

Attachment A21

Civil engineering preliminary review

Existing Building Services Condition Report

**230655 PARK ROYAL HOTEL
REDEVELOPMENT**

Client:
UOL

Revision:
C

Date:
24/03/2025

REPORT INFORMATION

Project	Park Royal Hotel Redevelopment
Title	Existing Building Services Condition Report
Client	UOL
Revision	C
Revision Date	24/03/2024
Prepared By	LCI Consultants Sydney Office Level 5, 73 Miller Street North Sydney, NSW 2060
ABN / ACN	92 124 107 973 / 124 107 973
Author	LCI

REVISION SCHEDULE

Revision	Date	Issue Name	Author	Authorised
A	16/09/2024	For Client Review	AC, AT, VD, MR	ATR
B	16/12/2024	FOR DA SUBMISSION	AC, AT, VD, MR	VD
C	24/03/2025	FOR DA SUBMISSION	AC, AT, VD, MR	VD

CONTENTS

1	Executive Summary	5
2	Introduction	8
2.1	Scope.....	8
3	Mechanical Services	10
3.1	Overview.....	10
3.2	Economic Life of Equipment	11
3.3	Equipment and Asset List.....	11
3.4	Mechanical Services Infrastructure	15
4	Electrical Services	16
4.1	Existing Electrical Services – Overview.....	16
4.2	Economic Life of Equipment	16
4.3	Existing Electrical Services.....	17
4.4	Existing Communication Services	20
5	Hydraulic Services	22
5.1	Sanitary Drainage System	24
5.2	Tradwaste Drainage System	25
5.3	Potable Cold Water System.....	26
5.4	Hot Water System	28
5.5	Natural Gas System	30
5.6	Stormwater Drainage System	31
6	Fire Services	32
6.1	Fire Hydrant System.....	34
6.2	Fire Sprinkler System	37
6.3	Fire Hose Reel and Fire Extinguishers System	40
6.4	Fire Detection and EWIS System.....	41
7	Vertical Transportation Services	45

7.1	Overview.....	45
7.2	Guest Lift No.1, 2 & 3	45
7.3	Service Lift No.4 & 5.....	46

1 Executive Summary

LCI have been engaged to provide documentation for the preparation of a Development Application for the proposed redevelopment of the Park Royal Hotel on 150 Day Street, Sydney. As part of the documentation process, LCI has undertaken a review of the existing building services at the site to determine the viability of maintaining and re-using the existing services for the new capital works.

The findings from the review are as summarised below:

Asset	Service	Recommendations
Life Safety/ Smoke Hazard Management Fans	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme
On-floor Air Handling Plant	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme
Central Plant Distributive Pumps	Mechanical	Replace for final new architectural scheme to meet new increased demand
Central Chiller Plant	Mechanical	Maintain and recommission for final works
Carpark Ventilation	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme
Hotel Room Fan Coil Units	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme
Central Atrium AHU	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme
Secondary Plant Distributive Pumps	Mechanical	Replace for final new architectural scheme
Central Cooling Tower Plant	Mechanical	Replace for final new architectural scheme to meet new increased demand
Condenser Water Pipework	Mechanical	Conduct pipe ultrasonic scans of existing condenser water pipework to determine suitability of re-use. Maintain or replace according to findings of testing. Replace main condenser water pipework to meet new increased demand and to suit new architectural scheme.
Chilled Water Pipework	Mechanical	Conduct pipe ultrasonic scans of existing chilled water pipework for new hotel rooms to determine suitability of re-use. Maintain or replace according to findings of testing. Bolster insulation accordingly to meet latest NCC standards Replace main chilled water pipework to meet new increased demand and to suit new architectural scheme.
Mechanical Electrical Wiring	Mechanical	Replace to meet latest NCC Standards and to suit new architectural scheme

Asset	Service	Recommendations
Main Switchboard	Electrical	Replace to meet latest NCC Standards and to meet new increased demand
Power Factor Correction Units	Electrical	Replace due to equipment being end-of -life
House and Services Distribution Boards	Electrical	Replace to meet latest NCC Standards and to meet new increased demand
Main Communications	Communications	Retain, clean room and finish internally to latest standards requirements
Communication Racks (Building)	Communications	Retain, clean room and finish internally to latest standards requirements
Communication Racks (Floor)	Communications	Increase room requirements to meet latest demands
Sanitary Drainage and sewer stack riser pipework	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Sewer Holding Well	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Grease Arrestors	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Potable Water Pumps	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Potable Water Tanks	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Potable Water Pipework	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Domestic Hot Water Plant	Hydraulics	Replace with heat pumps to meet latest NCC Standards and to meet new increased demand
Hot Water Pipework	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Hot Water Temperature Control Devices	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Gas Services	Hydraulics	Replace to meet latest NCC Standards, City of Sydney Guidelines and to meet new increased demand
Stormwater drainage and downpipes	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Stormwater Holding Well	Hydraulics	Replace to meet latest NCC Standards and to meet new increased demand
Hydrant Supply	Wet Fire	Replace to meet latest NCC Standards and to meet new increased demand

