVER PIPEWORK WHERE CLEARANCE TO UNDERSIDE OF FOOTING IS LESS THAN 150mm, UNLESS NOTED OTHERWISE.

8 SANITARY DRAINAGE LINES SHALL BE CONSTRUCTED OUTSIDE ZONE OF INFLUENCE OF STRUCTURAL BEAMS AND PIPES.

9 STORMWATER DRAINAGE PIPES SHALL BE TO CIVIL ENGINEER'S REQUIREMENTS.

10 ALL BUILDING SANITARY DRAINAGE PIPEWORK SHALL BE UPVC-DWV UNLESS NOTED OTHERWISE.

11 ALL PIPE JUNCTIONS, BENDS AND TAPERS SHALL BE VIA PURPOSE MADE FITTINGS. MITRE FITTINGS WILL NOT BE ACCEPTED IN ANY CIRCUMSTANCE.

12 ALL CONNECTIONS TO DRAINAGE PITS AND MANHOLES SHALL BE MADE IN A TRADESMANLIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH AND MADE WATERTIGHT.

13 PIPE BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH AS3500 AND ALSO IN ACCORDANCE WITH THE HYDRAULIC SERVICES SPECIFICATION.

14 WHERE STORMWATER LINES PASS UNDER FLOOR SLABS SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.

SANITARY PLUMBING NOTES

1 ALL BRANCH LINES SHALL BE GRADED AND/OR LOWERED TO AVOID PENETRATING STEEL BEAMS. THE SUB CONTRACTOR SHALL PROVIDE ANY ADDITIONAL PIPE LENGTHS AND WORK, INCLUDING CONSTRUCTION OF ADDITIONAL INSPECTION OPENINGS, AS REQUIRED BY THE LOCAL AUTHORITY.

2 COORDINATE WITH STRUCTURAL DRAWINGS. NO STEEL REINFORCING BARS TO BE CUT WITHOUT PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.

3 ALL ROOF PENETRATIONS TO DETAIL AND PAINTED (COLOUR TO BE ADVISED). ALL VENTS SHALL BE OFFSET IN ROOF SPACE MINIMUM 600mm FROM EAVES AND AS SHOWN ON ARCHITECTURAL DRAWINGS AND COMPLY WITH THE BUSH FIRE CODE REQUIREMENTS.

4 EXPOSED PIPEWORK WITHIN WET AREAS SHALL BE CHROME PLATED COPPER PIPE.

5 ALL SANITARY PLUMBING PIPEWORK SHALL BE UPVC-DWV UNLESS NOTIFIED OTHERWISE.

6 ALL TRADE WASTE PIPEWORK SHALL BE HDPE UNLESS NOTIFIED OTHERWISE.

7 ALL PIPE PENETRATIONS AT WALLS SHALL BE FITTED WITH A PUDDLE FLANGE AND MADE GOOD AND WATERTIGHT.

8 ALL SUSPENDED SLAB PENETRATIONS SHALL BE FORMED BY PATENT "SLABSEAL" OR OTHER APPROVED FIRE ISOLATING CAST-IN PENETRATION AND APPROVED (IN WRITING) BY THE MANAGING CONTRACTOR. THIS SHALL NOT RELIEVE THE SUB CONTRACTOR OF THE RESPONSIBILITY FOR THEIR LOCATION AND SIZE.

9 ALL SUSPENDED SLAB PENETRATIONS SHALL BE FORMED CLEAR OF ALL EXISTING STEEL SLAB SUPPORT BEAMS BEFORE CORING THROUGH SUSPENDED SLAB. JACK HAMMERS SHALL NOT BE USED TO MAKE SUSPENDED SLAB PENETRATIONS.

10 ALL CORE HOLE LOCATIONS SHALL BE APPROVED BY THE MANAGING CONTRACTOR PRIOR TO COMMENCEMENT OF CORING.

WATER SERVICES NOTES

1 DOMESTIC WATER PIPEWORK SHALL BE TYPE 'B' COPPER TUBE. FOR ALL MAIN RUNS INCLUDING SUPPLY TO FIRE HOSE REELS SEE ALSO HYDRAULIC SERVICES SPECIFICATION.

2 SUPPLY AND INSTALL HOT AND COLD WATER RETICULATION TO ALL NEW FIXTURES AND FITTINGS. ALL PIPEWORK TO BE CONCEALED IN WALL CAVITIES AND CEILING SPACES. NO PIPEWORK WILL BE SURFACE MOUNTED OR MADE VISIBLE. PIPEWORK TO FIXTURES WHERE VISIBLE IN CUPBOARD SPACES SHALL BE CHROMIUM PLATED.

3 ALL HOT WATER PIPEWORK TO BE FULLY INSULATED TO AS3500. ALL COLD WATER PIPING WITHIN WALL CHASES TO BE INSULATED WITH KEMLAG OR EQUAL.

4 ALL HOT WATER PIPEWORK SHALL BE INSULATED: Ø20mm AND SMALLER – KEMLAG, Ø25mm AND LARGER - THERMOTECH 4-ZERO OR APPROVED EQUAL.

5 ALL COLD WATER PIPEWORK SHALL BE Ø20 MINIMUM, EXCEPT THE LAST 3000mm OF RUN OUT TO ANY SINGLE FIXTURE MAY BE Ø15, UNLESS NOTED OR SHOWN OTHERWISE.

6 ALL INTERNAL HOSE TAPS SHALL BE 15mm, UNLESS NOTED OTHERWISE. ALL EXTERNAL OR PLANT ROOM HOSE TAPS SHALL BE 20mm, UNLESS NOTED OTHERWISE.

7 ALL BRANCHES FROM MAIN LINES SHALL BE FITTED WITH ISOLATING VALVES AS REQUIRED TO ISOLATE GROUPS OR SINGLE FIXTURES.

8 BACKFLOW PREVENTION: ALL HOSE COCKS SHALL BE FITTED WITH APPROVED BACKFLOW PREVENTING VACUUM BREAKERS AND INDIVIDUAL STOP TAPS UNLESS NOTED OTHERWISE.

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AHD	AUSTRALIAN HEIGHT DATUM
AP	ACCESS PANEL
B	BASIN
BALV	BALANCING VALVE
BCWU	BOILING/CHILLED WATER UNIT
BMS	BUILDING MANAGEMENT SYSTEM
BR	BRASS
BTFW	BUCKET TRAP FLOOR WASTE
BV	BALL VALVE
BWU	BOILING WATER UNIT
CD	CONDENSATE DRAIN
CHD	CHEMICAL DISPENSER
CI	CAST IRON
CKV	CHECK VALVE
CM	COFFEE MACHINE
CO	CLEAROUT
CP	CONTROL PANEL
CS	CLEANERS SINK
Cu	COPPER
CW	COLD WATER
CWM	CLOTHES WASHING MACHINE
dBA	DECIBELS
DCV	DOUBLE CHECK VALVE
DF	DRINKING FOUNTAIN
DG	DISCONNECTOR GULLY
DP	DOWNPIPE
DTU	DRAINAGE TURN-UP
DUCV	DUAL CHECK VALVE
DW	DISHWASHER
e	EXISTING
ED	ELEVATED DRAINAGE
EJ	EXPANSION JOINT
EW	EYE WASH
FCL	FINISHED CEILING LEVEL
FFL	FINISHED FLOOR LEVEL
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FSK	FLUSHING RIM SINK
FSL	FINISHED SLAB LEVEL
FU	FIXTURE UNIT
FW	FLOOR WASTE
GL	GROUND LEVEL
GPO	GENERAL POWER OUTLET
GTD	GRATED TRENCH DRAIN
GR	GRILL
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
H/L	HIGH LEVEL
HT	HOSE TAP
HW	HOT WATER
HWF	HOT WATER FLOW
HWR	HOT WATER RETURN
HWU	HOT WATER UNIT
IL	INVERT LEVEL
IM	ICE MACHINE
IO	INSPECTION OPENING
IV	ISOLATION VALVE
IWTD	IN WALL TUNDISH
IWTTD	IN WALL TRAPPED TUNDISH
kPa	KILOPASCALS
kW	KILOWATTS
L	LITRES
L/L	LOW LEVEL
LS	LABORATORY SINK
l/s	LITRES PER SECOND
LT	LAUNDRY TUB
LU	LOADING UNIT
m	METRES
mHEAD	METRES HEAD
MECH	MECHANICAL SERVICE
mm	MILLIMETRES
MPa	MEGAPASCALS
m/s	METRES PER SECOND
NC	NORMALLY CLOSED
NCC	NATIONAL CONSTRUCTION CODE
NO	NORMALLY OPEN
NPCW	NON POTABLE COLD WATER
NPHW	NON POTABLE HOT WATER
OF	OVERFLOW
OFG	OVERFLOW RELIEF GULLY
OT	OPERATING THEATRE
Pa	PASCAL
PDO	PLANTER DRAIN OUTLET
PE	POLYETHYLENE
PFW	PLANTROOM FLOOR WASTE
PG	PRESSURE GAUGE
PLV	PRESSURE LIMITING VALVE
PRV	PRESSURE REDUCTION VALVE
PVC	POLYVINYL CHLORIDE
R	RELOCATE
RFV	REFLUX VALVE
RL	RELATIVE LEVEL
RPZD	REDUCED PRESSURE ZONE DEVICE
RV	RELIEF VENT
RW	RAIN WATER
RWH	RAIN WATER HEAD
RWO	RAIN WATER OUTLET
S	SEWER
SAN	SANITISER
SFW	SEALED FLOOR WASTE
SH	SLOP HOPPER
SHR	SHOWER
SK	SINK
SS	STAINLESS STEEL
SSHR	SAFETY SHOWER
STER	STERILISER (CSSD)
SV	STOP VALVE
SW	STORMWATER
SWP	STORMWATER PIT
TD	TUNDISH
TG	TEMPERATURE GAUGE
TMV	THERMOSTATIC MIXING VALVE
TR	TROUGH
TTD	TRAPPED TUNDISH
TV	TEMPERING VALVE
TW	TRADE WASTE
TWV	TRADE WASTE VENT
U/G	UNDER GROUND
uPVC	UNPLASTICISED POLYVINYL CHLORIDE
UR	URINAL
V	VENT
VB	VACUUM BREAKER
WASH	WASHER (CSSD)
WC	WATER CLOSET
WM	WATER METER
WS	WASTE STACK
WT	WASH TROUGH
WW	WARM WATER

PIPEWORK LEGEND

CONDUITS
- CONDUIT

WATER & GAS
- AUTHORITY GAS MAIN
- AUTHORITY WATER MAIN
- CSSD COLD WATER
- COLD WATER
- FLUE
- HOT WATER FLOW (PLANT 1)
- HOT WATER RETURN (PLANT 1)
- NON-POTABLE COLD WATER
- NON-POTABLE HOT WATER
- OPERATING THEATRE COLD WATER
- REVERSE OSMOSIS WATER
- WARM WATER FLOW (PLANT 1)

DRAINAGE
- AUTHORITY SEWER MAIN
- CONDENSATE DRAIN
- FIRE SERVICES DRAIN
- RAIN WATER (TO TANK)
- SEWER
- STORMWATER
- TRADE WASTE
- TRADE WASTE VENT
- VENT (SEWER)

OTHER
- FIRE WALL
- SMOKE WALL

PIPEWORK LEGEND

CONDUITS
- CONDUIT

WATER & GAS
- AUTHORITY GAS MAIN
- AUTHORITY WATER MAIN
- CSSD COLD WATER
- COLD WATER
- FLUE
- HOT WATER FLOW (PLANT 1)
- HOT WATER RETURN (PLANT 1)
- NON-POTABLE COLD WATER
- NON-POTABLE HOT WATER
- OPERATING THEATRE COLD WATER
- REVERSE OSMOSIS WATER
- WARM WATER FLOW (PLANT 1)

DRAINAGE
- AUTHORITY SEWER MAIN
- CONDENSATE DRAIN
- FIRE SERVICES DRAIN
- RAIN WATER (TO TANK)
- SEWER
- STORMWATER
- TRADE WASTE
- TRADE WASTE VENT
- VENT (SEWER)

EXISTING & DEMOLISHED SERVICES
- EXISTING SERVICE
- EXISTING SERVICE TO BE DEMOLISHED
- PIPE CAST-IN SLAB
- SAW-CUT SLAB
- ACOUSTIC INSULATION
- NOT IN SCOPE

GENERAL
- PIPE DROP/BEND
- PIPE RISE/BEND
- PIPE DROP/TEE
- PIPE RISE/TEE
- CAPPED PIPE
- CONTINUATION OF PIPE
- FLANGED JOINT
- BLANKED END
- PIPE PENETRATION
- UNION
- CONNECT TO EXISTING
- DIRECTION OF FLOW
- CONTROL PANEL
- PUMP
- DRAWING CONTINUATION ARROW
- NOTE NUMBER
- PENETRATION ABOVE / SERVICE / SIZE / PENETRATION BELOW
- ACCESS PANEL

DRAINAGE
- DOWNPIPE
- DOWNPIPE WITH SPREADER
- GRATED STORMWATER PIT
- SEALED STORMWATER PIT
- GRATED TRENCH DRAIN
- RAINWATER OUTLET
- RAINWATER OVERFLOW
- OVERFLOW RELIEF GULLY (OFG)
- REFLUX VALVE IN PIT
- FLOOR WASTE
- SEALED FLOOR WASTE
- BUCKET TRAP FLOOR WASTE
- CLEAROUT
- IN-WALL TUNDISH
- TUNDISH (IN ELEVATION)
- AIR ADMITTANCE VALVE (AAV)
- SEWER MANHOLE

WATER
- ISOLATION VALVE (NORMALLY OPEN)
- ISOLATION VALVE (NORMALLY CLOSED)
- ISOLATION VALVE IN PATH BOX
- BALL VALVE
- GATE VALVE
- BALANCING VALVE
- FLOAT VALVE
- CHECK VALVE
- DOUBLE CHECK VALVE
- REDUCED PRESSURE ZONE DEVICE (RPZD)
- AIR RELIEF VALVE
- PRESSURE RELIEF VALVE
- PRESSURE LIMITING VALVE
- PRESSURE REDUCTION VALVE
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- AUTOMATIC BACKWASH FILTER
- THERMOSTATIC MIXING VALVE
- TEMPERING VALVE
- STRAINER (IN-LINE)
- DIRT BOX
- WATER METER
- HOSE TAP WITH VACUUM BREAKER
- COLD TAPSET
- HOT TAPSET
- WARM TAPSET
- NON-POTABLE TAPSET

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

North

Scale

Client

NSW GOVERNMENT Health Infrastructure

Managing Contractor

capital insight

Architect

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Project

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CONSULTANTS

Drawing Title

HYDRAULIC SERVICES
GENERAL NOTES

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-01A-0000002	E

DESIGN NOTES

DN1 - APPROXIMATE LOCATION OF EXISTING SEWER FROM AS-BUILT DOCUMENTATION. DEPTH UNKNOWN.

DN2 - PROPOSED LOCATION OF NEW SEWER CONNECTION FOR THE PROJECT. MAKE CONNECTION TO EXISTING ACCESS CHAMBER.

DN3 - MODIFY EXISTING INGROUND SEWER WITHIN ASB TO SUITE NEW LAYOUTS. REFER TO ARCHITECTURAL FOR FIXTURE SETOUTS.

DRAINAGE PLAN - GROUND

SCALE: 1 : 100

DRAINAGE PLAN - GROUND INSET

SCALE: 1 : 100

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
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E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

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SCALE BAR 1: 100

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Drawing Title

HYDRAULIC SERVICES

DRAINAGE PLAN - GROUND FLOOR

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-12B-0000004	E

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

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Scale

SCALE BAR 1:100

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Drawing Title

HYDRAULIC SERVICES

DRAINAGE PLAN - ROOF

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-12B-0000005	E

DESIGN NOTES

DN1 - MAKE CONNECTION TO EXISTING HOT WATER

DN2 - MAKE CONNECTION TO EXISTING COLD WATER

DN3 - EXTEND HOT WATER FLOW AND RETURN LINE IN CEILING SPACE

DN4 - EXTEND COLD WATER SUPPLY IN CEILING SPACE OUTSIDE OF THE VAULTED CORRIDOR CEILING

DN5 - PROVIDE TMV'S TO ALL WET AREAS

DN6 - CONNECTION TO EXISTING TMV. LOCATION IS INDICATIVE

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

Client

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Drawing Title

HYDRAULIC SERVICES
WATER RETICULATION PLAN - GROUND FLOOR

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-12B-0000006	E

WATER PLAN - GROUND FIXTURE CONNECTION - CLN-MED

SCALE: 1 : 50

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

North

Scale

SCALE BAR 1:100

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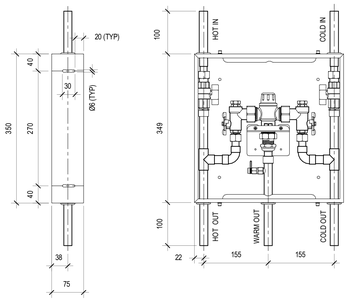
Drawing Title

HYDRAULIC SERVICES

WATER FIXTURE SUPPLY PLAN - GROUND FLOOR

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	1 : 50

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-HYD-TAM-12B-0000007	E

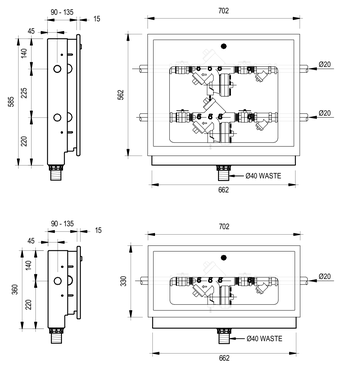


ENWARE 1500 TMV WITH BYPASS

SCALE: NTS

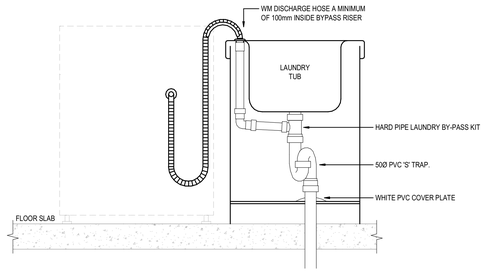
NOTES:

1. ZURN WILKINS MODEL 975XL IN STAINLESS STEEL BOX SEMI RECESSED IN WALL.
2. Ø40 WASTE CONNECTED TO TRAPPED SANITARY PLUMBING OR FLOOR WASTE.
3. SIGNAGE TO FRONT OF BOX STATING RPZD TO BE TESTED AT 12 MONTH INTERVALS BY AN AUTHORISED TRADES PERSON.



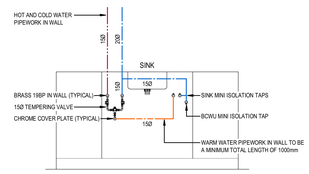
TYPICAL RPZD IN RECESSED CABINET

SCALE: NTS



TYPICAL LAUNDRY TUB AND WASHING MACHINE DETAIL

SCALE: NTS

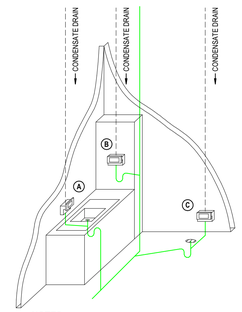


NOTES

1. A MINIMUM OF 1m OF PIPEWORK REQUIRED BEFORE FIXTURE.
2. ALL EXPOSED PIPE AND FITTINGS TO BE CHROME PLATED.
3. REFER TO SPECIFICATION FOR INSULATION REQUIREMENTS.
4. DETAIL BASED ON RMC HEATGUARD STANDARD (BLUE CAP).

TYPICAL BELOW SINK TEMPERING VALVE

SCALE: NTS



NOTES

1. PROVIDE ALL-PROOF GPO STYLE IN-WALL TUNDISH WITH CLEAR BACKPLATE AND BLANK GPO COVER TO MATCH WITH ELECTRICAL.
2. INSTALLED WITHIN WALL CAVITY AS DETAILED A, B OR C.

A. ABOVE BENCHTOP DISCHARGING TO SINK WASTE ABOVE TRAP.
B. IN-WALL WITH Ø40 GLUED TRAP AND ACCESS PANEL.
C. IN-WALL AT LOW LEVEL DISCHARGING TO FLOOR WASTE.

TYPICAL IN-WALL TUNDISH INSTALLATION

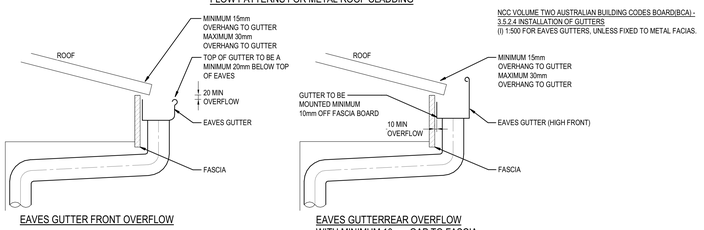
SCALE: NTS

FLOW PATTERNS FOR METAL ROOF CLADDING

AUSTRALIAN STANDARDS REQUIREMENTS FOR EAVES GUTTERS

AS3500.3:2003 - EAVES GUTTER:
A GRADIENT IN THE DIRECTION OF FLOW, 1:500 OR STEEPER;

NCC VOLUME TWO AUSTRALIAN BUILDING CODES BOARD(BCA) - 3.5.2.4 INSTALLATION OF GUTTERS
(i) 1:500 FOR EAVES GUTTERS, UNLESS FIXED TO METAL FACIAS.