Asset	Service	Recommendations
Hydrant Water Storage Tank	Wet Fire	Replace to meet latest NCC Standards and to meet new increased demand
Booster Assembly	Wet Fire	Replace to meet latest NCC Standards and to meet new increased demand
Hydrant Pumps	Wet Fire	Replace to meet latest NCC Standards and to meet new increased demand
Hydrant landing Valves	Wet Fire	Relocate within fire egress stairs on each level within building. Alternatively, develop a performance solution to address maintaining the current hydrant locations outside the fire stairs.
Sprinkler Water Storage Tank	Wet Fire	Survey effective capacity of the existing sprinkler tank to confirm size.
Range Pipes	Wet Fire	Replace to meet latest NCC Standards
Fire Sprinkler Pumps	Wet Fire	Replace to meet new increased demand
Fire Hose Reel	Wet Fire	Replaced existing fire hose reels with new fire hose reels that incorporate a 36m hose. Develop a performance solution to remove all hose reels from all Class 5 areas of the building.
Dry Fire Cabling	Dry Fire	Replace to meet latest NCC Standards
Smoke Detectors	Dry Fire	Replace to meet latest NCC Standards
Fire Indicator Panel	Dry Fire	Replace with newer model
Fire Functional Control Panel	Dry Fire	Replace with newer model
EWIS Cabling	EWIS	Replace to meet latest NCC Standards
EWIS Speakers, Phones	EWIS	Replace to meet latest NCC Standards
Guest Lift 1,2,3	Vertical Transportation	Maintain usage for future scheme. Adequate design life until 2033.
Service Lift 4,5	Vertical Transportation	Complete replacement of these lifts with larger lift cars to suit the latest architectural scheme

2 Introduction

2.1 Scope

The planning proposal for the existing Park Royal Hotel at 150 Day Street, Sydney (**the site**), involves an ambitious upgrade and expansion of the existing hotel. This project aims to enhance the existing hotel offering while introducing a new, distinct hotel experience above the current structure, enabling the coexistence of the existing Park Royal and a new Pan Pacific Hotel on the same site. Strategically positioned at the edge of the City of Sydney, the development reinforces the city's entry into Darling Harbour by maintaining and emphasising the city wall characteristic of this prominent location.

The project is defined by 3 key principles – maximising adaptive reuse (setting a benchmark for future developments in Sydney), energising the Sydney visitor economy, and significantly enhancing the greening of both the public realm and the skyline, in alignment with the City of Sydney's sustainability goals. Achieving this vision involves expanding the existing core to support the new hotel above, employing a 'strip to structure' approach from ground to Level 02 to facilitate amenity upgrades, lightly refurbishing existing hotel rooms, and comprehensively upgrading all building services. This initiative aims to establish a contemporary hotel destination while setting a new standard for sustainable urban redevelopment.

To achieve the intended outcomes, this planning proposal seeks to amend the *Sydney Local Environmental Plan 2012* (the **LEP**) by inserting a new site-specific clause for the subject site under Part 6 Division 5 Site specific provisions to:

- allow a maximum building height of RL 85 metres,
- permit a maximum floor space ratio of 13.5:1 for hotel and associated land uses,
- restrict use to employment/hotel use and not residential accommodation or serviced apartments.

The Planning Proposal is supported by a site-specific Development Control Plan (**DCP**) and reference design scheme, prepared by Hassell. Key elements of the site specific DCP and reference design include:

- Renovation of existing 2 level basement and existing 11 storey hotel, with the addition of a new 11 storey hotel above (including a transfer floor between the two structures), and a rooftop plant floor resulting:
 - Two hotel brand offerings – Park Royal Hotel (3.5 star) and Pan Pacific Hotel (5 star)
 - 490-540 hotel keys with gross floor area of ~30,000m²
 - Upgrade existing infrastructure and services (including new lift core),
 - New and upgraded hotel facilities (including lobby, dining areas, meeting rooms, ball room, gymnasium, bar and restaurants, and pool).
 - Removal existing Porte Cochere and exit ramp resulting in single vehicle entry/exit ramp from Day Street to be used by valet only.
- Ground floor public domain, public art and landscaping design, and
- Significant greening and landscaping of western façade.

As part of the documentation process, LCI has undertaken a review of the existing building services at the site to determine the viability of maintaining and re-using the existing services for the new capital works. The scope of this report is to provide a condition assessment of the existing services and recommendations on whether these assets are to be repurposed as part of the capital works.

The key consideration for the redevelopment planning works are the following minimum sustainability targets as stipulated by the City of Sydney:

- 4.5 Star NABERS Energy and Water
- 5 Star Green Star Rating

The report therefore shall consider the suitability of re-using the existing plant with a future strategy of meeting the above requirements accordingly.

The scope of the building services is limited to:

- Mechanical Services
- Electrical Services including communications
- Hydraulic Services
- Fire Services
- Vertical transport
- Fire Safety Engineering

The scope of the review does not include:

- Refrigeration plant

The review was carried out by the following:

- Desktop review of the existing drawings provided
- Site inspection 05/09/2024. Site inspection was visual and non-intrusive only. Assets not inspected but evaluated are nominated by exception.

3 Mechanical Services

3.1 Existing Mechanical Services - Overview

The mechanical services serving each functional space at the Park Royal hotel can be summarised as follows:

Area	Level	Ventilation	Cooling	Heating	Life Safety
Staff BOH	Basement	- Fresh air via risers from Level G under ceiling void - Exhaust as required by code	Chilled Water FCU serving floor	Electrical heating element in FCU	Nil - Stair Press omitted from stairs that access this area
Carpark	Upper Basement	- 2 off carpark supply air fans Outside air drawn from Level G under ceiling void - Natural ventilation by virtue of perforated garage screen door - Carpark exhaust fan no longer runs during normal operation	Not required	Not required	Carpark exhaust fan enabled during fire mode
Lobby and Kitchen BOH	Ground	- Fresh air via risers from Level G under ceiling void - Exhaust as required by code	Chilled water FCU serving floor.	Electrical heating element in FCU	Atrium smoke exhaust fans and smoke relief louvre
Hotel Rooms, Meeting Rooms	Level 1	Fresh air via outside air louvres on façade (close to motorway)	Condenser water packaged units		Atrium smoke exhaust fans and smoke relief louvre
Banquet Hall and Functions	Level R	Fresh air via outside air louvres on facade	Chilled water FCU serving meeting rooms. Chilled water in ceiling void plantroom serving banquet hall	Electrical heating elements in FCU	- Stair pressurisation fan for southern fire stairs - Atrium smoke exhaust fans and smoke relief louvre
Hotel Rooms	Levels 2-9	Fresh air via centralised fans and AHUs from Level 10	Corridors served by atrium AHU. Chilled water FCUs serving each hotel room	Electrical heating elements in FCU	Atrium smoke exhaust fans and smoke relief louvre
Hotel Rooms	Level 10	Fresh air via outside air louvres on facade	3 off Chilled water FCUs serving corridors Chilled water FCUs serving each hotel room	Electrical heating elements in FCU	

3.2 Economic Life of Equipment

The economic life of the equipment has been assessed based on the estimates in the AIRAH Technical Handbook and a visual inspection on site with consideration for contributing factors that may increase or reduce the this life. The relevant line items from the AIRAH Technical Handbook are listed below:

Equipment	Economic Life (years)
Air Handling Unit	20 to 25
Automatic controls and instrumentation	20 to 25
Cooling towers	10 to 15
Fans	15 to 20
Pipework and valves	20 to 25
Pumps	20 to 25

3.3 Equipment and Asset List

Equipment	Image(s)	Condition	NCC Risk	NABERS 4.5 Risk	Greenstar 5 Star Risk	Recommendation
Fire Pump Room Fan		Poor	High No Makeup	N/A	N/A	Replace in new architectural scheme
Computer Room A/C Unit		Good	Low	N/A	N/A	Reuse likely more costly than new units
Ground Floor FCU		Poor	High VSDs required	High VSDs required Metering required	High Increased OA Required	Replace in new architectural scheme
Water Cooled Chillers		Good	Medium Increased efficiency may be required. Pressure rating of vessels not high enough	Medium Increase d efficiency may be required	High High GWP refrigerant used	Keep in use for interim works. Replace for final scheme

Equipment	Image(s)	Condition	NCC Risk	NABERS 4.5 Risk	Greenstar 5 Star Risk	Recommendation
Chilled Water Pumps		Poor	High	High	High	Understood to be replaced in 5 months time. Hold off replacement until new capital works.
Condenser Water Pumps		Fair	High	High	High	Understood to be replaced in 5 months time. Hold off replacement until new capital works.
Carpark Supply fans		Poor	High No CO monitoring	High No control beyond timers	N/A	Replace in new architectural scheme
Carpark Exhaust fans		Poor	High No CO monitoring	High No control beyond timers	N/A	Replace in new architectural scheme
Misc Comms Room AC Units		Good	Low	N/A	N/A	Reuse likely more costly than new units

Equipment	Image(s)	Condition	NCC Risk	NABERS 4.5 Risk	Greenstar 5 Star Risk	Recommendation
Ground floor AHU	Not viewed due to poor access		High Low access space	High No control beyond timers	High Increased OA Required	Replace in new architectural scheme
Misc Ground floor exhaust fans	Not viewed due to poor access		High VSD Required	High No control beyond timers	N/A	Replace in new architectural scheme
Level 1 PACs		Poor	Medium Increased efficiency may be required	High No control beyond timers	High Increased OA Required	Replace in new architectural scheme
Level R AHUs		Poor	Medium Increased efficiency may be required	High No control beyond timers	High Increased OA Required	Replace in new architectural scheme
Level R Stair Press Fan		Poor	High Update to latest mech life safety standard	N/A	N/A	Replace in new architectural scheme
Levels 2-9 Hotel Room FCUs	Not viewed due to poor access		High Section J efficiency to be updated	High No control beyond timers	High Increased OA Required	Replace in new architectural scheme
Atrium AHU	Not viewed as operational and required to be shut down to view		Medium Increased efficiency may be required	High No control beyond timers	High Increased OA Required	Not required in new architectural scheme

Equipment	Image(s)	Condition	NCC Risk	NABERS 4.5 Risk	Greenstar 5 Star Risk	Recommendation
Level 10 Corridor FCUs		Good	Low	High No control beyond timers	High Increased OA Required	Replace in new architectural scheme
Supplementary Condenser Water Pumps		Fair	Medium Increased efficiency may be required	High No control beyond timers	N/A	Replace in new architectural scheme (was part of a late retrofit) or remove if no longer required.
Smoke exhaust fans		Fair	High Update to latest mech life safety standards	N/A	N/A	Not required in new architectural scheme
Rooftop Stair press fans		Fair	High Update to latest mech life safety standards	N/A	N/A	Not required and replaced to suit new architectural scheme
Cooling Towers		Poor	Medium Increased efficiency may be required	Medium Less water use may be required	N/A	Replace to suit new architectural scheme – location not suitable for transfer floor as it needs exposure to outside

3.4 Mechanical Services Infrastructure

Infrastructure	Image and General Condition	Re-use Considerations
Chilled water pipework	Fair to Poor 	- Must re-evaluate pipe sizing based on updated heat loads in detailed design - Pipe conditions and extent of corrosion cannot be determined from visual inspection and will require ultrasonic non-intrusive testing for re-use evaluation. - Insulation provided required to be updated to latest NCC - Pressure class to be evaluated. Depending on final plant arrangement, can be sufficient.
Condenser water pipework	Good to Fair 	- Must re-evaluate pipe sizing based on updated heat loads in detailed design - Pressure class to be evaluated. Depending on final plant arrangement, can be sufficient. - Pipe conditions and extent of corrosion cannot be determined from visual inspection and will require ultrasonic non-intrusive testing for re-use evaluation
Mechanical Electrical	Fair to Poor 	- Requires detailed analysis if conduits sufficient for new plant loads - Requires upgrade to the latest wiring and electrical standards - Boards are at the end of economic life - Low probability of re-use