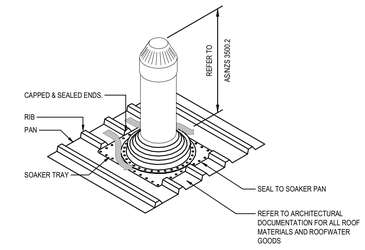


EAVES GUTTER FRONT OVERFLOW

EAVES GUTTERREAR OVERFLOW WITH MINIMUM 10mm GAP TO FASCIA

STANDARD EAVES GUTTER OVERFLOW METHODS

SCALE: NTS



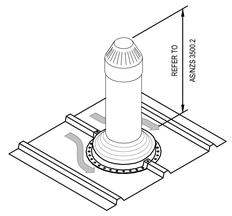
NOTES:

1. WHERE DEKTITES ARE SPANNING ONE RIB, OR LESS THAN ONE PAN WIDE AND WATER IS ALLOWED TO PASS, NO SOAKER TRAY IS REQUIRED.
2. WHERE THE DIAMETER OF THE DEKTITE EXCEEDS THE WIDTH OF THE PAN, PROVIDE A SOAKER TRAY AS SHOWN TO PREVENT THE BUILDUP OF WATER.
3. OFFSET VENTS AWAY FROM LAPS IN ROOF SHEETING - DO NOT PENETRATE THE SHEET LAP.
4. REFER TO ARCHITECTS SPECIFICATION FOR ALL ROOF MATERIALS AND UNDERLAY.

ROOF VENT FLASHING
WITH SOAKER TRAY

TYPICAL ROOF VENT FLASHING

SCALE: NTS



NOTES:

1. WHERE DEKTITES ARE SPANNING ONE RIB, OR LESS THAN ONE PAN WIDE AND WATER IS ALLOWED TO PASS, NO SOAKER TRAY IS REQUIRED.
2. WHERE THE DIAMETER OF THE DEKTITE EXCEEDS THE WIDTH OF THE PAN, PROVIDE A SOAKER TRAY AS SHOWN TO PREVENT THE BUILDUP OF WATER.
3. OFFSET VENTS AWAY FROM LAPS IN ROOF SHEETING - DO NOT PENETRATE THE SHEET LAP.
4. REFER TO ARCHITECTS SPECIFICATION FOR ALL ROOF MATERIALS AND UNDERLAY.

ROOF VENT FLASHING

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG 2 PRESENTATION	17.02.25	AP	SW
E	DRAFT DESIGN DEVELOPMENT – NOT FOR CONSTRUCTION	07.03.25	CC	SW

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

Client

NSW GOVERNMENT Health Infrastructure

Managing Contractor

capital insight

Architect

architectus

Project

WORLD CLASS END OF LIFE PROGRAM
TAMWORTH HOSPITAL

DEAN STREET, NORTH
TAMWORTH NSW 2340

NOT FOR CONSTRUCTION

ACOR Consultants Pty Ltd
Suite 2, Level 1, 33 Herbert Street
St Leonards NSW 2065
T: +61 2 9438 5098

CONSULTANTS

Drawing Title

HYDRAULIC SERVICES
TYPICAL DETAILS

Drawn	Designed	Q.A. Check	Date	Scale @ A0
AP	AP	SW	16.10.24	AS indicated
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-HYD-TAM-57F-0000007			E

Appendix B - Mechanical Services Drawings

WORLD CLASS END OF LIFE PROGRAM
DEAN STREET, NORTH TAMWORTH NSW 2340
MECHANICAL SERVICES

DRAWING LIST	
DRAWING No.	DRAWING TITLE
WCP-ACR-DRW-MEC-TAM-01A-0000001	COVER SHEET
WCP-ACR-DRW-MEC-TAM-01A-0000002	LEGEND AND GENERAL NOTES
WCP-ACR-DRW-MEC-TAM-01A-0000010	SCHEDULES
WCP-ACR-DRW-MEC-TAM-12B-0000300	GROUND FLOOR - EQUIPMENT LAYOUT
WCP-ACR-DRW-MEC-TAM-12B-0000310	ROOF - EQUIPMENT LAYOUT
WCP-ACR-DRW-MEC-TAM-12B-0000311	ROOF - PLANTROOM LAYOUT
WCP-ACR-DRW-MEC-TAM-12B-0000320	MEDICAL GAS LAYOUT
WCP-ACR-DRW-MEC-TAM-12B-0000400	GROUND FLOOR - PIPEWORK LAYOUT
WCP-ACR-DRW-MEC-TAM-12B-0000800	SCHEMATICS - AIR
WCP-ACR-DRW-MEC-TAM-12B-0000820	SCHEMATICS - MEDICAL GAS
WCP-ARC-DRW-MEC-TAM-12B-0000900	TYPICAL DETAILS

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
B	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
C	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

PRINT IN COLOUR

North | Scale

Client: NSW Government Health Infrastructure

Managing Contractor: capital insight

Architect: architectus

Project: WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

NOT FOR CONSTRUCTION

ACOR CONSULTANTS
ACOR Consultants Pty Ltd
Suite 2, Level 1, 33 Herbert Street
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Drawing Title: MECHANICAL SERVICES
COVER SHEET

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-MEC-TAM-01A-0000001	C

DUCT LEGEND	
	BARE GALVANIZED SHEETMETAL DUCTWORK.
	GALVANIZED SHEETMETAL DUCTWORK INTERNALLY LINED. NCC 2022 R1.2 INTERNAL LINING.
	GALVANIZED SHEETMETAL DUCTWORK INTERNALLY LINED. NCC 2022 R2.0 INTERNAL LINING.
	GALVANIZED SHEETMETAL DUCTWORK INTERNALLY LINED. NCC 2022 R3.0 INTERNAL LINING.
	GALVANIZED SHEETMETAL DUCTWORK EXTERNALLY INSULATED. NCC 2022 R1.2 EXTERNAL INSULATION.
	GALVANIZED SHEETMETAL DUCTWORK EXTERNALLY INSULATED. NCC 2022 R2.0 EXTERNAL INSULATION.
	GALVANIZED SHEETMETAL DUCTWORK EXTERNALLY FIRE RATED.
Ø500	GALVANIZED CIRCULAR SHEETMETAL DUCTWORK.
500x500	CLEAR INTERNAL DIMENSION OF DUCT (WIDTH BY HEIGHT FOR PLAN AND SECTION)
	SUPPLY AIR DUCTWORK RISING
	SUPPLY AIR DUCTWORK FALLING
	RETURN / EXHAUST AIR DUCTWORK RISING
	RETURN / EXHAUST AIR DUCTWORK FALLING
MVCD / MSD	MVCD = MOTORISED VOLUME CONTROL DAMPER MSD = MOTORISED SMOKE DAMPER C/W DUCT ACCESS PANEL
NRD	DUCT MOUNTED NON-RETURN DAMPER
VCD	DUCT MOUNTED VOLUME CONTROL DAMPER
FD	DUCT MOUNTED FIRE DAMPER C/W DUCT ACCESS PANEL
MFSD	DUCT MOUNTED COMBINED FIRE AND SMOKE DAMPER C/W DUCT ACCESS PANEL
SG	DUCT MOUNTED SECURITY GRILLE C/W DUCT ACCESS PANEL ON SECURE SIDE
	SQUARE BEND C/W TURNING VANES
	FLEXIBLE DUCT TAKE-OFF C/W VOLUME CONTROL DAMPER
	DUCT BRANCH TAKE-OFF C/W VOLUME CONTROL DAMPER
	RECTANGULAR DUCT ATTENUATOR
	CIRCULAR DUCT ATTENUATOR
	ACOUSTIC INSULATED FLEXIBLE DUCTWORK

DUCT SYSTEM LEGEND	
	CARPARK EXHAUST
	GENERAL EXHAUST
	HAZARDOUS EXHAUST
	KITCHEN EXHAUST
	OUTSIDE AIR
	RETURN AIR
	SMOKE EXHAUST
	SUPPLY AIR
	TOILET EXHAUST
	TRANSFER AIR

PIPEWORK LEGEND	
CHWF	CHILLED WATER FLOW PIPEWORK
CHWR	CHILLED WATER RETURN PIPEWORK
HHWF	HEATING HOT WATER FLOW PIPEWORK
HHWR	HEATING HOT WATER RETURN PIPEWORK
REF	REFRIGERANT PIPEWORK
COND	CONDENSATE PIPEWORK
A	ARGON PIPEWORK
CA	COMPRESSED AIR PIPEWORK
CO2	CARBON DIOXIDE PIPEWORK
MA	MEDICAL AIR PIPEWORK
N2	NITROUS OXIDE PIPEWORK
NG	NATURAL GAS PIPEWORK
O2	OXYGEN PIPEWORK
SG	SPECIALTY GAS PIPEWORK
SUC	SUCTION PIPEWORK
TA	TOOL AIR PIPEWORK
VAC	VACUUM PIPEWORK
	PIPE DROPPER
	PIPE RISER
	PIPE TEE DROPPER
H.TD	TUNDISH BY HYDRAULIC TRADE

PHASING LEGEND	
	NEW DUCTWORK. REFER DUCT LEGEND.
	EXISTING DUCTWORK TO BE RETAINED.
	EXISTING DUCTWORK TO BE DEMOLISHED.
	EXISTING DUCTWORK TO BE RELOCATED.
XX	NEW PIPEWORK. REFER PIPE LEGEND.
XX	EXISTING PIPEWORK TO BE RETAINED.
XX	EXISTING PIPEWORK TO BE DEMOLISHED.
	NEW EQUIPMENT. REFER EQUIPMENT LEGEND.
	EXISTING EQUIPMENT TO BE RETAINED.
	EXISTING EQUIPMENT TO BE DEMOLISHED.

AIR DIFFUSION EQUIPMENT LEGEND	
	SQUARE FACE SWIRL BLADE CEILING DIFFUSER. REFER TO SCHEDULE FOR DETAILS.
	CIRCULAR FACE SWIRL BLADE CEILING DIFFUSER. REFER TO SCHEDULE FOR DETAILS.
	LOUVRE FACE DIFFUSER. REFER TO SCHEDULE FOR DETAILS.
	BAR OR LOUVRE FACE GRILLE. REFER TO SCHEDULE FOR DETAILS.
	EGG CRATE GRILLE. REFER TO SCHEDULES FOR SIZES & DETAILS.
	PERFORATED GRILLE. REFER TO SCHEDULES FOR DETAILS.
	CONTINUOUS LINEAR SLOT DIFFUSER. REFER TO SCHEDULE FOR DETAILS.
	SIDEWALL SUPPLY AIR DIFFUSER. REFER SCHEDULE FOR DETAILS.
	SIDEWALL RETURN / EXHAUST AIR DIFFUSER. REFER SCHEDULE FOR DETAILS.
A	DOOR RELIEF GRILLE. REFER TO SCHEDULE FOR DETAILS.
S# / xxx	SYSTEM: S - SUPPLY AIR R - RETURN AIR E - EXHAUST AIR T - TRANSFER AIR O - OUTSIDE AIR # - TYPE. REFER SCHEDULE FOR DETAILS. xxx - AIR QUANTITY (L/s)

EQUIPMENT LEGEND	
A/P	ACCESS PANEL
C	LOCAL EQUIPMENT CONTROLLER
H	HUMIDITY SENSOR
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
AH	AFTER HOURS PUSH BUTTON
CP	LOCAL CONTROL PANEL
CO	CARBON MONOXIDE SENSOR
GAP	GAS ALARM PANEL
IVB	ISOLATION VALVE BOX
MGAP	MEDICAL GAS ALARM PANEL
PIR	CEILING MOUNTED PASSIVE INFRARED DEVICE FOR FAN CONTROL
360	360° CEILING MOUNTED OCCUPANCY SENSOR
S	SMOKE DETECTOR
	CEILING CASSETTE FAN COIL UNIT
	UNDER CEILING CONSOLE FAN COIL UNIT
	WALL MOUNTED FAN COIL UNIT
	DUCTED FAN COIL UNIT C/W FILTER PLENUM
	VARIABLE AIR VOLUME BOX
	MECHANICAL SERVICES SWITCHBOARD
	HORIZONTAL DISCHARGE OUTDOOR UNIT
	VERTICAL DISCHARGE OUTDOOR UNIT
	PANEL / DEEP BED FILTER

WATER SCHEMATIC LEGEND	
	BALL VALVE
	BUTTERFLY VALVE
	DOUBLE REGULATION VALVE
	GATE VALVE
	ISOLATION VALVE
	NON-RETURN VALVE
	STRAINER
	FLEX CONNECTION
M	2-WAY MOTERISED VALVE
M	3-WAY MOTERISED VALVE
?	GAUGE SYMBOL: TG - TEMPERATURE GAUGE PG - PRESSURE GAUGE
?	SENSOR SYMBOL: FS - FLOW SENSOR PS - PRESSURE SENSOR TS - TEMPERATURE SENSOR
?	METER SYMBOL: EM - ENERGY METER FM - FLOW METER FS - FLOW SWITCH GM - GAS METER WM - WATER METER
?	CONTROL SYMBOL: BMS - BUILDING MANAGEMENT SYSTEM VCD - VOLUME CONTROL DEVICE DPS - DIFFERENTIAL PRESSURE SWITCH DPC - DIFFERENTIAL PRESSURE CONTROL
	PRESSURE RELIEF VALVE
	TUNDISH SYMBOL

ABBREVIATIONS

AFFL	ABOVE FINISHED FLOOR LEVEL
AH	AFTER HOURS
AP	ACCESS PANEL
B	BLANK OFF
C/S	CEILING SPACE
CHW	CHILLED WATER
CoW	CONDENSER WATER
CW	COLD WATER
C/W	COMPLETE WITH
D	DEMOLISH
DTW	DRAIN TO WASTE
E/A	EXHAUST AIR
EX	EXISTING
F/A	FROM ABOVE
F/B	FROM BELOW
FD	FIRE DAMPER
FFL	FINISHED FLOOR LEVEL
FW	FLOOR WASTE
GMP	MEDICAL GAS PANEL
HHW	HEATING HOT WATER
H/L	HIGH LEVEL
L/L	LOW LEVEL
L/s	LITRES PER SECOND
MAX	MAXIMUM
MIN	MINIMUM
MJ	MEGAJOULE
MSP	MEDICAL SERVICE POINT
MVCD	MOTORISED VOLUME CONTROL DAMPER
N	NEW
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NG	NATURAL GAS
NRV	NON RETURN VALVE
NTS	NOT TO SCALE
O/A	OUTSIDE AIR
OBD	OPOSED BLADE DAMPER
PE-X	CROSS LINKED POLYETHYLENE
PRV	PRESSURE REDUCTION VALVE
PVC	POLYVINYL CHLORIDE
R	RELOCATE
R/A	RETURN AIR
RL	RELATIVE LEVEL
S/A	SUPPLY AIR
S/S	STAINLESS STEEL
SD	SMOKE DAMPER
T/A	TO ABOVE
T/B	TO BELOW
TD	TUNDISH
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
U/S	UNDERSIDE
VCD	VOLUME CONTROL DAMPER

EQUIPMENT ABBREVIATIONS

A/C	AIR CONDITIONING UNIT
ADS	AIR DIRT SEPARATOR
AHU	AIR HANDLING UNIT
AID	AUTO INFILL DEVICE
ATT	SOUND ATTENUATOR
BC	BRANCH CONTROLLER
BMS	BUILDING MANAGEMENT SYSTEM
C/C	COOLING COIL
CH	CHILLER
CHWP	CHILLED WATER PUMP
CU	CONDENSING UNIT
DH	DEHUMIDIFIER
EF	EXHAUST AIR FAN
ERV	ENERGY RECOVERY VENTILATOR
FCU	FAN COIL UNIT
H/C	HEATING COIL
HHWG	HEATING HOT WATER GENERATOR
HHWP	HEATING HOT WATER PUMP
HHWU	HEATING HOT WATER UNIT
HX	HEAT EXCHANGER
IDU	INDOOR UNIT
KEF	KITCHEN EXHAUST FAN
MSSB	MECHANICAL SERVICES SWITCHBOARD
OAF	OUTSIDE AIR FAN
ODU	OUTDOOR UNIT
RAF	RETURN OR RELIEF AIR FAN
RC	ROOF COWL
SAF	SUPPLY AIR FAN
SEF	SMOKE EXHAUST FAN
TEF	TOILET EXHAUST FAN
VAV	VARIABLE AIR VOLUME
WBT	WATER BUFFER TANK

DOOR RELIEF GRILLES

TYPE	SIZE (mm)
A	600 x 150
B	600 x 300
C	600 x 450
D	600 x 600
U	DOOR UNDERCUT (20mm)

FLEXIBLE DUCT SCHEDULE

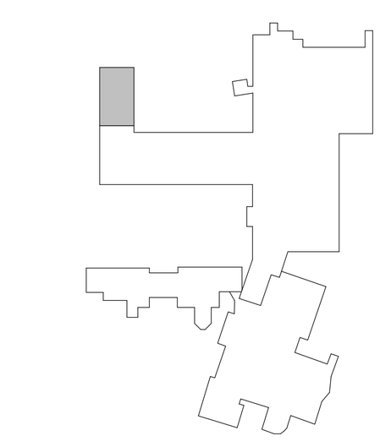
AIR FLOW (L/s)	DUCT SIZE (mm)
0 - 45	Ø150
66 - 85	Ø200
86 - 150	Ø250
151 - 250	Ø300
251 - 360	Ø350
361 - 500	Ø400
501 - 670	Ø450
671 - 880	Ø500

GENERAL NOTES

1. MECHANICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND ASSOCIATED CONSULTANT'S DRAWINGS, SPECIFICATIONS AND RELATED WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORKS.
2. THE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT AND CURRENT NATIONAL CONSTRUCTION CODE (NCC) AND RELEVANT STANDARDS INCLUDING BUT NOT LIMITED TO NCC SECTION J, AS 1668.1, AS1668.2 AND AS3000 WIRING RULES.
3. INFORMATION SHOWN IS FOR TENDER PURPOSES ONLY. THE CONTRACTOR SHALL CO-ORDINATE WITH OTHER TRADES ON SITE PRIOR TO MANUFACTURE AND SITE-INSTALLATION.
4. FLEXIBLE TAKEOFFS FROM MAIN DUCTS SERVING DIFFUSERS SHALL BE FITTED WITH VOLUME CONTROL DAMPERS. DUCTWORK INCLUDING FLEXIBLE DUCTS AND GRILLES SHALL BE SUPPORTED FROM ROOF STRUCTURE
5. DUCTWORK DIMENSIONS SHOWN ARE CLEAR INTERNAL SIZES.
6. DUCTWORK SHALL COMPLY WITH AS 4254 AND AS 1668 PART 1 & 2.
7. WHERE DIAMETER OF THE FLEXIBLE DUCT EXCEEDS THE DEPTH OF THE RIGID DUCT IT ORIGINATES FROM, AN OVAL DUCT HAVING A SIMILAR CIRCUMFERENCE TO THE FLEXIBLE DUCT MAY BE USED.
8. CONFIRM FINAL LOCATIONS OF CONTROLLERS, TEMPERATURE SENSOR, CEILING DIFFUSERS AND GRILLES IN CONJUNCTION WITH FURNITURE PLANS, ROOM ELEVATION AND REFLECTED CEILING PLAN ON SITE.
9. POSITION EQUIPMENT IN CEILING SPACES TO MAXIMISE ACCESSIBILITY OF CONTROLS AND CONNECTIONS.
10. PIPEWORK AND DUCTWORK ROUTES ARE INDICATIVE ONLY. ALLOW TO TRANSITION ACCORDINGLY TO AVOID CLASHES WITH OTHER SERVICES, BEAMS AND BUILDING STRUCTURE.
11. BALANCE AIR DIFFUSION EQUIPMENT TO AIR QUANTITIES SHOWN.
12. REFER TO SCHEDULE FOR FLEXIBLE DUCT DIAMETERS, FLEXIBLE DUCT SHALL NOT EXCEED 6m IN LENGTH AND NO INTERMEDIATE JOINTS ARE PERMITTED.
13. A SUITABLE SIZE INSULATED CONDENSATE DRAIN SHALL BE RUN FROM EACH INDOOR UNIT TO A TUNDISH AS INDICATED ON THE DRAWINGS.
14. ALL PLANT, EQUIPMENT AND SUPPORTS SHALL BE FIXED TO THE BUILDING STRUCTURE IN ACCORDANCE WITH SECTION 8 OF AS1170 PART 4. REFER TO THE SPECIFICATION FOR FURTHER DETAILS.

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
B	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
C	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key



PRINT IN COLOUR

North

Scale

Client

NSW GOVERNMENT Health Infrastructure

Managing Contractor

capital insight

Architect

architectus

Project

WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

NOT FOR CONSTRUCTION

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T: +61 2 9438 5098

CONSULTANTS

Drawing Title

MECHANICAL SERVICES
LEGEND AND GENERAL NOTES

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-MEC-TAM-01A-0000002	C

Autodesk Docs://240254_WCELP_TAM_R23/EOL-ACR-TAM-MOD-ME-00001-R23.rvt 7/03/2025 2:35:29 PM

VRV HEAT RECOVERY INVERTER AIR CONDITIONING UNIT SCHEDULE

INDOOR UNIT NO.	TYPE	AREA OF SERVICE	SUPPLY AIR (L/s)	OUTSIDE AIR (L/s)	ESTIMATED EXTERNAL STATIC PRESSURE (Pa)*	FILTER	COOLING TOTAL (kW)	COOLING SENSIBLE (kW)	COOLING EAT (° DCDB)	COOLING EAT (° DCWB)	HEATING CAPACITY (kW)	HEATING EAT (° DCDB)	INDOOR UNIT MINIMUM CIRCUIT AMPS (A)	INDOOR UNIT ELECTRICAL SUPPLY (V/Φ/Hz)	INDOOR UNIT SWITCHBOARD NO.	INDOOR DESIGN SELECTION OR APPROVED EQUIVALENT	BRANCH BOX UNIT No.	BRANCH BOX MINIMUM CIRCUIT AMPS (A)	BRANCH BOX ELECTRICAL SUPPLY (V/Φ/Hz)	BRANCH BOX DESIGN SELECTION	OUTDOOR UNIT UNIT No.	OUTDOOR UNIT MINIMUM CIRCUIT AMPS (A)	OUTDOOR UNIT ELECTRICAL SUPPLY (V/Φ/Hz)	OUTDOOR UNIT SWITCHBOARD NO.	OUTDOOR UNIT DESIGN SELECTION OR APPROVED EQUIVALENT	REFERENCE DRAWING
AC-PCU-01	DUCTED	OFF-1P	150	10	160	F5/100	1.9	1.8	24.6	17.3	0.9	19.1	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ20PAVE	BS-PCU-01	0.6	240/1/50	DAIKIN BS6Q14BVM	CU-PCU-01	16.1	400/3/50	MSSB-PCU-1	DAIKIN REYQ10BYM9	WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-02	DUCTED	SSTN	420	55	160	F5/100	6.8	6.0	24.6	17.0	4.2	17.7	2.3	240/1/50	MSSB-PCU-1	DAIKIN FXMQ80PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-03	DUCTED	WKRM	150	15	160	F5/100	1.3	1.1	25.3	17.6	0.9	18.1	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ20PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-04	DUCTED	1BR-SP	300	60	160	G4/25 + F8/100	4.8	4.1	26.4	18.2	3.5	16.2	1.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ50PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-05	DUCTED	1BR-SP	300	60	160	G4/25 + F8/100	4.6	4.0	26.4	18.2	3.0	16.2	1.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ50PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-06	DUCTED	LOUNGE	300	45	160	F5/100	4.9	4.2	26.1	18.0	3.1	17.2	1.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ50PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-07	DUCTED	OFF-WS	150	10	160	F5/100	1.4	1.3	24.6	17.3	1.6	19.1	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ20PAVE	BS-PCU-02	1.2	240/1/50	DAIKIN BS12Q14BVM	CU-PCU-02	51.2	400/3/50	MSSB-PCU-1	DAIKIN REYQ28BYM9	WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-08	DUCTED	1BR-SP	160	60	160	G4/25 + F8/100	3.3	2.7	28.5	19.3	3.1	16.0	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ32PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-09	DUCTED	CORRIDOR	270	35	160	F5/100	3.3	2.8	25.5	17.8	2.2	17.5	1.4	240/1/50	MSSB-PCU-1	DAIKIN FXMQ40PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-10	DUCTED	1BR-ON	150	10	160	F5/100	0.8	0.6	24.7	17.3	0.6	19.1	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ20PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-11	DUCTED	1BR-SP	160	60	160	G4/25 + F8/100	3.5	2.9	28.5	19.3	3.1	16.0	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ32PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-12	DUCTED	STRM	270	45	160	F5/100	4.0	3.3	24.8	17.6	2.6	16.7	1.4	240/1/50	MSSB-PCU-1	DAIKIN FXMQ40PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-13	DUCTED	1BR-SP	160	60	160	G4/25 + F8/100	3.2	2.6	29.2	19.5	3.0	16.0	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ32PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-14	DUCTED	1BR-SP	160	60	160	G4/25 + F8/100	3.2	2.6	29.2	19.5	3.0	16.0	0.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ32PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-15	DUCTED	MEET	300	90	160	F5/100	5.8	4.4	28.2	19.0	4.4	16.0	1.6	240/1/50	MSSB-PCU-1	DAIKIN FXMQ50PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-16	DUCTED	LINKWAY	415	80	160	F5/100	7.7	6.7	26.2	17.6	8.2	16.4	2.3	240/1/50	MSSB-PCU-1	DAIKIN FXMQ80PAVE										WCP-ACR-DRW-MEC-TAM-12B-0000300
AC-PCU-17	DUCTED	LINKWAY	1200	135	250	F5/100	21.5	19.7	25.3	16.6	20.6	17.9	6.9	240/1/50	MSSB-PCU-1	DAIKIN FXMQ200PV1A										WCP-ACR-DRW-MEC-TAM-12B-0000300

FAN SCHEDULE

FAN No.	TYPE	AIR FLOW (L/s)	ESTIMATED STATIC (Pa) *	VSD	dB(A) @ 3m	SPEED (rpm)	MOTOR (kW)	MAX. ABSORBED POWER (kW)	FULL LOAD AMPS	STARTING AMPS	ELECTRICAL SUPPLY (V/Φ/Hz)	SWITCHBOARD No.	AREA SERVICED	DESIGN SELECTION OR EQUIVALENT	REFERENCE DRAWING
SAF-PCU-01	ILM	165	200	EC	53	2155	0.11		0.8	-	240/1/50	MSSB-PCU-1	OUTSIDE AIR	FANTECH JETLINE-200ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
SAF-PCU-02	ILM	255	200	EC	57	2558	0.14		0.9	-	240/1/50	MSSB-PCU-1	OUTSIDE AIR	FANTECH JETLINE-250ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
SAF-PCU-03	ILM	210	200	EC	55	2435	0.11		0.8	-	240/1/50	MSSB-PCU-1	OUTSIDE AIR	FANTECH JETLINE-200ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
TEF-PCU-01	ILM	100	100	EC	42	2268	0.06		0.5	-	240/1/50	MSSB-PCU-1	TOILET EXHAUST	FANTECH JETLINE-150ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
TEF-PCU-02	ILM	170	150	EC	46	2242	0.11		0.8	-	240/1/50	MSSB-PCU-1	TOILET EXHAUST	FANTECH JETLINE-200ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
TEF-PCU-03	ILM	100	100	EC	42	2068	0.06		0.5	-	240/1/50	MSSB-PCU-1	TOILET EXHAUST	FANTECH JETLINE-150ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
TEF-PCU-04	ILM	50	100	EC	36	2220	0.03		0.2	-	240/1/50	MSSB-PCU-1	TOILET EXHAUST	FANTECH JETLINE-125ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
GEF-PCU-01	ILM	95	100	EC	44	2600	0.02		0.1	-	240/1/50	MSSB-PCU-1	CLNR	FANTECH JETLINE-100ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
GEF-PCU-02	ILM	55	100	EC	37	2266	0.03		0.2	-	240/1/50	MSSB-PCU-1	LNDRY	FANTECH JETLINE-125ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300
GEF-PCU-03	ILM	50	100	EC	36	2220	0.03		0.2	-	240/1/50	MSSB-PCU-1	STRM	FANTECH JETLINE-125ECO	WCP-ACR-DRW-MEC-TAM-12B-0000300

ILM: IN-LINE MIXED FLOW

DIFFUSER/GRILLE SCHEDULE

ITEM	TYPE	DIMENSIONS (mm) FACE	FITTINGS & NOTES	DESIGN SELECTION OR EQUIVALENT
S1	CEILING SWIRL	600x600	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE CFP
S2	CEILING 2-WAY	300x300	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE CMPH
R1	CEILING EGG CRATE	300x300	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
R2	CEILING EGG CRATE	300x600	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
R3	CEILING EGG CRATE	600x600	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
R4	CEILING EGG CRATE	900x600	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
E1	CEILING EGG CRATE	300x300	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
T1	CEILING EGG CRATE	300x300	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125
T2	CEILING EGG CRATE	300x600	WHITE COLOUR, COMPLETE WITH INSULATED HEADER BOX	HOLYOAKE EC-125

COWL SCHEDULE

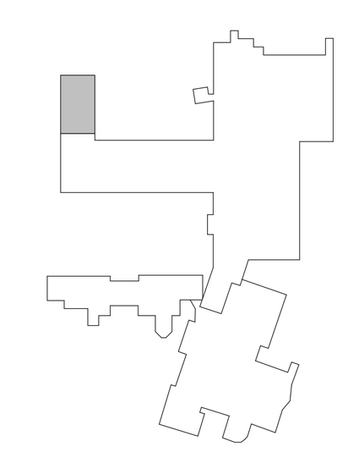
UNIT NO.	TOTAL AIR QUANTITY (L/s)	MAXIMUM PRESSURE DROP (Pa)	DESIGN SELECTION OR APPROVED EQUIVALENT	REFERENCE DRAWING
RC-S-PCU-01	165	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-S-PCU-02	255	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-S-PCU-03	210	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-S-PCU-04	80	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-S-PCU-05	135	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-01	100	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-02	150	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-03	100	25	FANTECH MRV2	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-04	55	25	FANTECH MRV1	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-05	50	25	FANTECH MRV1	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-06	50	25	FANTECH MRV1	WCP-ACR-DRW-MEC-TAM-12B-0000310
RC-E-PCU-07	50	25	FANTECH MRV1	WCP-ACR-DRW-MEC-TAM-12B-0000310

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

VAV No.	SUPPLY AIR MAX. (L/s)	SUPPLY AIR MIN. (L/s)	DESIGN SELECTION OR EQUIVALENT	REFERENCE DRAWING
VAV-GF-01-11	150	50	CELMEC AN04	WCP-ACR-DRW-MEC-TAM-12B-0000300

Issue.	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
B	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
C	DD ENGINEERING PUG 2	14.02.25	PT	BH
D	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key



PRINT IN COLOUR

North

Scale

Client

Managing Contractor

Architect

Project

WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

NOT FOR CONSTRUCTION

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Drawing Title
MECHANICAL SERVICES
SCHEDULES

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-MEC-TAM-01A-0000010	D

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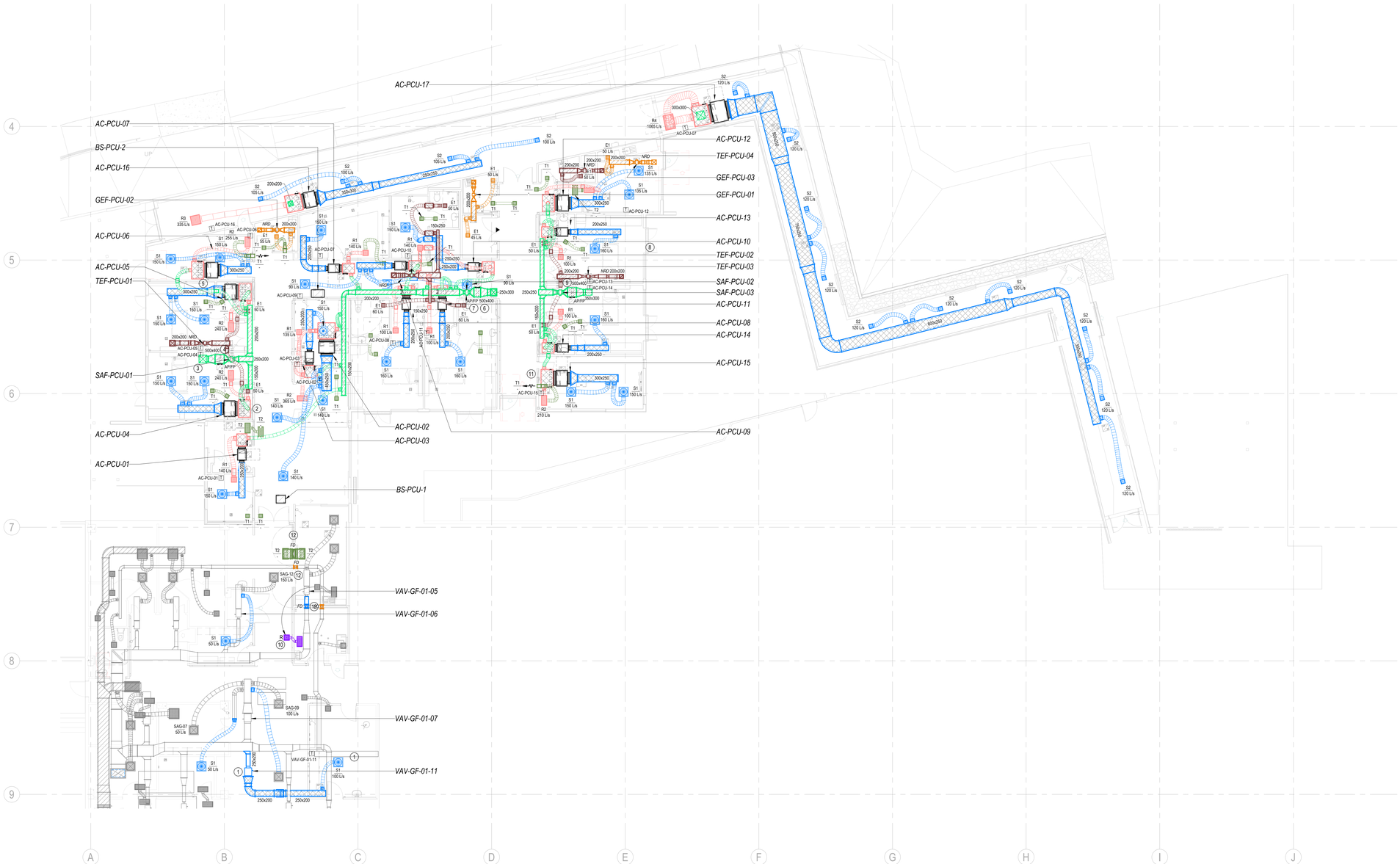
NOTES:

1. PROVIDE A NEW VAV BOX AND SUPPLY AIR DUCT TO PROVIDE INDIVIDUAL TEMPERATURE CONTROL TO MEDICATION ROOM.
2. PROVIDE G4 + F8 FILTERS FOR PATIENT BEDROOM FCU'S. ALL OTHER FILTERS SHALL BE F5 RATING.
3. PROVIDE TRANFER GRILLES CONNECTED TO INSULATED CUSHION BOXES FOR ENSUITE TO ALLOW AIR TRANSFER. (TYPICAL FOR ALL ENSUITES AND TOILETS).
4. 500x400 PANEL FILTER 100mm THICK TO BE INSTALLED WITH FILTER BOX FOR SAF-PCU-01.
5. CONDENSATE PIPE TO DRAIN TO NEAREST TUNDISH. (TYPICAL FOR ALL UNITS).
6. 500x400 PANEL FILTER 100mm THICK TO BE INSTALLED WITH FILTER BOX FOR SAF-PCU-02.
7. INLINE OUTSIDE AIR FAN TO BE SUPPORTED FROM ROOF STRUCTURE WITH VIBRATION ISOLATORS. TYPICAL FOR ALL NEW VENTILATION FANS LOCATED IN CEILING VOID.
8. PROVIDE REED SWITCH AT OPENABLE SLIDING DOOR TO INTERLOCK FOR DEACTIVATING THE RESPECTIVE AC UNIT IN BEDROOM. (TYPICAL FOR ALL 6 BEDROOM UNITS).
9. 500x400 PANEL FILTER 100mm THICK TO BE INSTALLED WITH FILTER BOX FOR SAF-PCU-03.
10. RELOCATE EXISTING TRANSFER GRILLE TO SERVE DIRTY UTILITY ROOM.
11. WALL MOUNTED ACCESS PANEL FOR FUTURE MAINTENANCE AND REPLACEMENT.
12. INSTALL NEW FIRE DAMPERS AND MODIFY EXISTING DUCTWORK THAT PASS THROUGH NEW FIRE RATED WALL.



DRAWING UNDER REVISION

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	13.09.24	FD	BH
B	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
C	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
D	DD ENGINEERING PUG 2	14.02.25	PT	BH
E	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

Client

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Drawing Title

MECHANICAL SERVICES
GROUND FLOOR - EQUIPMENT LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000300			E

NOTES:

1. EXHAUST AIR ROOF COWL CONNECTS TO EXHAUST AIR DUCT BELOW.
2. OUTSIDE AIR ROOF COWL CONNECTS TO OUTSIDE AIR DUCT BELOW.

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	13.09.24	FD	BH
B	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
C	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
D	DD ENGINEERING PUG 2	14.02.25	PT	BH
E	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

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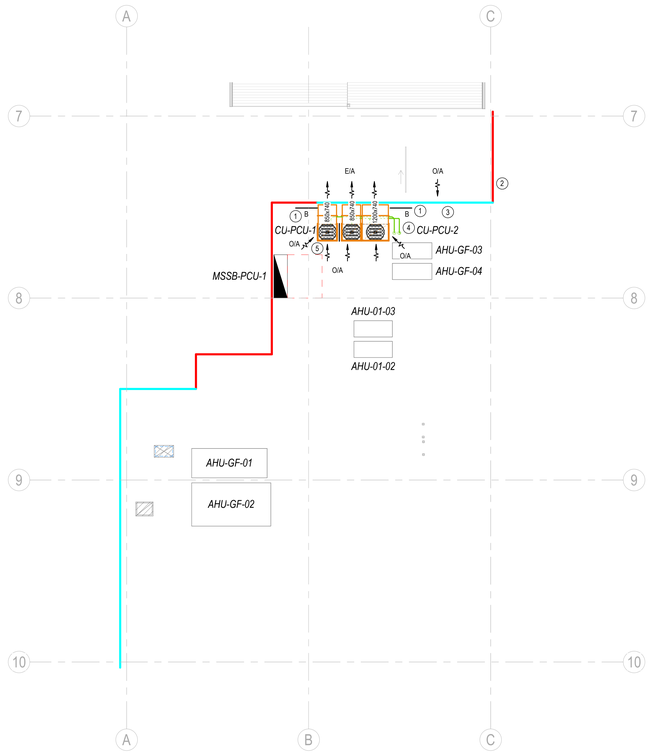
Drawing Title

MECHANICAL SERVICES
ROOF - EQUIPMENT LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000310			E

NOTES:

1. BLANK OFF 1M AROUND THE DISCHARGE TO AVOID RE-CIRCULATION.
2. SOLID WALLS.
3. VENTILATION LOUVRES.
4. REFRIGERATION PIPES TO PENETRATE FLOOR SLAB TO BELOW.
5. NEW VRV CONDENSING UNITS TO BE INSTALLED IN PLANT ENCLOSURE . PROVIDE CONCRETE PLINTH. INSTALL ON VIBRATION ISOLATORS AND PROVIDE TOP DISCHARGE PLENUM BOX WITH TURNING VANES.



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A	DRAFT SCHEMATIC ISSUE	13.09.24	FD	BH
B	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
C	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
D	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

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Scale

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SCALE BAR 1:100

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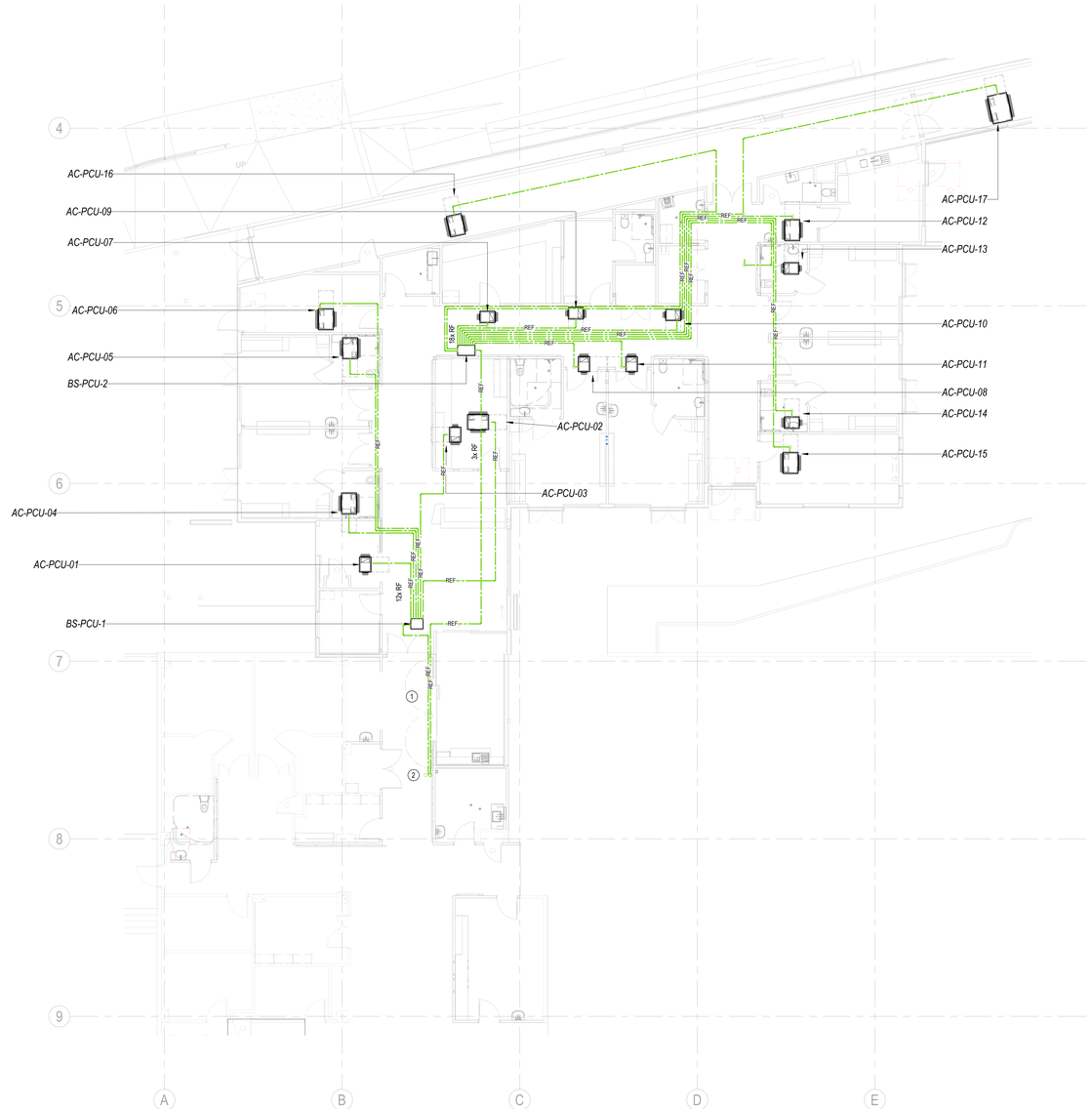
Drawing Title