4 Electrical Services

4.1 Existing Electrical Services – Overview

The electrical services plantrooms at the Park Royal hotel can be summarised as follows:

Level	Plantroom	Comment
Building Distributor Room	Lower Basement	- The room houses 5 x racks which contain all the servers for hotel operations
MDF Room	Upper Basement	- Main incoming telco services terminate in this room. Current providers are NBN, Pipe Networks
Main Switchroom	Upper Basement	- Houses 1 x Main switchboard for the building and distributes power to rest of the hotel
FDR	On all levels	-Typical 45 RU rack provided on every level to distribute the communications services
Distribution Boards, Electrical Risers	On all levels	-Typical risers on all levels, houses cables, teed off boxes and distribution boards
Roof	Services mounted on roof for DAS and PAYTV	-Antenna located on the roof for DAS system currently owned by Vodafone -Antenna located on the roof for Foxtel and FTA TV system

4.2 Economic Life of Equipment

The economic life of the equipment has been assessed based on a visual inspection on site with consideration for contributing factors that may increase or reduce the life for e.g. scheduled maintenance, preventive maintenance, operation of the asset in its environmental conditions.

Equipment	Economic Life (years)
Main Switchboard	20 to 25
Distribution Board	20 to 25
Cables	25 to 30
Rack	8 to 10
PFC	10 to 15

4.3 Existing Electrical Services

Park Royal Hotel consists of the following major Low Voltage (LV) electrical plant and infrastructure:

4.3.1 Main Switch Room:

Main Switchboard

The main electrical services Main Switch Room (MSR) is located in the upper basement and serves as the central point of electrical services distribution for the entire building. The switchboard is approaching end of life with no service protection device (SPD) and is not compliant to the current standards(AS 61439). The consumer mains currently originate from Ausgrid substation S.7983(Sussex Sand) and currently has half sized neutral which is also non-compliant to current AS/NZS 3000 requirements.



Figure 4-1 : Main Switchboard



Figure 4-2 : Incoming Consumer Mains

4.3.2 Power Factor Correction Units

A total of one (1) power factor correction units (PFC) are housed within the Upper Basement Switch Room, with their details summarized below:

- PFC: 350kVAR unit connected to MSB on the mechanical bus bar

The power factor correction units were installed circa 1999 and the equipment have been maintained well, with annual inspections conducted per manufacturers recommendations with maintenance labelling observed on the PFC unit. The expected services life for PFC units is around 15 years before contactors begin failing, and therefore it is expected this equipment will require replacement in the coming years.

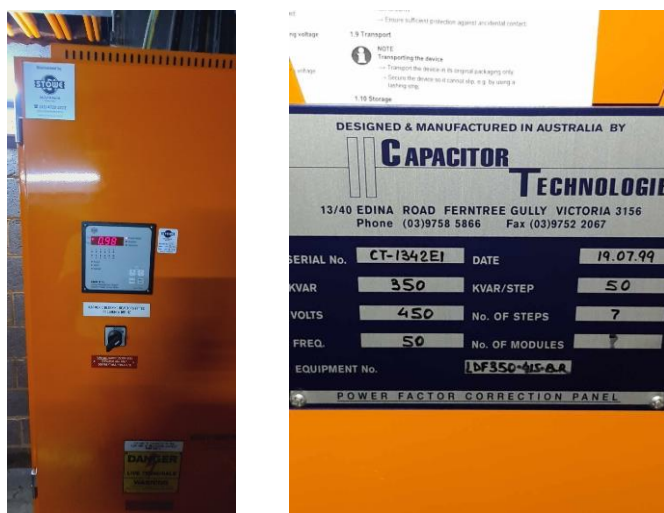


Figure 4-3 : Power Factor Correction Unit

4.3.3 House and Services Distribution Boards (Various Locations)

The development includes various electrical distribution boards (DBs) throughout the building, housed in plant areas, hotel level corridors within dedicated services cupboards and risers to enable efficient distribution of electrical power. These include house distribution boards (supplying general power and lighting circuits) and DBs dedicated to certain plant (such as security, telecommunications or hydraulics). During the site inspection, it was observed that these boards are end of life. The boards cannot be retained and would have to be upgraded to meet current standards.



Figure 4-4: Typical Distribution Boards

4.4 Existing Communication Services

4.4.1 MDF

The main communications room is located in the upper basement and serves as the central point of communication incoming services from the street. The site currently has NBN and other service providers terminating their services in the MDF room. The room and services could be retained in its current location for existing and future development needs however needs to be cleaned, repainted and finished internally to the current requirements of S009.



Figure 4-5: MDF Room

4.4.2 BDR

The main building distributor room is located in the lower basement and serves as the central point of distribution for the entire building. The room currently houses 5 racks. The room and services could be retained in its current location for existing and future development needs however needs to be cleaned, repainted and finished internally to the current requirements of S009.

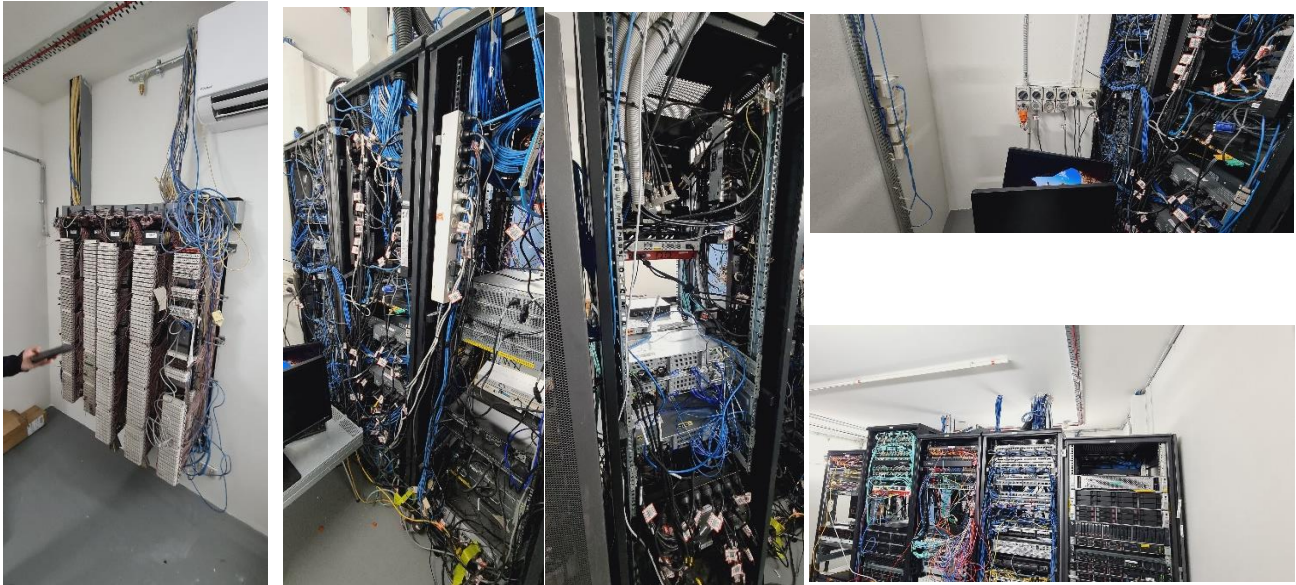


Figure 4-6: Building Distributor Room

4.4.3 FDR

The floor distributor room is located on every level and serves as the central point of distribution on every floor. The room currently houses 1 rack. The space allocation for this room would need to be reviewed in conjunction with the new lift core arrangement for the new development. In some instances, the rack could be re-used for new works which would be dependent on its age and integrity. Spaces for specific use, for e.g. function spaces have their own small wall mounted racks. The suitability of reusing active gear in the current racks would have to be evaluated by the systems integrator which will be dependent on the technology being deployed for hotel communication infrastructure.

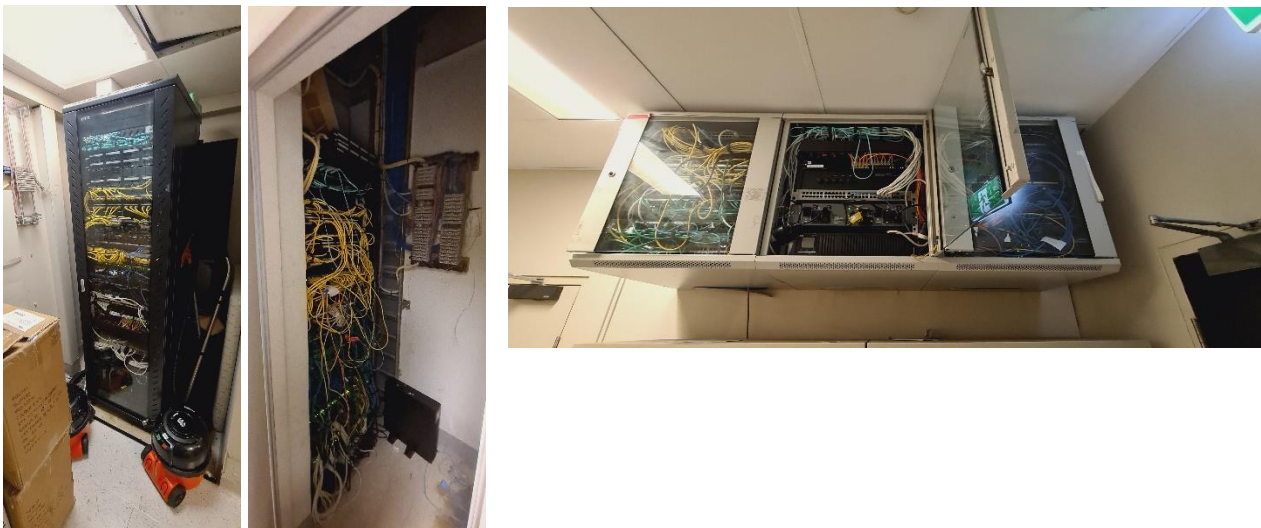


Figure 4-7: Floor Distributor Room

5 Hydraulic Services

The table below has summarised the minimum required works for each hydraulic service to accommodate the proposed new Building Scheme.