MECHANICAL SERVICES
ROOF - PLANTROOM LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000311			D

NOTES:

1. REFRIGERATION PIPES FROM CONDENSING UNITS ABOVE IN LEVEL 1 PLANT ROOM.
2. REFRIGERATION PIPES FROM/TO ABOVE.



Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
B	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
C	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

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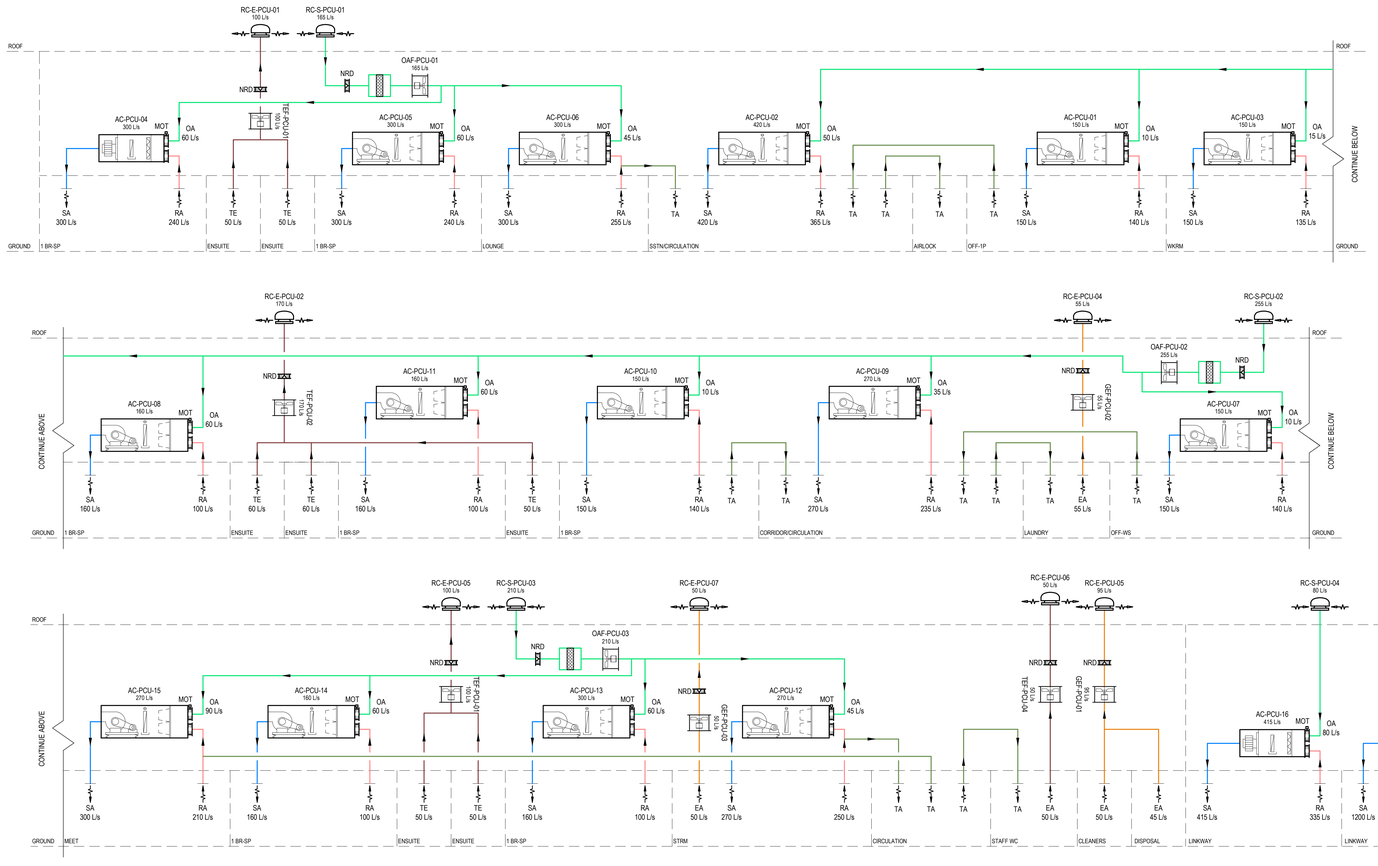
Drawing Title

MECHANICAL SERVICES
GROUND FLOOR - PIPEWORK LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000400			C



AIR SCHEMATIC

Issue	Description	Date	Drawn	Approved
A	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

PRINT IN COLOUR

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Scale

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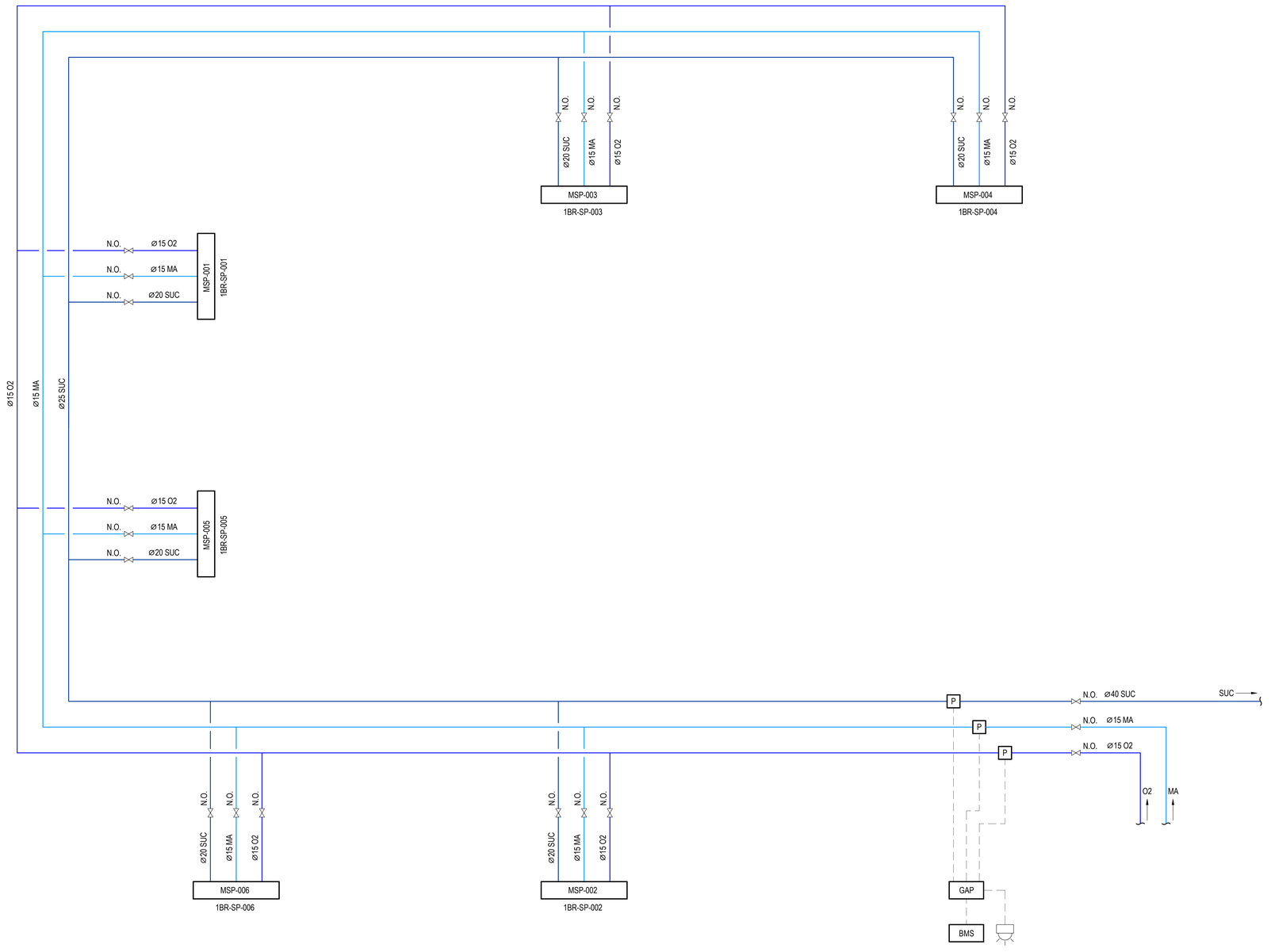
Drawing Title

MECHANICAL SERVICES
SCHEMATICS - AIR

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	N.T.S
Project No.	**Drawing No.**			**Issue**
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000800			A



Issue	Description	Date	Drawn	Approved
A	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

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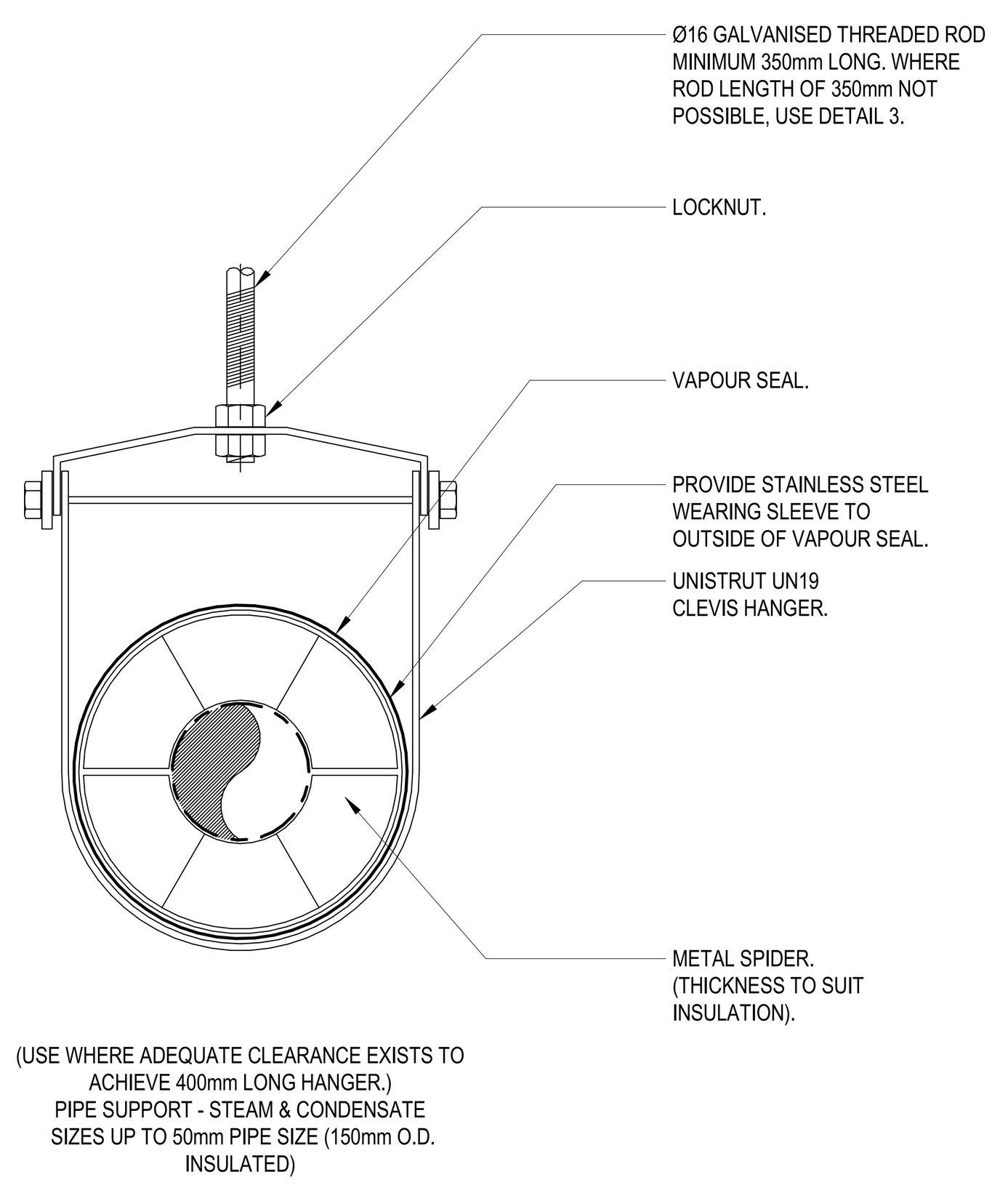
Drawing Title

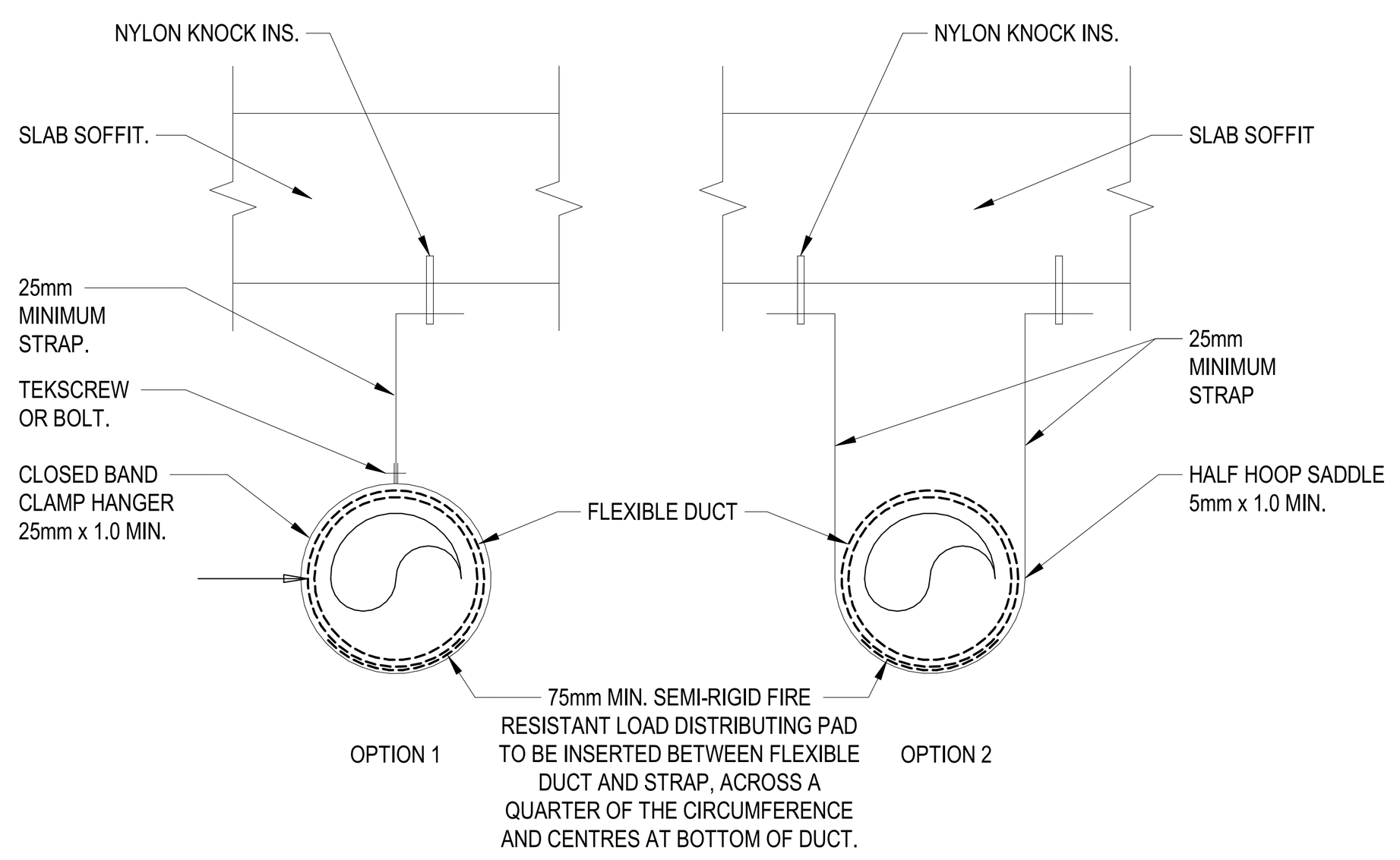
MECHANICAL SERVICES
SCHEMATICS - MEDICAL GAS

Drawn	Designed	Q.A. Check	Date	Scale @ A0
A. Walters	P. Tran	S. Bowling	07.03.25	N.T.S
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000820			A



SINGLE PIPE SUPPORT DETAIL

SCALE: N.T.S

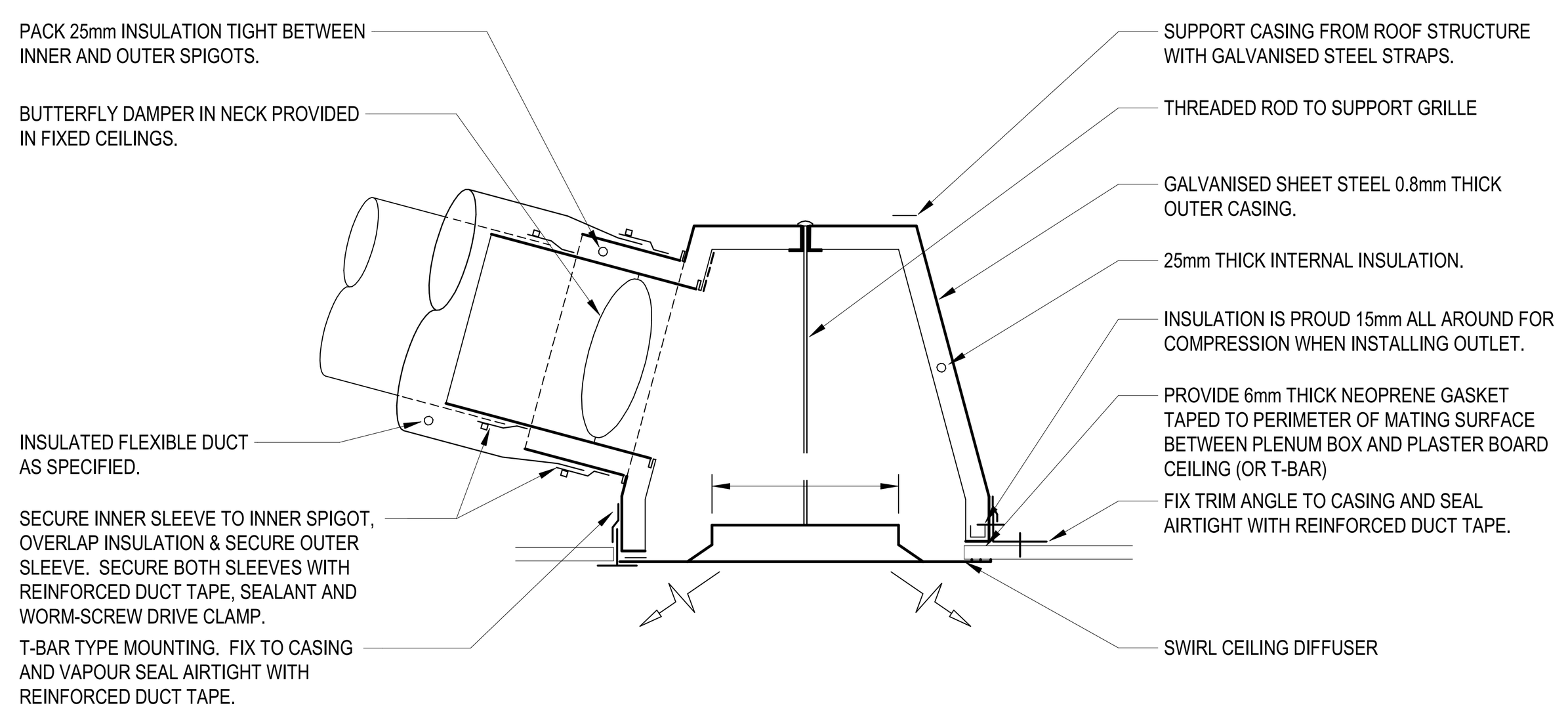


TYPICAL FLEXIBLE DUCT INSTALLATION DETAILS

SCALE: N.T.S

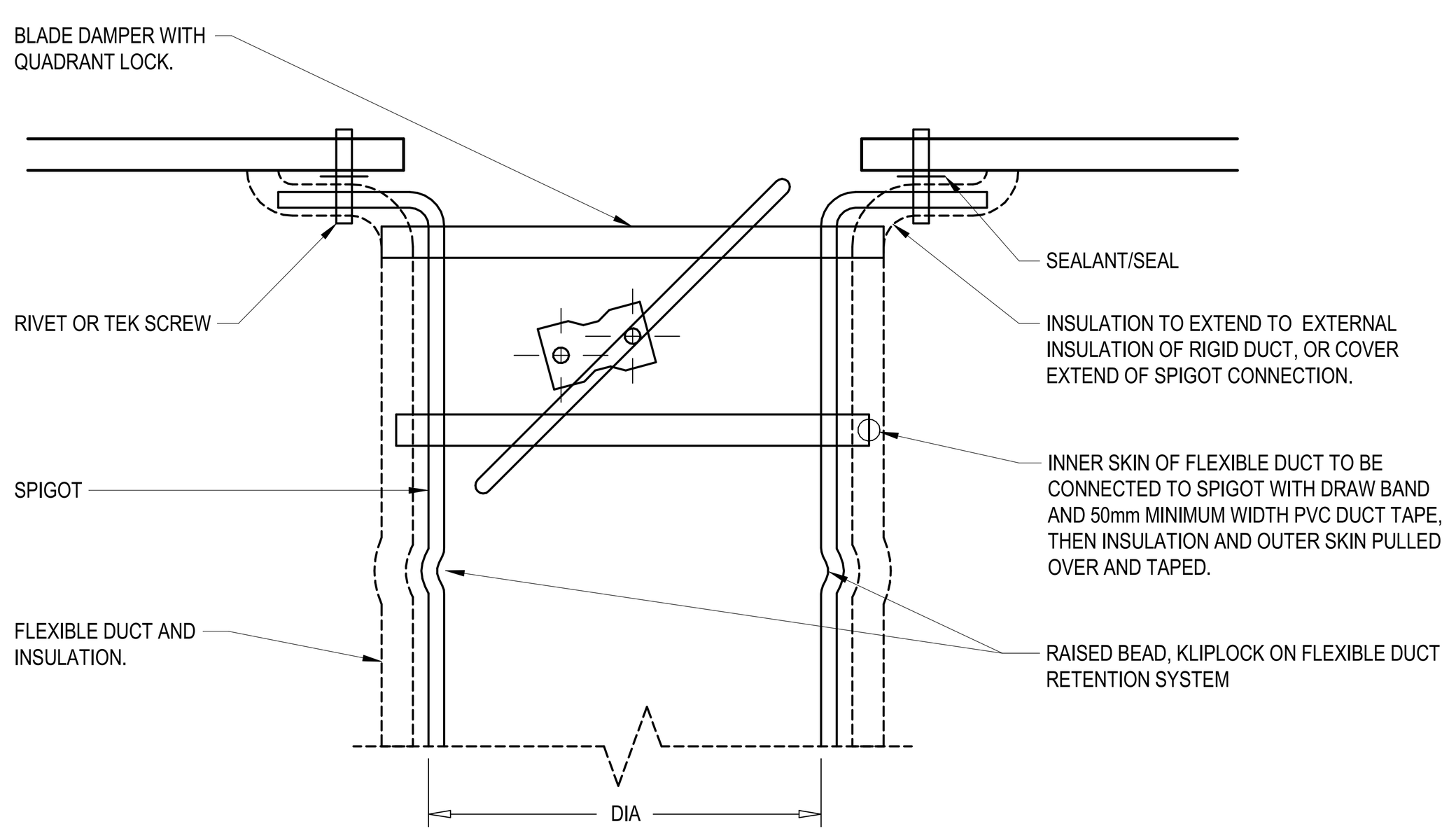
NOTE:

1. SUPPORT SYSTEM SHALL NOT DAMAGE, CAUSE OUT-OF-ROUND SHAPE, OR COMPRESS INSULATION TO THE POINT WHERE THERMAL BRIDGING COULD OCCUR.
2. STRAPS SHALL BE SPACED AT MAXIMUM 1500mm CENTERS.
3. FLEXIBLE DUCTS SHALL EXTEND STRAIGHT FOR NO LESS THAN 100mm FROM A CONNECTION BEFORE BENDING.
4. FLEXIBLE DUCTS SHALL BE INSTALLED WITH A BEND RADIUS TO DUCT DIAMETER RATIO NO LESS THAN 1.0.
5. FLEXIBLE DUCTS SHALL BE INSTALLED IN LENGTHS NOT EXCEEDING 6m BETWEEN A DUCT SPIGOT AND A TERMINAL DEVICE.
6. INSULATED FLEXIBLE DUCT SHALL BE PROVIDED IN ACCORDANCE WITH SPEC.J5.2 OF THE NCC (BCA)



SWIRL DIFFUSER AND CUSHION HEAD DETAIL

SCALE: N.T.S

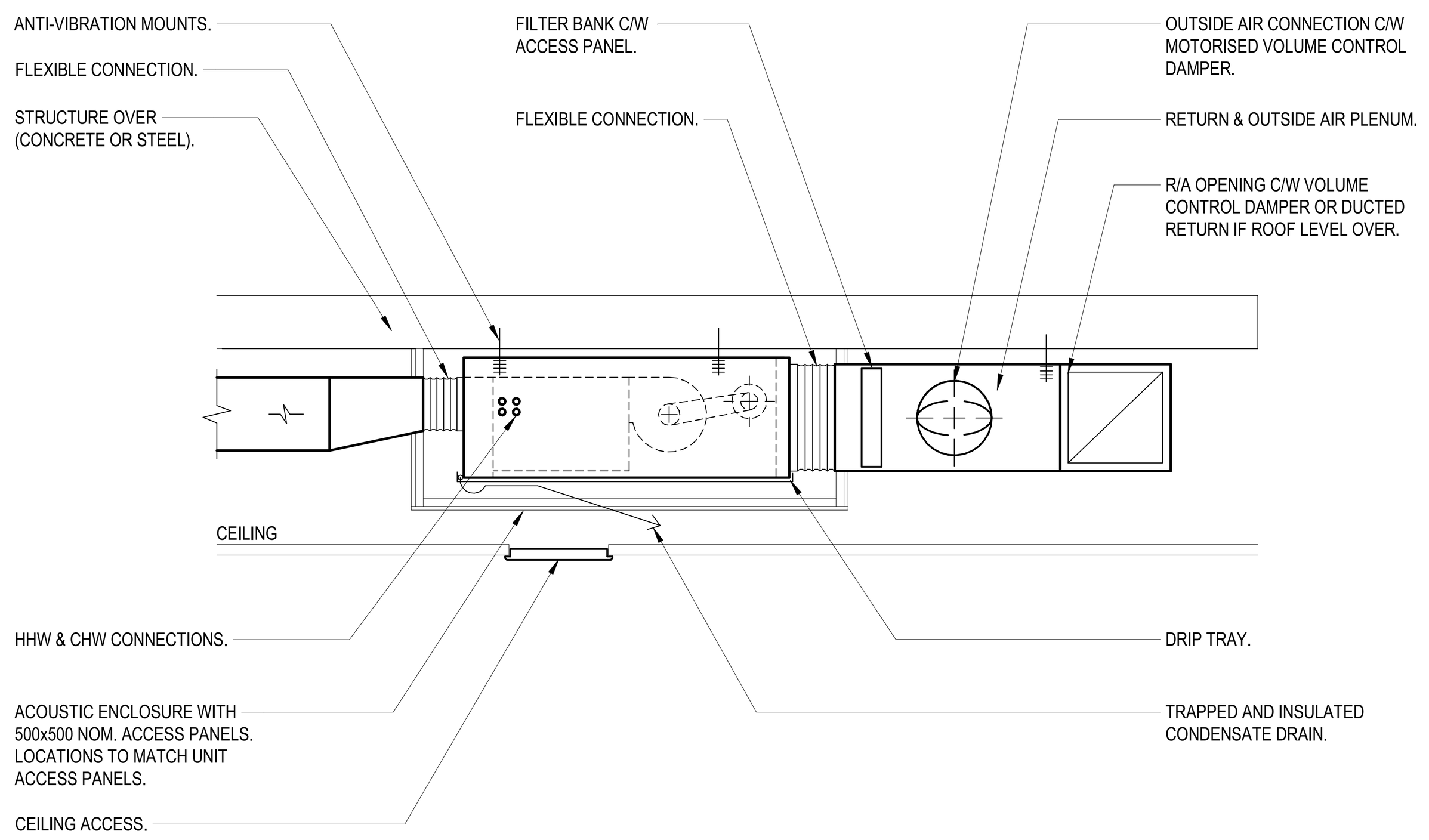


TYPICAL FLEXIBLE DUCT TAKE-OFF DETAIL

SCALE: N.T.S

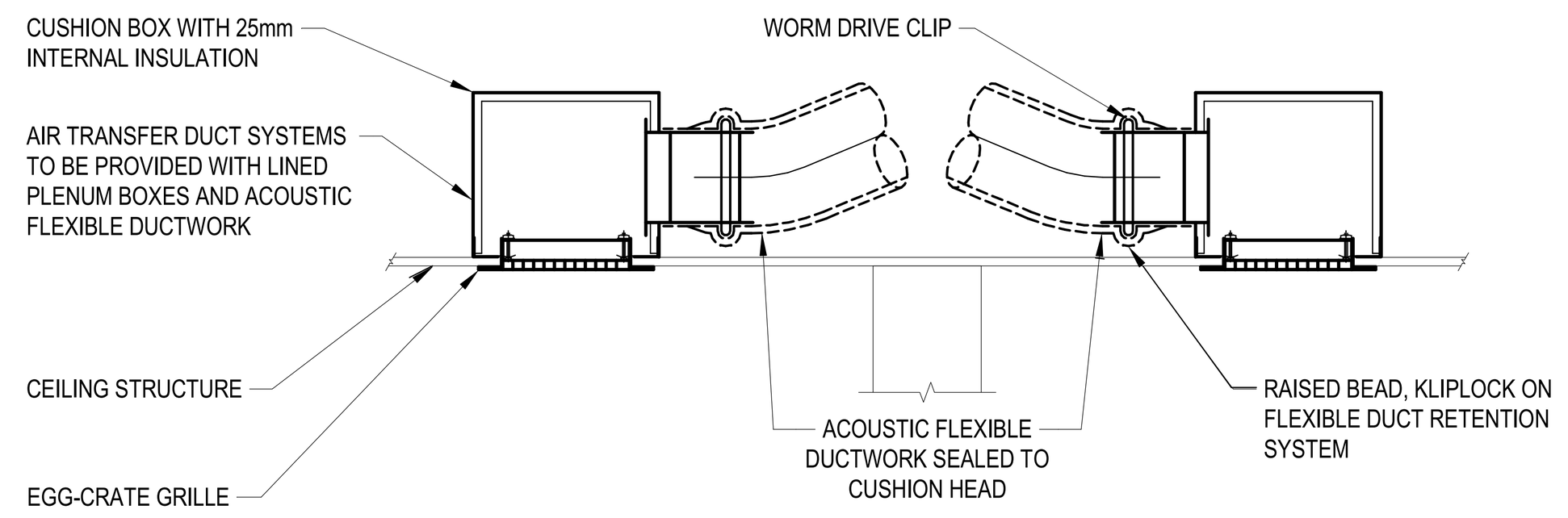
NOTE:

1. FLEXIBLE DUCTS SHALL BE CONNECTED TO SPIGOTS AND SLEEVES IN ACCORDANCE WITH AS4254.1



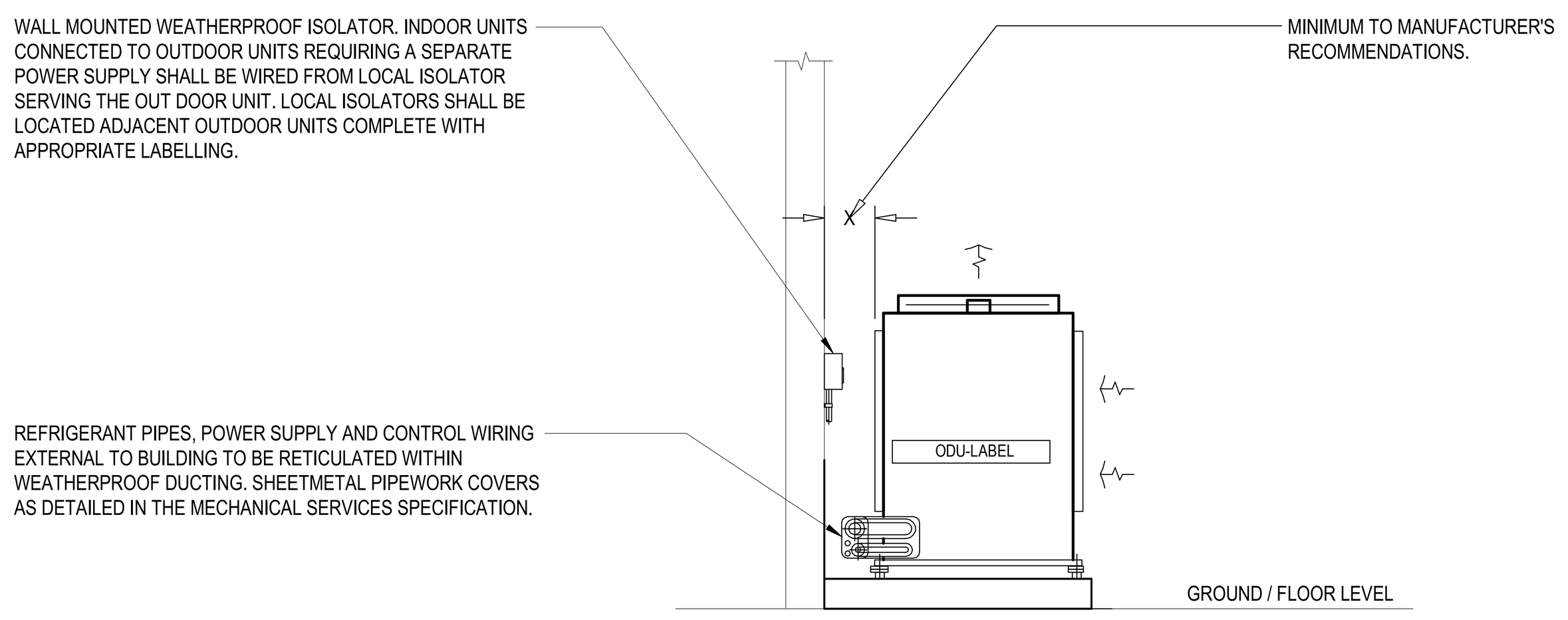
FAN COIL UNIT MOUNTING DETAIL

SCALE: N.T.S



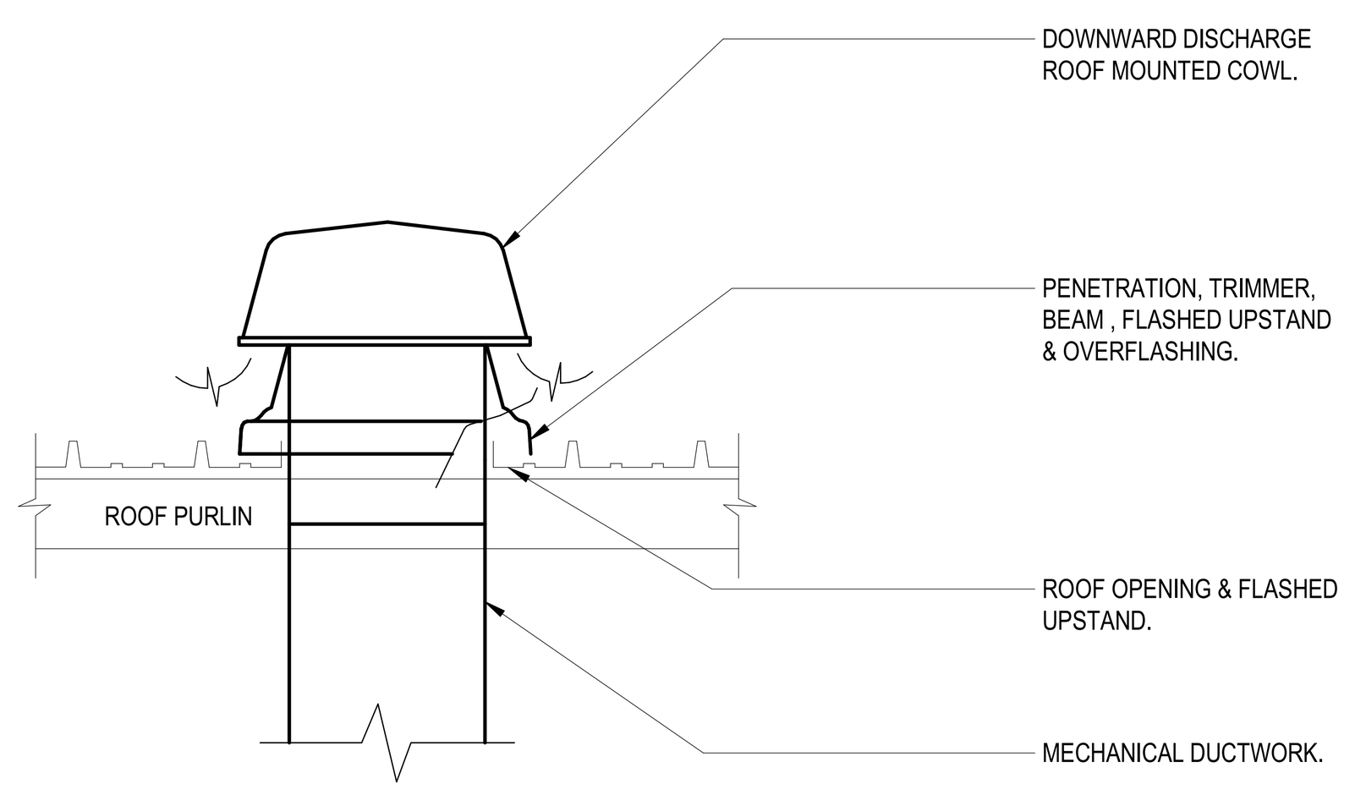
TYPICAL AIR TRANSFER DUCT DETAIL (FLEXIBLE DUCT)

SCALE: N.T.S



OUTDOOR UNIT MOUNTING DETAIL

SCALE: N.T.S

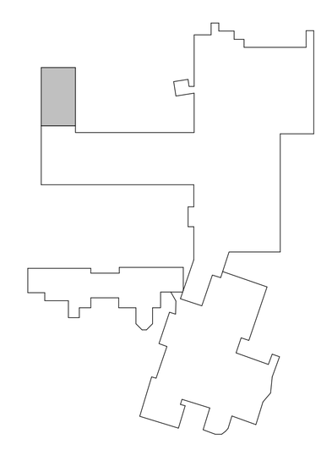


ROOF MOUNTED FAN/COWL DETAIL

SCALE: N.T.S

Issue.	Description	Date	Drawn	Approved
A	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key



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WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

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Drawing Title

MECHANICAL SERVICES
TYPICAL DETAILS

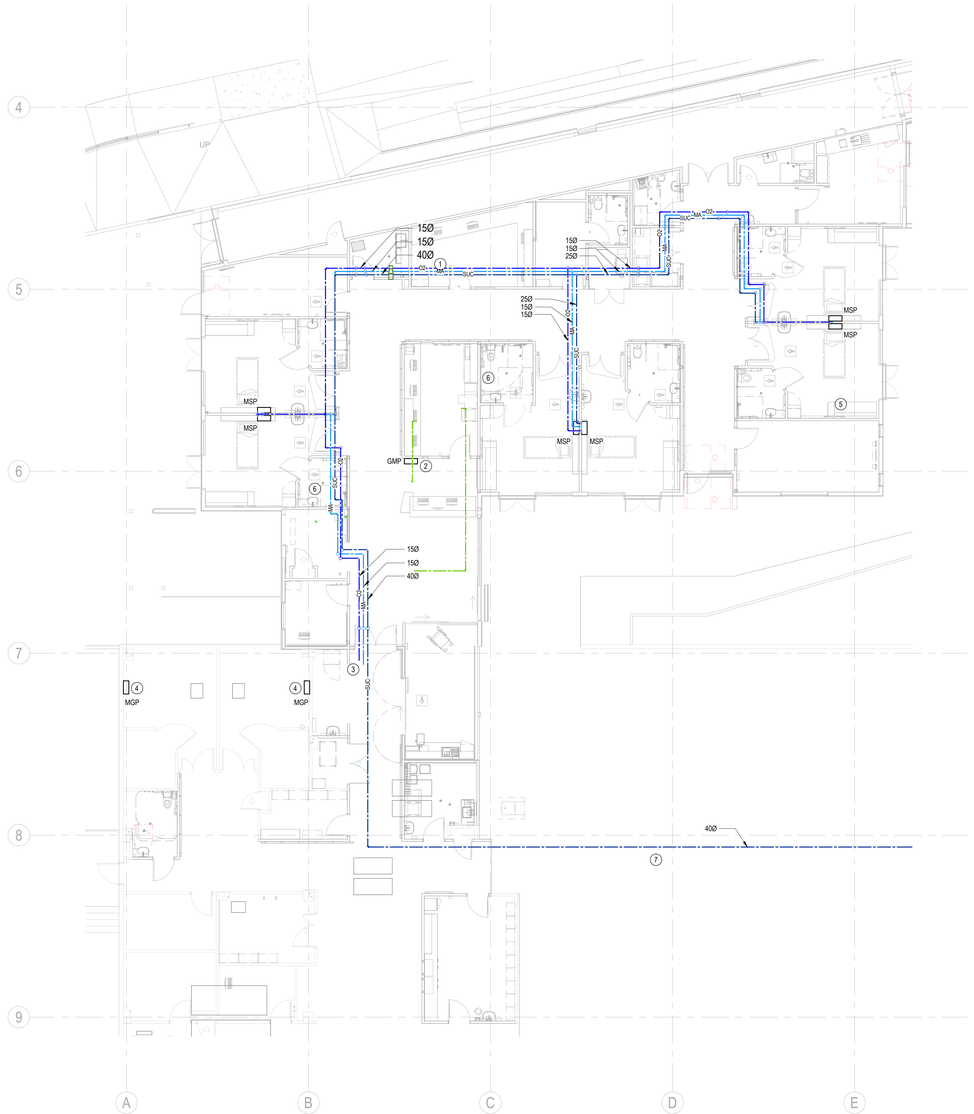
Drawn	Designed	Q.A. Check	Date	Scale @ A0
F. Nasim	P. Tran	S. Bowling	07.03.25	N.T.S

Project No.	Drawing No.	Issue
NA230258	WCP-ARC-DRW-MEC-TAM-12B-0000900	A

Appendix C - Medical Gas Drawings

NOTES:

1. RUN MEDICAL GAS PIPES IN CEILING SPACE ABOVE CORRIDOR. RETICULATE PIPES TO MSP's VIA WALL CAVITIES.
2. MEDICAL GAS MONITORING AND ALARM PANEL.
3. PROVIDE NEW CONNECTION AND BRANCH FROM EXISTING PIPE RUNS FOR OXYGEN AND MEDICAL AIR ONLY.RUN PIPES IN CEILING SPACE TO SERVE NEW EXTENSION.
4. MODIFY EXISTING MSP LOCATIONS TO SUIT CHANGED LAYOUT FOR 2 EXISTING BEDROOMS.
5. MEDICAL SERVICES PANEL (MSP) -INTEGRATED WITH ELECTRICAL SERVICES (TYPICAL).
6. MEDICAL AIR OUTLETS IN BEDROOM ENSUITES AND EXTERNAL COURTYARD (IF REQUIRED).
7. CONNECT NEW SUCTION AIR PIPES FROM EXISTING PIPE RUNS. RUN PIPES IN CEILING SPACE TO SERVE NEW EXTENSION.



Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	13.09.24	FD	BH
B	DRAFT SCHEMATIC DESIGN	17.10.24	FD	BH
C	DD ENGINEERING PUG PRESENTATION	21.01.25	FD	BH
D	DD ENGINEERING PUG 2	14.02.25	PT	BH
E	DRAFT DESIGN DEVELOPMENT	07.03.25	FN	BH

Drawing Key

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Drawing Title

MECHANICAL SERVICES
MEDICAL GAS LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
F.Duckinoski	P. Tran	S. Bowling	07.03.25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-MEC-TAM-12B-0000320			E

Appendix D - Electrical Drawings

WORLD CLASS END OF LIFE PROGRAM
DEAN STREET, NORTH TAMWORTH NSW 2340
ELECTRICAL SERVICES

DRAWING LIST	
DRAWING No.	DRAWING TITLE
WCP-ACR-DRW-ELE-TAM-01A-0000001	COVER SHEET AND DRAWING INDEX
WCP-ACR-DRW-ELE-TAM-01A-0000002	LEGEND AND GENERAL NOTES
WCP-ACR-DRW-ELE-TAM-01A-0000006	LIGHTING AND EMERGANCY LIGHTING LAYOUT
WCP-ACR-DRW-ELE-TAM-01A-0000007	POWER AND COMMUNICATION LAYOUT
WCP-ACR-DRW-ELE-TAM-01A-0000008	SECURITY LAYOUT
WCP-ACR-DRW-ELE-TAM-01A-0000009	NURSE CALL LAYOUT
WCP-ACR-DRW-ELE-TAM-01A-0000010	CABLE TRAY LAYOUT
WCP-ACR-DRW-ELE-TAM-01A-0009000	TYPICAL LAYOUTS AND MSP DETAIL

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DETAILED DESIGN ISSUE	21.10.24	AP	SW
D	DETAILED DESIGN ISSUE	15.11.24	AP	SW
E	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
F	DD ENGINEERING PUG PRESENTATION	17.02.25	DV	SW
G	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key

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Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

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WORLD CLASS END OF LIFE PROGRAM

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TAMWORTH NSW 2340

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Drawing Title

ELECTRICAL SERVICES
COVER SHEET AND DRAWING INDEX

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	N.T.S
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000001			G

LIGHTING

SYMBOL	DESCRIPTION
T1	1200mm RECESSED LED LUMINAIRE. PROVIDE WITH DIMMABLE DALI. PROVIDE WITH SOFT WIRING 5 PIN DALI PLUG (WITH MINIMUM 2m LEAD)
T2	600mm RECESSED LED LUMINAIRE. PROVIDE WITH DIMMABLE DALI. PROVIDE WITH SOFT WIRING 5 PIN DALI PLUG (WITH MINIMUM 2m LEAD)
B1	1200mm LED BATTEN TYPE LUMINAIRE. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2m LEAD)
LED 1	LINEAR STRIP RECESSED LED.
LED 2J	LINEAR STRIP RECESSED LED IN JOINERY.
D1	?x?W RECESSED COMPACT LED DOWNLIGHT. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
D2	?x?W RECESSED COMPACT LED DOWNLIGHT. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
D3	?x?W RECESSED COMPACT LED DOWNLIGHT. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
D4	?x?W RECESSED COMPACT LED DOWNLIGHT. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
UL1	?x?W WALL MOUNTED LUMINAIRE. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
WL1	?x?W WALL MOUNTED LUMINAIRE. PROVIDE WITH A DIMMABLE DALI ELECTRONIC. PROVIDE WITH SOFTWIRING 5 PIN DALI PLUG (WITH MINIMUM 2 m LEAD).
P1	?x?W PENDANT LUMINAIRE
	?W LED MONITORED SELF-CONTAINED NON-MAINTAINED EMERGENCY LUMINAIRE WITH DUAL RATE CHARGER. LIGHTING TESTING FACILITY TO COMPLY WITH AS/NZS 2293.1 0.9 PF CORRECTED. REFER TO SPECIFICATION FOR REQUIREMENTS.
	SURFACE MOUNTED EMERGENCY EVACUATION LUMINAIRE.
	?W LED MONITORED MAINTAINED EMERGENCY EVACUATION LUMINAIRE WITH NICAD BATTERY BACKUP AND 24m VIEWING DISTANCE. PROVIDE WITH RUNNING MAN SYMBOL AND DIRECTIONAL ARROWS AS SHOWN. LIGHTING TESTING FACILITY TO COMPLY WITH AS/NZS 2293.1 0.9 PF CORRECTED. REFER TO SPECIFICATION FOR OTHER REQUIREMENTS.A ARROW DENTOES SIDE AND DIRECTON.

LIGHTING

SYMBOL	DESCRIPTION
	ONE-WAY OR TWO-WAY RECESSED LIGHT SWITCH. 15A SWITCH MECHANISM. MOUNTED AT 1000mm AFFL UNLESS SHOWN OTHERWISE.
	360° MOTION SENSOR.
	360° MOTION SENSOR FOR CORRIDOR LIGHTING.
	COMBINED SOUND AND MOTION SENSOR.
	LIGHTING CIRCUIT LINE.
	SWITCHING LINE.
LCP	LIGHTING CONTROL PANEL.
LCP ZZ	MULTIGANG LIGHTI SWITCH PANEL. X = NUMBER OF LIGHT SWITCH PANEL. ZZ = NUMBER OF GANG SWITCHES.
DB-YY	DB CIRCUITING ZONE INDICATOR.
	SPOT LIGHT DIRECTION ARROW.

POWER

SYMBOL	DESCRIPTION
	SINGLE OR DOUBLE GENERAL PURPOSE POWER OUTLET. EQUAL TO HPM EXCEL LIFE OR CLIPSAL 2000 RANGE. REFER TO STANDARD NOTATIONS ADJACENT LEGEND.
	RED GPO FOR EMERGENCY POWER
SS	20A WORKSTATION STARTER SOCKET. SUPPLIED BY WORKSTATION TRADE. INSTALLED BY ELECTRICAL TRADE. REFER TO STANDARD NOTATIONS ADJACENT LEGEND.
	SINGLE OR DOUBLE SPECIAL PURPOSE POWER OUTLET.
IS	ISOLATOR SWITCH. OUTLET RATING TO MATCH CIRCUIT RATING UNLESS SHOWN OTHERWISE. REFER TO STANDARD NOTATIONS ADJACENT LEGEND.
	POWER CIRCUIT LINE.
DB-XX	DISTRIBUTION BOARD. REFER TO SPECIFICATION.
MSSB-XX	CONTROL PANEL OR MSSB BY OTHER TRADE UNDER BUILDERS CONTRACT REFER TO SPECIFICATION.
FBX	THREE COMPARTMENT FLOOR BOX. ALLOW FOR ALL MODIFICATIONS TO THE SLAB TO FACILITATE FLOOR BOX INSTALLATION AND CABLE RETICULATION, INCLUDING SLAB SCANNING. ALL DETAILS ARE TO BE CONFIRMED WITH A STRUCTURAL ENGINEER PRIOR TO PROCEEDING. COORDINATE THE WORKS WITH THE BUILDING TRADE.
xxxECT	ELECTRCIAL CABLE TRAY. SIZE DENOTED ON DRAWINGS. "xxx" DENOTES CABLE TRAY WIDTH. "ECT" DENOTES ELECTRICAL CABLE TRAY. "ECB" DENOTES ELECTRICAL CABLE BASKET.
	XX CHANNEL SKIRTING DUCT.
WSxy	WORKSTATION TYPE xy. WITH THE FOLLOWING OUTLETS: x = x GPOs (SOFT WIRED), y = y DATA RJ45 (CAT 6A)
TVxy	TV OUTLET TYPE xy. WITH THE FOLLOWING OUTLETS: x = x GPOs (SOFT WIRED), y = y DATA RJ45 (CAT 6A)

SECURITY

SYMBOL	DESCRIPTION
PR	PROXIMITY CARD READER.
RS	REED SWITCH.
PBX	PUSH TO EXIT.
ES	ELECTRONIC STRIKE.
DA	DURESS ALARM (INTEGRITI BRAND).
EP	EMERGENCY PHONE (RED).
INT	INTERCOM HANDSET.
VI	VIDEO INTERCOM.
	CCTV CAMERA - DOME TYPE.
ADI	AUTO DOOR INTERFACE.
D1	DUAL LEAF DOOR: -2x MAGNETIC LOCK -2x CARD READER (INSIDE/OUT).
D2	DUAL LEAF DOOR: -2x MAGNETIC LOCK -1x CARD READER (OUTSIDE) -1x PUSH TO EXIT (INSIDE)
D3	DUAL LEAF DOOR: -2x MAGNETIC LOCK -1x CARD READER (INSIDE)
S1	SINGLE LEAF DOOR: -1x ELECTRIC STRIKE/REED SWITCH -2x CARD READER (INSIDE/OUT)
S2	SINGLE LEAF DOOR: -1x ELECTRIC STRIKE/REED SWITCH -2x CARD READER (OUTSIDE)
S3	SINGLE LEAF DOOR: -1x ELECTRIC STRIKE/REED SWITCH -2x CARD READER (INSIDE)
RS	REED SWITCH - DUAL LEAF DOOR (2).
ACR	CARD READER INSIDE/OUTSIDE (2)

NURSE CALL

SYMBOL	DESCRIPTION
NC1	NURSE CALL POINT COMPLETE WITH CALL/CANCEL/ACKNOWLEDGEMENT BUTTONS: NC - DENOTES NURSE CALL (PATIENT TO STAFF) EMG - DENOTES EMERGENCY SA - DENOTES STAFF ASSIST (STAFF TO STAFF) PEND - DENOTES BUTTON WITH PENDANT AND JACK CONNECTIONS RES - DENOTES ROOM ENTRY SENSOR WET - BED WET SENSOR BED - BED EXIT SENSOR
	NURSE CALL INDICATOR LIGHT, WALL MOUNTED.
	SENSOR
ANN	ANNUNCIATOR.
MAS	NURSE CALL MASTER ASSIST STATION.
CAS	CALL ASSIST STROBE ALARM WITH VISUAL ALARM.
NCP	NURSE CALL CONTROL PANEL

PROJECT PHASING LEGEND

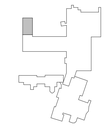
	NEW OR RELOCATED ITEM. "R" DENTOTES RELOCATED ITEM
	EXISTING ITEM TO REMAIN.
	EXISTING ITEM TO BE REMOVED OR RELOCATED.

DATA & COMMUNICATIONS

SYMBOL	DESCRIPTION
1 2 3 4	SINGLE, DOUBLE, TRIPLE & QUAD CATEGORY 6 RJ45 COMMUNICATIONS OUTLET. REFER TO STANDARD NOTATIONS ADJACENT LEGEND.
CC	COMMUNICATIONS CABINET. REFER TO SPECIFICATION.
xxxCCT	COMMUNICATIONS CABLE TRAY. SIZE DENOTED ON DRAWINGS. "xxx" DENOTES CABLE TRAY WIDTH. "CCT" DENOTES COMMUNICATIONS CABLE TRAY. "CCB" DENOTES COMMUNICATIONS CABLE BASKET.

Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DETAILED DESIGN ISSUE	21.10.24	AP	SW
D	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
E	DD ENGINEERING PUG PRESENTATION	17.02.25	DV	SW
F	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key



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Scale

1 0 1 2 3 4 5m
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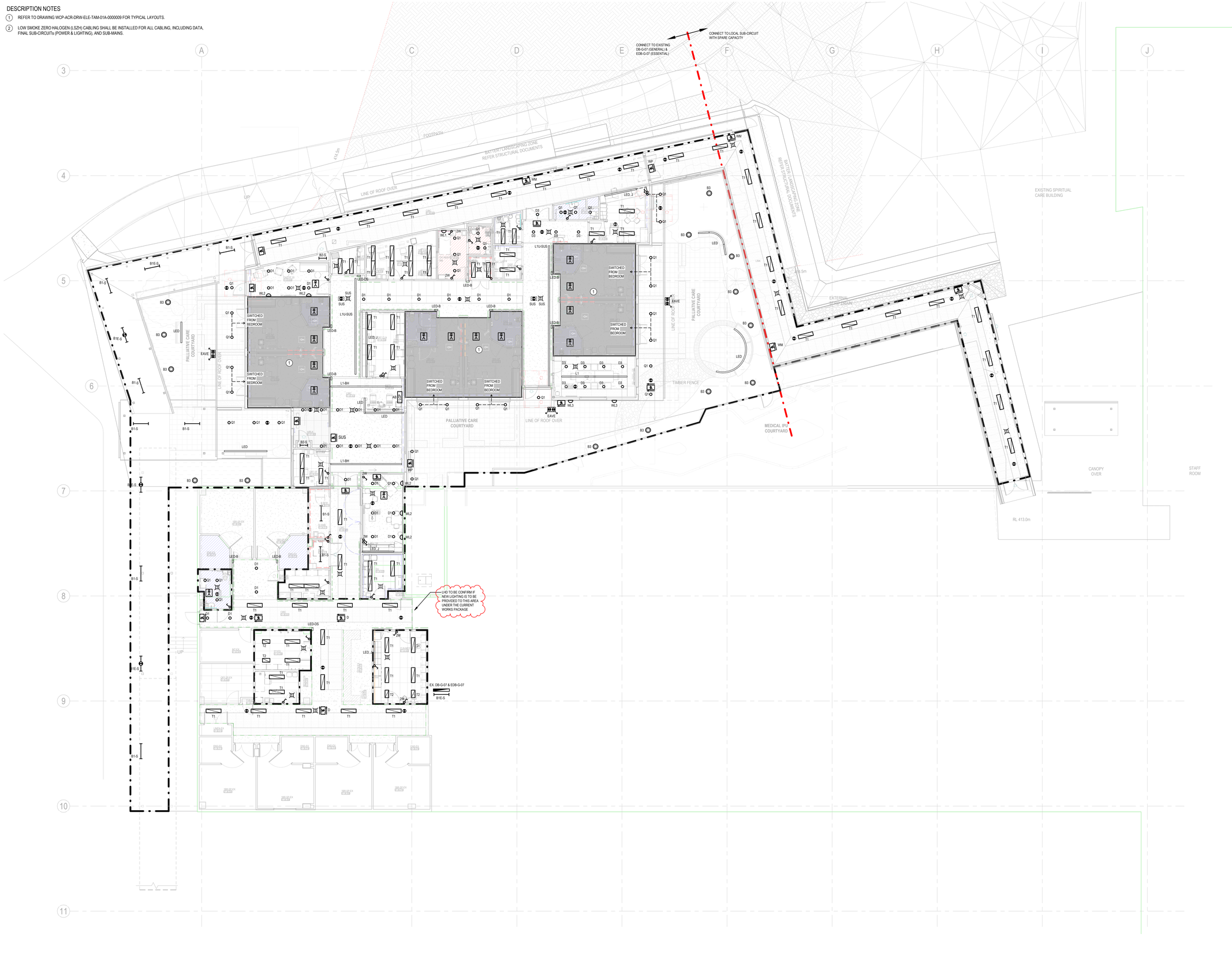
Drawing Title

ELECTRICAL SERVICES
LEGEND AND GENERAL NOTES

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000002			F

DESCRIPTION NOTES

1. REFER TO DRAWING WCP-ACR-DRW-ELE-TAM-01A-0000009 FOR TYPICAL LAYOUTS.
2. LOW SMOKE ZERO HALOGEN (LSZH) CABLING SHALL BE INSTALLED FOR ALL CABLING, INCLUDING DATA, FINAL SUB-CIRCUITs (POWER & LIGHTING), AND SUB-MAINS.



Issue	Description	Date	Drawn	Approved
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D	DETAILED DESIGN ISSUE	15.11.24	AP	SW
E	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
F	DD ENGINEERING PUG PRESENTATION	17.02.25	DY	SW
G	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key

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Scale

1 0 1 2 3 4 5m
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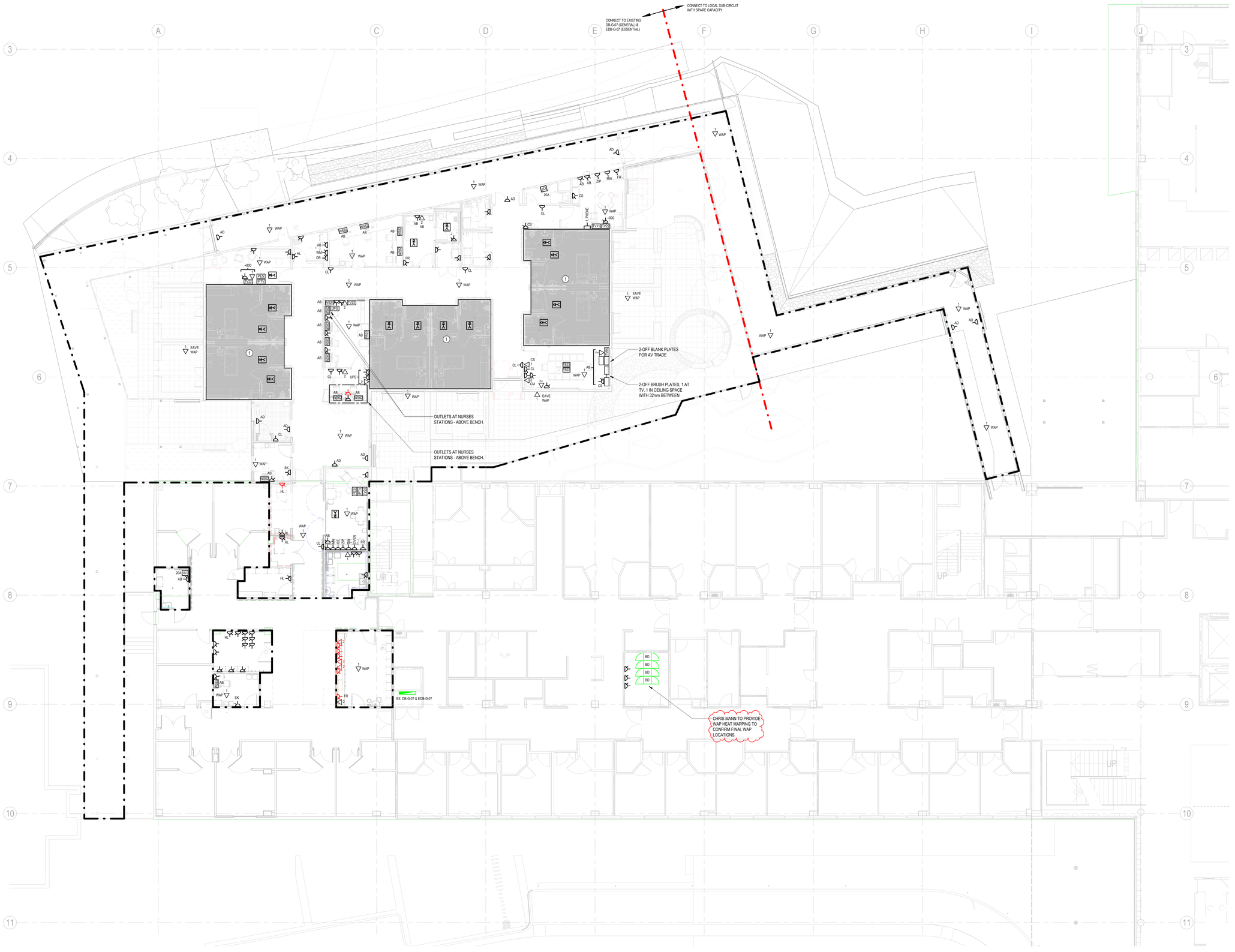
Drawing Title

ELECTRICAL SERVICES
LIGHTING AND EMERGANCY LIGHTING LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000006	G



Issue	Description	Date	Drawn	Approved
A	DRAFT SCHEMATIC ISSUE	09.09.24	AP	SW
B	DRAFT SCHEMATIC ISSUE	17.10.24	AP	SW
C	DETAILED DESIGN ISSUE	21.10.24	AP	SW
D	DETAILED DESIGN ISSUE	15.11.24	AP	SW
E	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
F	DD ENGINEERING PUG PRESENTATION	17.02.25	DY	SW
G	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

DESCRIPTION NOTES

1. REFER TO DRAWING WCP-ACR-DRW-ELE-TAM-01A-0000009 FOR TYPICAL LAYOUTS.
2. LOW SMOKE ZERO HALOGEN (LSZH) CABLING SHALL BE INSTALLED FOR ALL CABLING, INCLUDING DATA, FINAL SUB-CIRCUITs (POWER & LIGHTING), AND SUB-MAINS.
3. 12 RU CABINET REQUIREMENTS PER NSW ICT STANDARD (HD2425811):
   3.1.CABINETS AND OR 4 (FOUR) POST RACKS MUST HAVE A WELDED INTEGRAL EARTH BOLT (EARTH TERMINAL). IF A CABINET IS SUPPLIED TO SITE WITHOUT AN EARTH TERMINAL AND ITS FITMENTS, MUST BE CONSIDERED NOT FIT FOR PURPOSE AND MUST BE REJECTED. THE CABINET EARTH TERMINAL MUST BE SUPPLIED FITTED WITH TWO NUTS, A FLAT WASHER, AN EARTH LUG, AND A STAR WASHER. THE EQUIPMENT & TELECOMMUNICATIONS ROOMS PROVIDER MUST ATTACH THE EARTH CONDUCTOR TO THE EARTH TERMINAL USING A NUT, FLAT WASHER, EARTH LUG, STAR WASHER, AND NUT IN THAT ORDER.
   3.2.ALL CABINETS, RACKS MUST HAVE AT LEAST AN 18 MM (EIGHTEEN MILLIMETRES) FRONT FACING SIDE TO ACCOMMODATE THE REQUIRED LABEL AS SPECIFIED IN THE ABCOWN HEALTH ICT INFRASTRUCTURE NAMING STANDARD.
   3.3.CABINET DIMENSIONS: 600 MM (SIX HUNDRED MILLIMETRES) WIDE AND MINIMUM 600 MM (SIX HUNDRED MILLIMETRES) DEEP. EXCLUDING THE SWING FRAME; SWING FRAME DEPTH: A MINIMUM OF 100 MM (ONE HUNDRED MILLIMETRES), REAR-MOUNTED TO THE CABINET (THE TOTAL INTERNAL DEPTH OF THE CABINET AND THE FRAME IS TO EQUAL A MINIMUM OF 700 MM (SEVEN HUNDRED MILLIMETRES)
   3.4.INSTALLATION ON A MINIMUM OF 12 MM (TWELVE MILLIMETRE) AC GRADE PLYWOOD BACKBOARD, WITH THE SMOOTH SIDE OUT, SECURED TO AT LEAST TWO WALL STUDS, FIXED AT THE TOP AND BOTTOM TO EACH STUD (TYPICALLY 800 MM (EIGHT HUNDRED MILLIMETRES) X 800 MM (EIGHT HUNDRED MILLIMETRES) FOR MOUNTING OF THE CABINET SWING FRAME, SUITABLY AFFIXED TO ENSURE THE CABINET WILL NOT SEPARATE FROM THE BACKBOARD OR WALL.
   3.5.VENTED TOP AND BOTTOM PANELS TO ALLOW AIRFLOW.
   3.6.PERFORATED DOOR TO ALLOW AIRFLOW.
   3.7.FULLY LOCKABLE, INCLUDING SIDE PANELS.
   3.8.MICRO SWITCHES INSTALLED ON THE FRONT DOOR.
   3.9.TOP OF CABINET CABLING ACCESS AND ACCESSORIES.
   3.10.FAN (2 (TWO) FAN UNIT) INSTALLED IN THE TOP OF THE CABINET WITH A BUILT-IN THERMOSTAT SET TO OPERATE AT 26°C (TWENTY-SIX DEGREES CELSIUS) (IF NOT N+1 AC ROOM).
   3.11.THE FOBOT AND ICT CABLING PATCH PANELS SHALL BE MOU.