Service	New Building Scheme
Sanitary Drainage services	
Sanitary drainage and stacks	To accommodate the new building scheme, it is envisaged the existing mild steel sanitary drainage services pipework and stack risers would be undersized and should be replaced with new uPVC drainage pipework of adequate size.
Sewer Holding well.	- A new sewer holding well and associated pumps will be provided. - The existing plantroom the sewer holding well is located within does not incorporate adequate ventilation for personnel to enter and work within. The ventilation to the room should be upgraded
Tradewaste Drainage services	
Grease Arrestors	New grease arrestors will be provided and adequately sized to accommodate the grease waste anticipated for the new building scheme.
Tradewaste drainage and stacks	New grease arrestors will be provided and adequately sized to accommodate the grease waste anticipated for the new building scheme.
Potable Water service	
Transfer and Booster pumps.	- A new potable water transfer pumpset and potable water boosting pumpset will be provided to accommodate the new building scheme. - Potable Water transfer pumps to be located within dedicated plantroom on Lower Basement.
Potable Water tank.	The existing tank should be decommissioned, and a new potable water storage tank will be provided, that is adequately sized for the new building scheme.
Potable Water pipework	New potable water services pipework should be provided that is adequately sized to cater for the new building scheme.
Hot Water service	
Hot Water plant	- The existing hot water plant should be replaced with an adequately sized hot water plant that consist of either: - A gas fired instantaneous with hot water storage. - Electric boosted air to water heat pumps with hot water storage.
Hot Water services pipework	New hot water flow and return services pipework should be provided that is adequately sized to cater for the new building scheme.
Hot water temperature control devices	- New temperature control devices will be provided throughout the building to provide: 50 degrees Celsius tempered water to all ablution fixtures. 45 degrees Celsius tempered water o all accessible ablution fixtures.
Natural Gas service	
Gas pipework pressure	New natural gas service pipework will be run throughout the building to serve to the existing and new gas appliance, sized to cater for the lower gas pressure.

Stormwater drainage service	
Stormwater drainage and downpipes	The existing mild steel horizontal stormwater drainage and downpipes appears to be in poor condition and would will need to be replaced with new uPVC drainage pipework of adequate size.
Stormwater Holding well	A new stormwater holding well and associated pumps will be provided.

5.1 Sanitary Drainage System

5.1.1 Existing System

The building's sanitary drainage system is conveyed by a boundary trap connection point to Sydney Water's 300 VC sewer main located within Sand St. Drainage services pipework is run throughout the building to provide connection to sanitary fixtures in the following arrangements:

- Drainage services conveying wastewater from sanitary fixtures located on Levels 1 to Roof, gravitate directly to the boundary trap located at high level on the Upper basement level.
- Drainage services conveying wastewater from fixtures located on Upper basement and Lower basement level reticulate to an inground sewer holding well located within dedicated plant room on Lower basement level. Wastewater that is conveyed by the holding well is pumped back to the boundary trap connection point via submersible macerator pump. The size and condition of the holding well was not inspected during the site inspection.

Sanitary drainage stacks are provided within dedicated services riser that are located between each apartment suit. The drainage stacks provide connection to each apartment fixtures. All sewer stacks and sanitary horizontal drainage pipework was visually inspected to be mild steel.

5.1.2 Recommended upgrade works

5.1.2.1 Sanitary drainage and Sewer stack risers

The existing sewer horizontal drainage and stack appears to be in poor condition and is currently sized to accommodate wastewater for the current building scheme. To accommodate the new building scheme, it is envisaged the existing mild steel sanitary drainage services pipework and stack risers would be undersized and should be replaced with new uPVC drainage pipework of adequate size.

5.1.2.2 Sewer Holding Well

The condition of the existing sewer holding well and associated pumps located on Lower ground Basement is expected to need replacing due to being at it's end of life period. A new sewer holding well and associated pumps will be provided. The existing plantroom the sewer holding well is located within does not incorporate adequate ventilation for personnel to enter and work within. The ventilation to the room will be upgraded.



Existing Mild Steel sewer drainage.



Existing sewer pump station.

5.2 Tradewaste Drainage System

5.2.1 Existing System

A trade waste drainage system is provided to convey the grease waste generated from the hotel's commercial kitchen areas. It is understood the hotel have a current tradewaste agreement with Sydney Water in place.

The commercial kitchen areas within the building currently served by the tradewaste drainage system are understood to be:

- Ground level - Bistro Kitchen
- Level R – Banquet Kitchen & Main Kitchen
- Level 1 – Servery

Tradewaste drainage pipework reticulates from all commercial kitchen areas within building to make connection into (2) 9Kl grease arrestors that are located within a dedicated plantroom on Upper basement level. The treated grease waste then gravitates from the arrestors, into the Sewer holding well on Lower basement level. The current condition or capacity of the arrestors was not visually inspected during the site visit.

5.2.2 Recommended upgrade works

5.2.2.1 Grease Arrestors

The current grease arrestors are sized to cater for the grease waste usage for the current commercial kitchen areas within the building. As part of the new building scheme, additional restaurant tenancies are being proposed and it is envisaged the existing grease arrestors would not be able to accommodate any additional grease waste. New grease arrestors will be provided and adequately sized to accommodate the grease waste anticipated for the new building scheme in the basement and coordination has considered access of equipment.



Grease Arrestor level alarm.



Existing Grease Arrestor room.

5.3 Potable Cold Water System

5.3.1 Existing System

The Potable Water service for the building is supplied from a connection made to the 250 CICL water main located within Day St. A 100mm dia. authority master water meter and backflow assembly is located within a dedicated enclosure on the Upper basement level.

The potable water service extends via town's main pressure up to a set of transfer pumps located within a ceiling cavity plantroom cavity on Level R. The transfer pumps pressurise the potable water service up to a 95kl shared hydrant/potable water storage panel tank located within the Roof top plantroom. It is unknown how much of the potable/hydrant water storage tank's capacity is dedicated for potable water usage.

A variable speed pump set that is located within plantroom on Level 11. The pump set pressurises the potable water service from the break tank to enable minimum operating flow and pressures for the potable water service when serving fixtures and provisions on the higher floor levels.