Drawing Key

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1 0 1 2 3 4 5m
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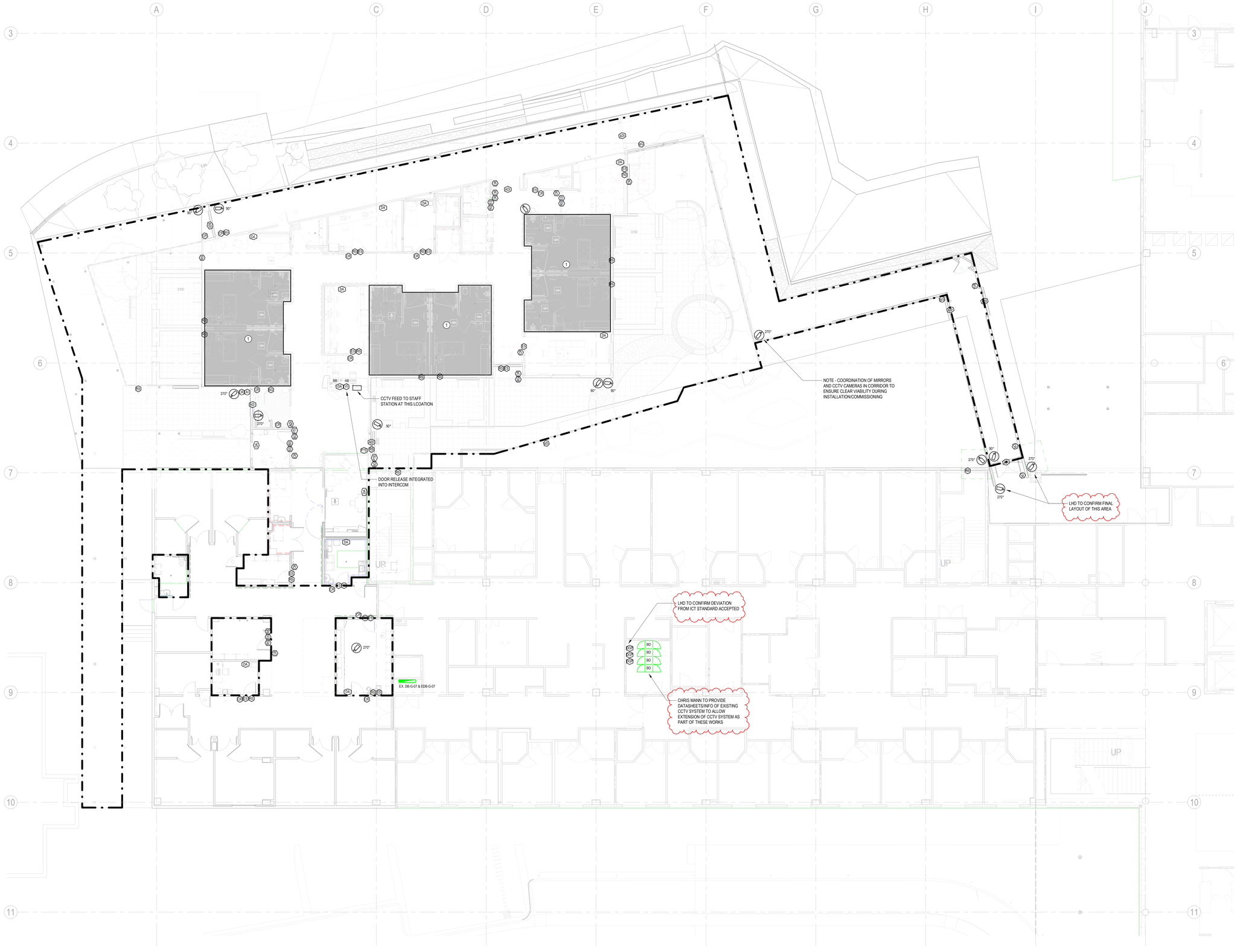
Drawing Title

ELECTRICAL SERVICES
POWER AND COMMUNICATION LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000007			G

DESCRIPTION NOTES

1. REFER TO DRAWING WCP-ACR-DRW-ELE-TAM-01A-0000009 FOR TYPICAL LAYOUTS.
2. COMMISSIONING OF CAMERAS & FINAL POSITIONING TO BE APPROVED BY CLIENT.



Issue	Description	Date	Drawn	Approved
A	DETAILED DESIGN ISSUE	21.10.24	AP	SW
B	DETAILED DESIGN ISSUE	15.11.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG PRESENTATION	17.02.25	DV	SW
E	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key

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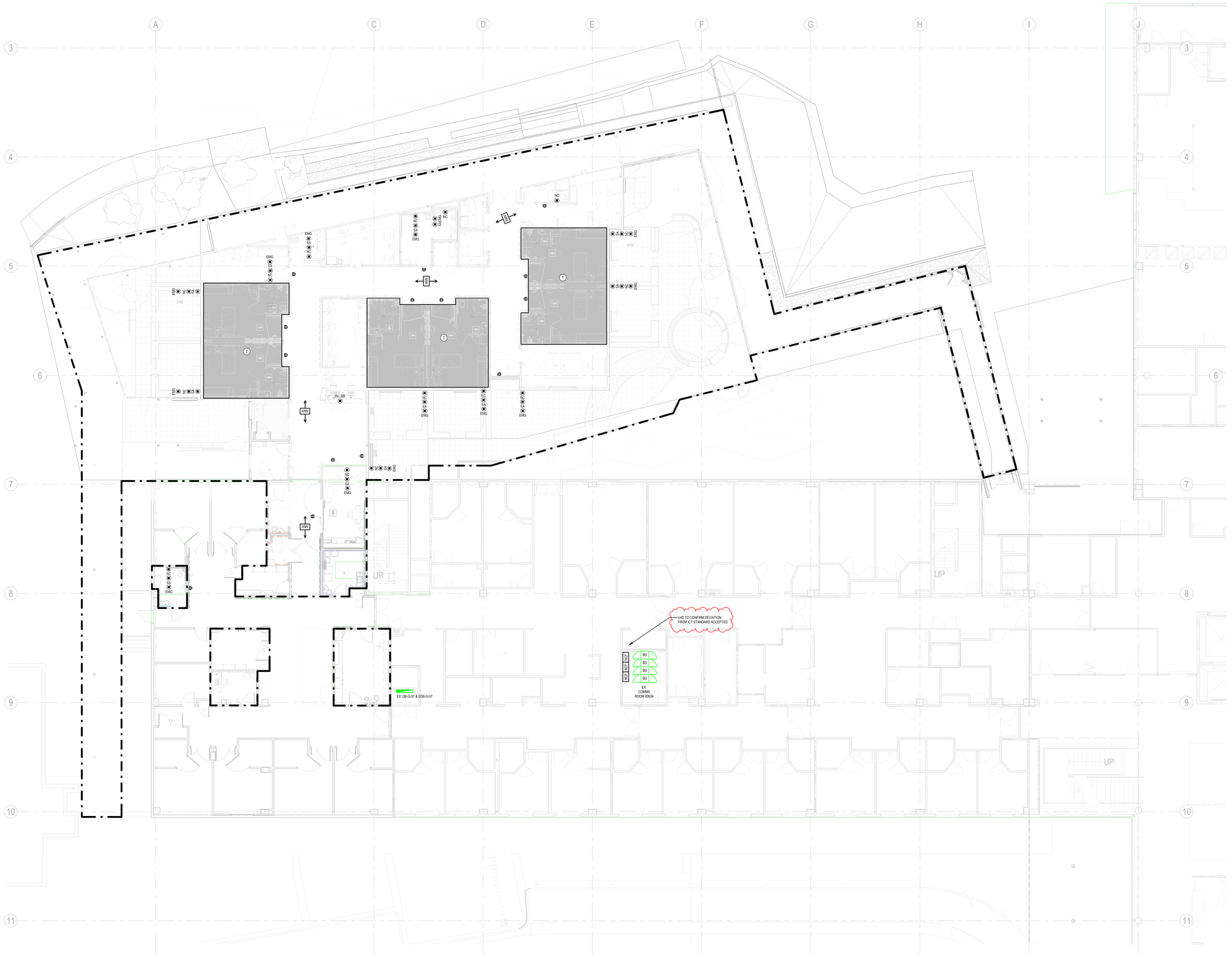
Drawing Title
ELECTRICAL SERVICES
SECURITY LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000008	E



Issue	Description	Date	Drawn	Approved
A	DETAILED DESIGN ISSUE	21.10.24	AP	SW
B	DETAILED DESIGN ISSUE	15.11.24	AP	SW
C	DD ENGINEERING PUG PRESENTATION	21.01.25	AP	SW
D	DD ENGINEERING PUG PRESENTATION	17.02.25	DV	SW
E	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m
SCALE BAR 1:100

Client

NSW GOVERNMENT Health Infrastructure

Managing Contractor

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Project

WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

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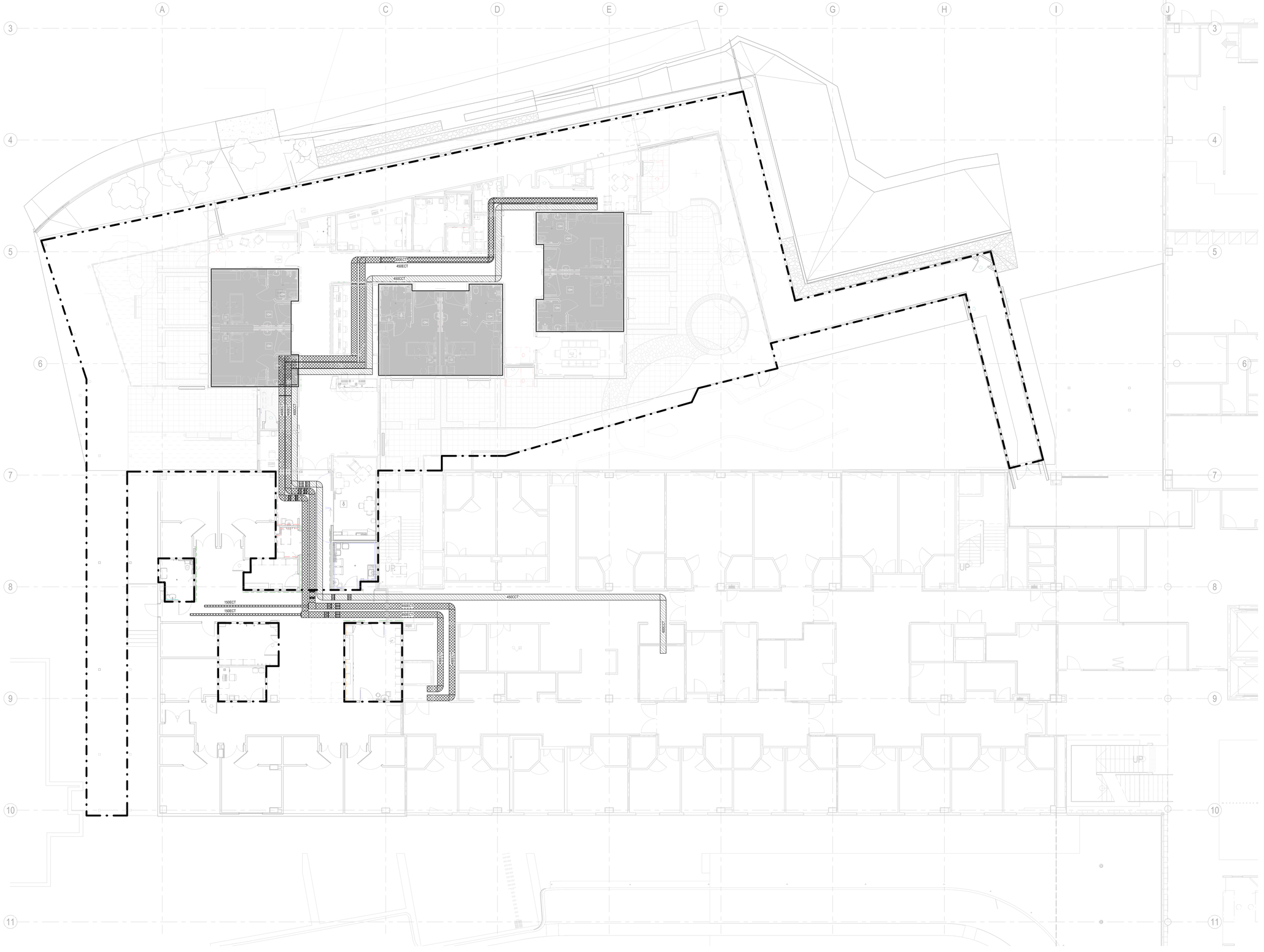
Drawing Title

ELECTRICAL SERVICES
NURSE CALL LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000009			E



Issue.	Description	Date	Drawn	Approved
A	DD ENGINEERING PUG PRESENTATION	17.02.25	DV	SW
B	DRAFT DESIGN DEVELOPMENT	07.03.25	SY	SW

Drawing Key

PRINT IN COLOUR

North

Scale

1 0 1 2 3 4 5m

SCALE BAR 1:100

Client

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Drawing Title
ELECTRICAL SERVICES
CABLE TRAY LAYOUT

Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	1 : 100

Project No.	Drawing No.	Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0000010	B

Autodesk Docs://240254_WCELP_TAM_R23/EOL-ACR-TAM-MOD-EL-00001-R23.rvt

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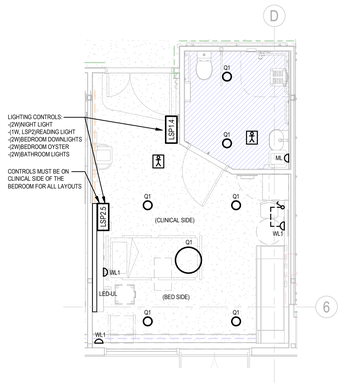
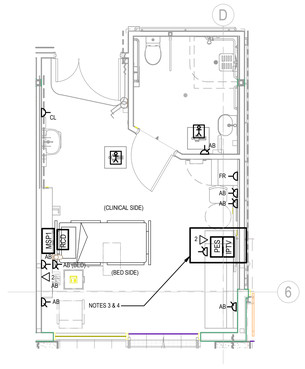
DESCRIPTION NOTES

1. NOTE FINAL MSP LAYOUT TO BE CONFIRMED WITH ARCHITECTURAL DIRECTION - RESIDENTIAL STYLE.
2. LAYOUT FOR REVIEW BASED ON CLIENT COMMENTS RECIEVED 12.06.24.
3. ALL DATA OUTLETS WITHIN ROOMS SHALL BE LOCATED OUTSIDE OF AS/NZS 3003 BODY PROTECTED AREAS. I.E. 2300 AFFL TO BOTTOM OF OUTLET
4. ALL OUTLETS FOR TELEVISIONS (POWER AND DATA) SHALL BE INSTALLED IN ACCORDANCE WITH NOTE 3. POWER OUTLETS TO BE ON SHARED CIRCUIT BETWEEN ROOMS.
5. NOTE SUB-CIRCUITS PROTECTED BY LOCAL RCD SHALL BE PROTECTED BY UPSTREAM BREAKING DEVICE LOCATED IN SWITCHBOARD. I.E. CIRCUIT PROTECTION AT SWITCHBOARD, RCD INSTALLED LOCALLY.



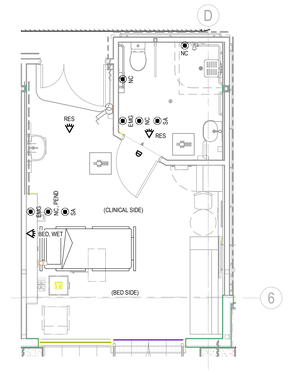
TYPICAL BEDROOM - LIGHTING LAYOUT

SCALE: 1:50



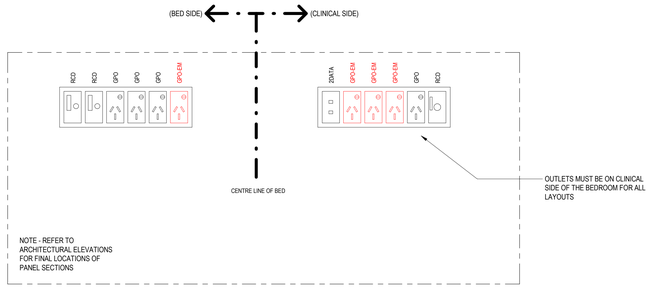
TYPICAL BEDROOM - POWER LAYOUT

SCALE: 1:50



TYPICAL BEDROOM - NURSE CALL LAYOUT

SCALE: 1:50



MEDICAL SERVICE PANEL DETAIL "MSP1"

NOT TO SCALE

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Drawing Key

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Client

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WORLD CLASS END OF LIFE PROGRAM

DEAN STREET, NORTH
TAMWORTH NSW 2340

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Drawing Title

ELECTRICAL SERVICES
TYPICAL LAYOUTS AND MSP DETAIL

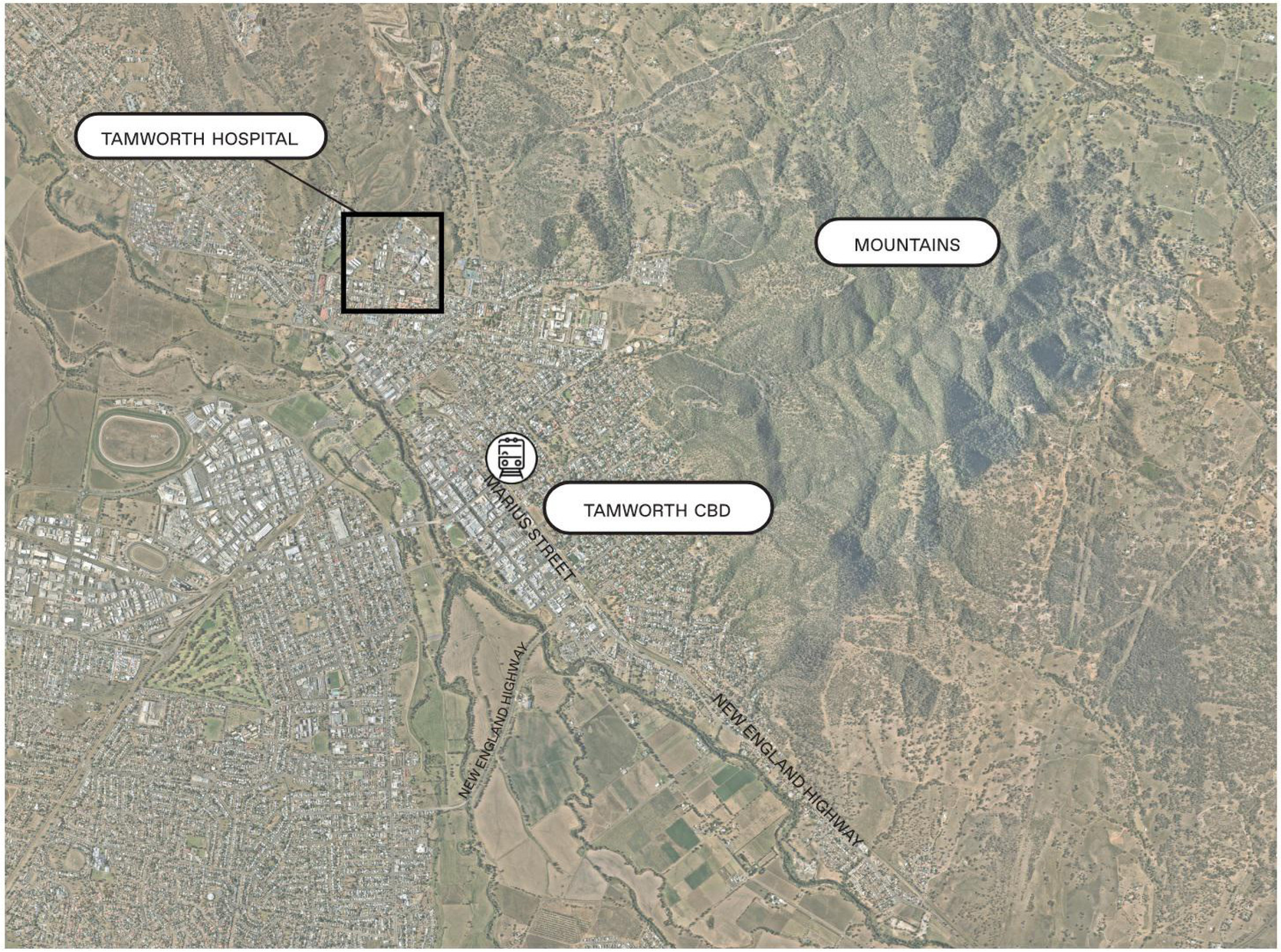
Drawn	Designed	Q.A. Check	Date	Scale @ A0
CS	AT	PK	22/01/25	N.T.S
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-ELE-TAM-01A-0009000			F

Appendix E - Fire Drawings

WORLD CLASS END OF LIFE PROGRAM TAMWORTH HOSPITAL
DEAN STREET, NORTH TAMWORTH NSW 2340
FIRE PROTECTION SERVICES

DRAWING LIST

DRAWING No.	DRAWING NAME
WCP-ACR-DRW-FIRE-TAM-01A-0000001	COVER SHEET
WCP-ACR-DRW-FIRE-TAM-01A-0000002	LEGEND AND GENERAL NOTES
WCP-ACR-DRW-FIRE-TAM-12B-0000008	WET FIRE SERVICE LAYOUT- GROUND FLOOR
WCP-ACR-DRW-FIRE-TAM-12B-0000009	DRY FIRE SERVICE LAYOUT - GROUND FLOOR



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D	DD ENGINEERING PUG - NOT FOR CONSTRUCTION	14.02.2025	JB	LZ
E	DRAFT DESIGN DEVELOPMENT	07.03.2025	ML	LZ

Drawing Key

PRINT IN COLOUR

North

Scale

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Architect

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Project

WORLD CLASS END OF LIFE PROGRAM
TAMWORTH HOSPITAL

DEAN STREET, NORTH
TAMWORTH NSW 2340

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Drawing Title

FIRE PROTECTION SERVICES
COVER SHEET

Drawn	Designed	Q.A. Check	Date	Scale @ A0
ML	ML	LZ	07.03.2025	N.T.S
Project No.	**Drawing No.**			**Issue**
NA230258	WCP-ACR-DRW-FIRE-TAM-01A-0000001			E

SPECIFICATION NOTES

CODES, RULES, PERMITS, FEES.

ALL MATERIALS, SUPPLIES, WORKMANSHIP AND ALL INSTALLED WORKS SHALL COMPLY WITH CODES, RULES AND REGULATIONS OF ALL STATUARY AUTHORITIES HAVING JURISDICTION OVER THE WORKS.

GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS, PERFORM ALL TESTS AND PAY ALL FEES AND CHARGES RENDERED BY THE RESPECTIVE STATUTORY AND LOCAL AUTHORITIES IN REFERENCE TO THE WORKS.

SITE VISIT

FIRE TRADE IS TO BECOME FULLY INFORMED OF THE SCOPE OF THE CONTRACT WORK, EXISTING INSTALLATIONS AND SITE CONDITIONS BY INSPECTION OF THE SITE AND BY ALL OTHER MEANS CONSIDERED NECESSARY.

UNFORESEEN DIFFICULTIES DUE TO NEGLECT OF THIS PRECAUTION SHALL IN NO WAY RELIEVE THE FIRE TRADE'S RESPONSIBILITY FOR THE FULL AND PROPER EXECUTION OF THE WORKS. NO CLAIM FOR ADDITIONAL COSTS ARISING FROM NEGLECT OF A THOROUGH INSPECTION WILL BE CONSIDERED.

CO-ORDINATION

THE FIRE TRADE SHALL FULLY LIAISE AND CO-ORDINATE WITH THE BUILDER AND OTHER TRADES IN A TIMELY MANNER TO ENSURE PROPER CO-ORDINATION WITH ALL OTHER SERVICES.

FINAL TESTS AND COMMISSIONING

THE FIRE SERVICES TRADE SHALL PERFORM ALL COMMISSIONING AND TESTING TO LOCAL AUTHORITY, MANUFACTURER AND CODE REQUIREMENTS. PROVIDE A COPY OF ALL CERTIFICATES AND TEST RESULTS TO THE SUPERINTENDENT PRIOR TO PRACTICAL COMPLETION.

DEFECTS LIABILITY

THE FIRE TRADE SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST ALL DEFECTS FOR A PERIOD OF TWELVE (12) MONTHS FROM DATE OF ISSUE OF PRACTICAL COMPLETION.

DURING THIS PERIOD, REPLACEMENT OF DEFECTIVE EQUIPMENT, FIXTURES AND MATERIALS SHALL BE PROMPTLY CARRIED OUT AT NO ADDITIONAL COST TO THE CLIENT.

AS-BUILT DRAWINGS

SUPPLY TWO (2) SETS OF AS-BUILT DRAWINGS TO THE SUPERINTENDENT FOR APPROVAL, 30 DAYS PRIOR TO PRACTICAL COMPLETION.

THESE DRAWINGS SHALL BE A TRUE RECORD OF THE INSTALLATION AS IT WAS INSTALLED. FOLLOWING APPROVAL OF THE INITIAL SUBMISSION, PROVIDE FOUR (4) SETS OF PRINTS, NEATLY BOUND, TO THE SUPERINTENDENT.

ALL DRAWINGS SHALL BE OF EQUAL STANDARD TO THE DESIGN DRAWINGS AND BE IN DIGITAL FORMAT. PROVIDE ONE ELECTRONIC FORMAT FILE OF THE COMPLETED AS-BUILT DRAWINGS TO THE SUPERINTENDENT.

INSTALLATION

THE COMPLETE INSTALLATION SHALL BE OF FIRST QUALITY WORKMANSHIP AND TO THE APPROVAL OF THE SUPERINTENDENT, FIRE SERVICES ENGINEER AND REGULATORY AUTHORITY. ALLOW FOR OUT OF HOURS WORK AS REQUIRED.

ALL WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS AND REGULATIONS.

FIRE SPRINKLERS

1. CONTRACTOR TO SUPPLY, INSTALL, PROVIDE WORK SHOP DRAWINGS,TESTS AND MAINTAIN AN AUTOMATIC FIRE SPRINKLER SYSTEM COMPLYING WITH:
   - NCC 2022
   - AS 2118.1 - 2017
   - FIRE ENGINEERING BRIEF QUESTIONNAIRE (FEBQ) (REF P01274, DATE 22.08.2024)
2. HAZARD CLASSIFICATION OF SPRINKLER PROTECTED AREAS:
   - HEALTH WARD AREAS TO BE LIGHT HAZARD (LH)
3. ALL SPRINKLER HEADS AND ESCUTCHEON PLATES ARE TO BE FAST RESPONSE TYPE ACTIVFIRE LISTED, FM APPROVED AND TO BE CONSISTENT IN TYPE AND FINISH.
   - BELOW CEILING SPRINKLER HEADS: 15mm 68°C FAST RESPONSE, STANDARD COVERAGE, CHROME FINISH
   - ESCUTCHEON PLATES 2PC PLATES CHROME FINISH
   - CEILING SPACE SPRINKLER HEADS: 15mm 93°C FAST RESPONSE, STANDARD COVERAGE, BRONZE FINISH
4. ALL EXPOSED SPRINKLER PIPE AND FITTINGS TO BE PAINTED SIGNAL RED IN ACCORDANCE WITH AS2118, UNLESS OTHERWISE SPECIFIED BY ARCHITECT.
5. CONTRACTOR TO UNDERTAKE HYDRAULIC CALCULATION TO CONFIRM PIPE SIZING, WATER SUPPLY FROM EXISTING TOWN MAINS CONNECTION.
6. PROVIDE AND INSTALL ALL MONITORED ISOLATION VALVES, FLOW SWITCHES AND PRESSURE SWITCHES INTERFACING WITH THE SFIP.
7. FIRE CONTRACTOR TO CO-ORDINATE HYDRAULIC, ELECTRICAL, MECHANICAL AND ALL OTHER SERVICES INTERFACES WITH THE SFIP.
8. ALL PENETRATIONS ARE TO BE SEALED AND FIRE RATED TO MATCH ORIGINAL FRL OF WALLS, FLOORS AND CEILINGS.
9. ALL PENETRATIONS THROUGH FIRE WALLS ARE TO BE SEALED WITH AUSTRALIAN STANDARD APPROVED MATERIAL AND METHOD OF SEALING.
10. ALL FIRE SPRINKLERS SHALL BE CHARGED AND TESTED PRIOR TO INSTALLATION.
11. CONTRACTOR IS TO OBTAIN A PRESSURE AND FLOW ENQUIRY BEFORE ANY WORKS COMMENCE ON SITE.

FIRE DETECTION & ALARM SYSTEM

1. CONTRACTOR TO SUPPLY, INSTALL, PROVIDE WORKSHOP DRAWINGS, TEST AND MAINTAIN A FULLY ADDRESSABLE NON-PROPRIETARY FIRE DETECTION SYSTEM TO COMPLY WITH:
   - NCC 2022
   - AS 1670.1 - 2018
2. SMOKE DETECTORS TO BE SPACED AS REQUIRED BY AS1670.1;
   - 10m MAXIMUM BETWEEN DETECTORS
   - 5m MAXIMUM FROM WALLS OR PARTITIONS
   - 900mm MINIMUM FROM SUPPLY AIR OUTLETS
   - 300mm MINIMUM FROM WALLS OR PARTITIONS
   - 600mm MINIMUM CLEARANCE BELOW DETECTORS
   - DETECTORS TO BE PROVIDED IN CONCEALED SPACES OF 800mm AND GREATER
   - DETECTORS TO BE PROVIDED WITHIN 1.5m OF LIFT OPENINGS
3. HEAT DETECTORS TO BE SPACED AS REQUIRED BY AS1670.1:
   - 7.0m MAXIMUM BETWEEN DETECTORS
   - 3.5m MAXIMUM FROM WALLS OR PARTITIONS
   - 900mm MINIMUM FROM SUPPLY AIR OUTLETS
   - 300mm MINIMUM FROM WALLS OR PARTITIONS
   - 600mm MINIMUM CLEARANCE BELOW DETECTORS
4. ALL NEW DETECTORS TO BE CONSISTENT IN TYPE AND FINISH.
5. FIRE CONTRACTOR TO PROVIDE FIRE TRIP INCLUDING WIRING TO MECHANICAL AND ELECTRICAL SERVICES SWITCHBOARDS FOR ISOLATION OF SERVICES IN FIRE CONDITION. FINAL TERMINATION AT THE SWITCHBOARD BY MECHANICAL OR ELECTRICAL CONTRACTOR.
6. OCCUPANT WARNING SYSTEM TO BE PROVIDED IN ACCORDANCE WITH AS1670.1 WITH A MINIMUM SOUND PRESSURE LEVEL OF 75 dBA THROUGHOUT.
7. VISUAL ALARM DEVICES TO BE PROVIDED IN ALL AREAS WHERE AMBIENT SOUND LEVELS ARE 85 dBA OR ABOVE.

PORTABLE EXTINGUISHERS & FIRE BLANKETS

1. CONTRACTOR TO SUPPLY, INSTALL, PROVIDE WORKSHOP DRAWINGS, TEST AND MAINTAIN FIRE EXTINGUISHERS AND FIRE BLANKETS TO COMPLY WITH:
   - NCC 2022
   - AS 2444 - 2001
2. PROVIDE ASSOCIATED SIGNAGE WITH NEW UNITS IN ACCORDANCE WITH AS2444.
3. ALL NEW EXTINGUISHERS AND BLANKETS TO BE CONSISTENT IN TYPE AND FINISH.

FIRE HOSE REEL SYSTEM

1. THE CONTRACTOR TO SUPPLY, INSTALL, TEST AND MAINTAIN THE ENTIRE HOSE REEL INSTALLATION SHALL COMPLY WITH:
   - NCC 2022
   - AS 2441 - 2005
2. AND ALL OR ANY STANDARDS OR CODES REFERENCED BY THEM. IN PARTICULAR, COMPLY WITH THE FOLLOWING REQUIREMENTS:
   a. ENSURE THE MOST HYDRAULICALLY DISADVANTAGED HOSE REEL DISCHARGES AT LEAST 21L/min
   b. INSTALL ONLY THOSE HOSE REELS APPROVED AND IDENTIFIED AS COMPLYING WITH AS 1221.
   c. INSTALL A UNION CONNECTION IMMEDIATELY DOWNSTREAM OF THE HOSE REEL STOP VALVE.
   d. LOCK ANY VALVES CAPABLE OF ISOLATING THE HOSE REELS IN THE OPEN POSITION WITH A KEYED LOCK. INCLUDING BUT NOT LIMITED TO :
      - MAIN STOP VALVES AT THE PROPERTY BOUNDARY; AND
      - ISOLATING VALVES UP AND DOWNSTREAM OF BACKFLOW PREVENTION DEVICES.
   e. ISOLATION VALVES SECURED IN THE OPEN POSITION TO HAVE AN ENGRAVED NON FERROUS METAL LABEL ATTACHED. LABEL TO BE ENGRAVED WITH 8mm UPPER CASE WORDING: "FIRE SERVICE VALVE - CLOSE ONLY TO SERVICE FIRE HOSE REELS".
3. LOCATE HOSE REELS IN A READILY ACCESSIBLE LOCATION AND WITHIN 4 METRES OF AN EXIT TO COMPLY WITH NCC REQUIREMENTS.
4. PROVIDE DOUBLE CHECK VALVES TO ALL FIRE HOSE REELS, UNLESS NOTED OTHERWISE.
5. NO ISOLATING VALVES SHALL BE INSTALLED ON HOSE REEL SERVICE BETWEEN METER AND ANY FIRE HOSE REEL AS DETAILED FOR UNINTERRUPTED FLOW.

FIRE HYDRANT SYSTEM

1. THE CONTRACTOR TO SUPPLY, INSTALL, TEST AND MAINTAIN THE ENTIRE FIRE HYDRANT INSTALLATION SHALL COMPLY WITH:
   - NCC 2022
   - AS 2419.1 - 2021
2. ALL HYDRANTS SHALL BE INSTALLED SO THAT THE VALVE OUTLET IS AT RIGHT ANGLES TO THE FACE OF THE WALL BEHIND (IF ANY) AND THE VALVE OUTLET IS HORIZONTAL OR SLOPING NOT MORE THAN 35 DEGREES BELOW THE HORIZONTAL.
3. ALL HYDRANTS SHALL BE INSTALLED TO PROVIDE A MINIMUM OF 100mm CLEARANCE AROUND THE HANDWHEEL IN ALL DIRECTIONS.
4. ALL HYDRANT PIPEWORK SHALL BE SUPPORTED IN ACCORDANCE WITH AS2419.

   ALL HYDRANT PIPEWORK SHALL BE IDENTIFIED IN ACCORDANCE WITH AS1345.
5. PAINT ALL EXPOSED PIPE HYDRANT AND FIRE HOSE REEL PIPEWORK RED IN COLOUR.

SPRINKLERS

- EXPOSED SPRINKLER
- CONCEALED SPACE SPRINKLER
- BELOW CEILING SEMI-RECESSED SPRINKLER
- HT — BELOW CEILING SEMI-RECESSED HIGH TEMPERATURE SPRINKLER
- BELOW CEILING SEMI-RECESSED SPRINKLER WITH BAFFLE
- FLUSH MOUNTED SPRINKLER
- SIDEWALL SPRINKLER

FIRE PROTECTION

- MONITORED VALVE

FIRE DETECTION & ALARM SYSTEM

- HEAT DETECTOR
- SMOKE DETECTOR
- CONCEALED SPACE SMOKE DETECTOR
- RECESSED OCCUPANT WARNING SPEAKER
- SURFACE MOUNTED OCCUPANT WARNING SPEAKER
- WARDEN INTERCOM POINT (WIP)
- MANUAL CALL POINT (MCP)
- VAD — VISUAL ALARM DEVICE

FIRE PANELS / EQUIPMENT

- MIMIC — FIRE ALARM MIMIC PANEL (MIMIC)

FIRE HYDRANTS, HOSE REELS & EXTINGUISHERS

- FIRE HYDRANT
- FIRE HOSE REEL (PLAN)
- FIRE EXTINGUISHER - CO2

PIPEWORK LEGEND

- FS — FIRE SERVICE
- FH — FIRE HYDRANT

EXISTING & DEMOLISHED SERVICES

- EXISTING SERVICE

ABBREVIATIONS

e	EXISTING
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE SERVICES

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Drawing Key

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FIRE PROTECTION SERVICES
LEGEND AND GENERAL NOTES

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ML	ML	LZ	07.03.2025	N.T.S
Project No.	Drawing No.			Issue
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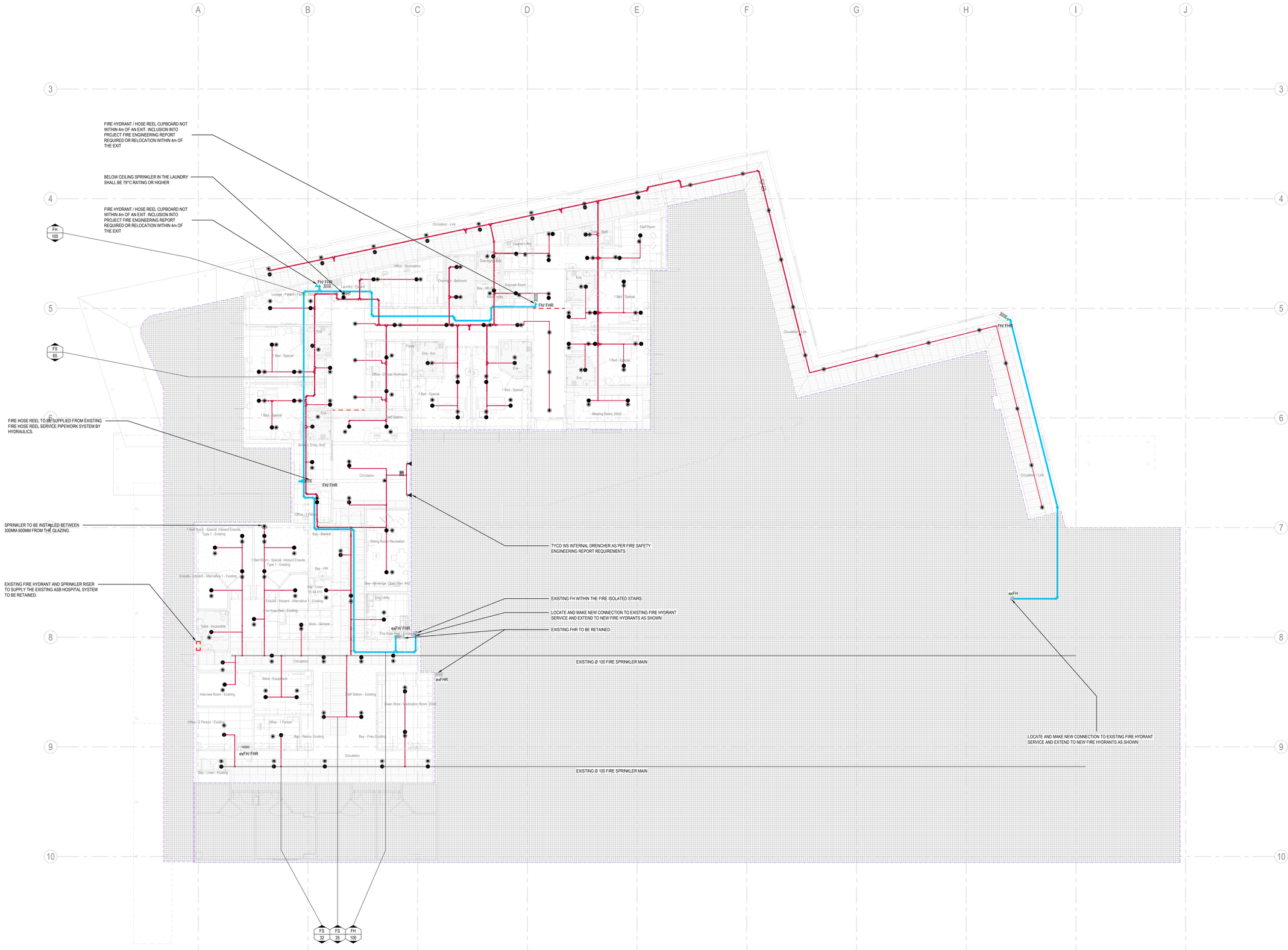

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FIRE PROTECTION SERVICES
WET FIRE SERVICE LAYOUT- GROUND FLOOR

Drawn	Designed	Q.A. Check	Date	Scale @ A0
ML	ML	LZ	07.03.2025	1 : 100
Project No.	Drawing No.			Issue
NA230258	WCP-ACR-DRW-FIRE-TAM-12B-0000008			E

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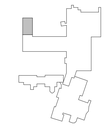

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FIRE PROTECTION SERVICES
DRY FIRE SERVICE LAYOUT - GROUND FLOOR

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NA230258	WCP-ACR-DRW-FIRE-TAM-12B-0000009			E