The portable service extends from the pumps to provide connection to each apartment cold water services riser. The apartment cold water services risers are located within dedicated services cupboards that have positioned between each apartment, access via the corridor on each floor level. Each cupboard contains a cold water isolation valve to enable individual isolation of the potable water supply to each apartment.

The potable water service also provides a potable water supply provisions to the following main plant equipment:

- Cooling tower top-up water supply.
- Domestic potable water supply.

5.3.2 Recommended upgrade works

5.3.2.1 Potable Water transfer & booster pumpsets

The existing potable water transfer pumps on level R and the potable water booster pumps on Level 11 are sized for the old building scheme. A new potable water transfer pump set(B2) and potable water boosting pump set (L11) will be provided to accommodate the new building scheme.

5.3.2.2 Potable Water tank

The existing combined potable/fire water storage tank is sized to cater for the current building scheme. The existing tank should be decommissioned, and a new potable water storage tank will be provided, that is adequately sized for the new building scheme.

5.3.2.3 Potable water services pipework

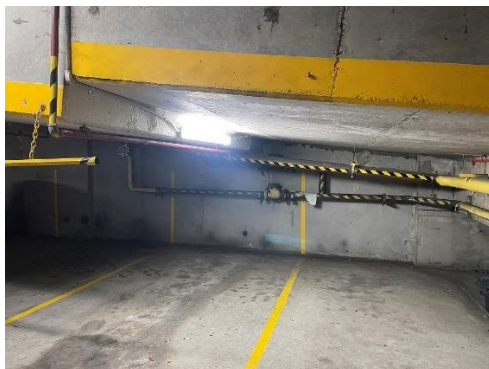
The current potable water services pipework appears to be in poor condition and is sized to cater for the current building scheme. New potable water services pipework should be provided that is adequately sized to cater for the new building scheme,



Existing CW. transfer pumps.



Existing CW. booster pumps.



Existing incoming CW. service.



Existing Combined CW. & FH water storage tank.

5.4 Hot Water System

5.4.1 Existing System

The building's domestic hot water system is served by (4) gas fired hot water storage boilers (approx. capacity of 5kl each) located within roof top plantroom. The hot water plant storage boilers have a combined approx. capacity of 20kl to cater for the hotel's anticipated hot water peak usage.

A hot water flow and return service extends from the hot water boilers to provide connection to each apartment hot water services riser. The hotel hot water services risers are located within dedicated services cupboards that have positioned between each hotel, access via the corridor on each floor level. Each cupboard contains a hot water isolation valve to enable individual isolation of the hot water supply to each hotel room.

There is no evidence that thermostatic control valves are currently being utilised for the hot water system.

5.4.2 Recommended upgrade works

5.4.2.1 Hot Water plant

The existing hot water plant is sized based on the current building scheme and is expected to no have spare capacity to accommodate the new building works scheme. The existing hot water plant should be replaced with an adequately sized hot water plant that consist of either:

- A gas fired instantaneous with hot water storage.
- Electric boosted air to water heat pumps with hot water storage.

5.4.2.2 Hot water services pipework

The current hot water services flow and return pipework appears to be in poor condition and is sized to cater for the current building scheme. New hot water flow and return services pipework should be provided that is adequately sized to cater for the new building scheme.

5.4.2.3 Hot water Temperature Control devices

Currently no hot water temperature control devices in the form of tempering valves or thermostatic mixing valves are being utilised on the hot water system as required by the AS3500. New temperature control devices will be provided throughout the building to provide:

- 50 degrees Celsius tempered water to all ablution fixtures.
- 45 degrees Celsius tempered water o all accessible ablution fixtures.



Existing Domestoc HW boiler.



Existing Hot Water services pipework.

5.5 Natural Gas System

5.5.1 Existing System

The building's natural gas services is supplied from Jemena's high pressure (1050kpa) gas main located within Sand St. The gas main enters the development and extends through an authority owned High-pressure boundary gas regulator/meter assembly that is located within a dedicated enclosure on Ground level. The boundary regulator steps the incoming gas services pressure down from 1050kpa to 100kpa.

The gas services reticulates through the building at 100kpa pressure, to provide a gas connection to appliances located within following areas:

- Lower basement – Laundry (200mj/hr Approx.)
- Level R – Banquet Kitchen & Main Kitchen (1000mj/hr Approx.)
- Level 1 – Servery (300 mj/hr Approx.)
- Roof level – Domestic Hot Water boilers (6500 mj/hr Approx.)

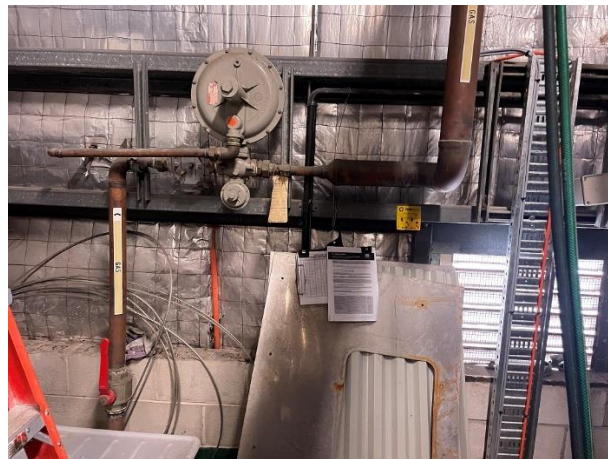
5.5.2 Recommended upgrade works

5.5.2.1 Gas service pressure

The existing natural gas services reticulates within the building at 100kpa, without being located within a ventilated fire rated shaft in accordance with AS5601. A new boundary regulator will be provided to limit the natural gas supply operating pressure to 7kpa once entering into the building. The building's existing natural gas pipework will be deemed to small to accommodate anticipated natural gas usage at the new lower pressure and will need to be decommissioned and removed. New natural gas service pipework will be run throughout the building to serve to the existing and new gas appliance, sized to cater for the lower gas pressure.



Existing High pressure gas boundary regulator.



Existing Gas regulator serving Domestic HW. plant.

5.6 Stormwater Drainage System

5.6.1 Existing System

The building's stormwater drainage system is conveyed via a conventional gravity drainage connection made to Sydney Water's stormwater infrastructure at high level Upper basement level.

Stormwater drainage extends from the connection point at high level Upper basement and makes connection to multiple stormwater downpipes. The stormwater downpipes run up through the building within dedicated services risers to make connection to stormwater outlets provided to following roof areas:

- Level 11 & 12 roof areas that incorporate a corrugated roof, are provided with box gutter type outlets.
- In-slab stormwater outlets have been provided on the Level 12 cooling tower plantroom and to the balcony terrace areas on Leves 2 to 8.

An inground stormwater holding well is provided on Lower basement level. It is envisaged the inground stormwater pumpstation is utilised to convey ground water collected via the inground subsoil drainage and perimeters spoon drains, and driveway grated drains. The collected stormwater from holding well is pumped back into the stormwater drainage connection to council's main.

5.6.2 Required upgrade works

5.6.2.1 Stormwater drainage and downpipes

The existing mild steel horizontal stormwater drainage and downpipes appears to be in poor condition and will need to be replaced with new uPVC drainage pipework of adequate size.

5.6.2.2 Stormwater Holding Well

The condition of the existing sewer holding well and associated pumps located on Lower ground Basement is expected to need replacing due to being at it's end of life period. A new stormwater holding well and associated pumps will be provided.



Existing L11 roof stormwater outlet and overflow.



Existing Stormwater pumpstation control panel.

6 Fire Services

The table below has summarised the minimum required works for each fire service to achieve compliance to the latest version of the NCC and to accommodate the proposed new Building Scheme.

Service	NCC 2021	New Building Scheme
Fire Hydrant service		
Hydrant System water supply	- A new hydrant water connection will need to be provided from town's main. (2) new hydrant diesel pumps and pumproom will need to be provided.	As per NCC requirement.
Hydrant 'Break' water storage tank	A new galvanised steel break tank will need to be provided, sized in accordance with AS2419.1.	As per NCC requirement.
Brigade Booster assembly	- A new brigade booster assembly will need to be provided. - A new performance solution as part of an FER may need to be provided to address booster location.	As per NCC requirement. (Existing location maintained and upgraded.)
Hydrant pumps	- Replaced current hydrant pump set with a new hydrant pump set. - Provided a new dedicated fire pumproom room.	As per NCC requirement.
Hydrant landing valves	Relocated within fire egress stairs on each level within building. Alternatively, develop a performance solution to address maintaining the current hydrant locations outside the fire stairs.	As per NCC requirement.
Fire Sprinkler service		
Sprinkler 'Break' water storage tank	Survey effective capacity of the existing sprinkler tank to confirm size.	As per NCC requirement.
Brigade Booster assembly	- A new brigade booster assembly will need to be provided. - A new performance solution as part of an FER may need to be provided to address booster location.	As per NCC requirement. (existing location maintained in refurbishment of building)
Range pipes	Replaced all current sprinkler range pipes serving light hazard sprinklers and concealed in-ceiling sprinklers.	As per NCC requirement.
Fire Sprinkler pumps.	Would achieve compliance to NCC.	- Would need to be upgraded to accommodate additional building floor levels.

Fire hose reel service		
Hose reel drum.	- Replaced existing fire hose reels with new fire hose reels that incorporate a 36m hose. - Develop a performance solution to remove all hose reels from all Class 5 areas of the building.	As per NCC requirement.
Smoke detection and Alarm system		
Cabling Infrastructure	Replace all current Cabling infrastructure throughout the building.	As per NCC requirement.
Smoke detectors	Replaced existing smoke detectors with new addressable detectors.	As per NCC requirement.
FIP Panel	Replace panel with newer model.	As per NCC requirement.
FFC Panel	Replace panel with newer model.	As per NCC requirement.
Fire Control Room	Provide new control panel in accordance with NCC.	As per NCC requirement. (existing location maintained in refurbishment of building)
EWIS system	AS1670.4 2018	
Cabling Infrastructure	Replace all current Cabling infrastructure throughout the building.	As per NCC requirement.
EWIS devices i.e. speakers, WIP phones	Replaced existing devices with new compliant devices.	As per NCC requirement.

6.1 Fire Hydrant System

6.1.1 Existing System Overview

Based on the available as built documentation, the existing fire hydrant system has been designed and commissioned to meet the performance criteria of the Ordinance 70. Based on visual inspection, it is evident that small portions of the hydrant system may have been upgraded i.e. Storz adapters added to landing valve outs, however it is understood complete upgrades of the hydrant system have never taken place.

A dedicated hydrant booster assembly consisting of two booster points is located within an enclosure on Sand St.

The building's hydrant system is supplied a shared hydrant and potable water storage tank located within the Level 11 rooftop plantroom. The effective capacity of the hydrant tanks is 95kl. However, the hydrant and potable water allocation is unknown and would need to be surveyed. The hydrant tank is topped up via a dedicated 100mm dia. potable water provision.

A single hydrant booster pump is located within the roof top plantroom. The pump is a horizontal end suction centrifugal type pump that incorporates both an electric and diesel motors. The hydrant pumps draws water from the fire hydrant storage tank and distributes water to the hydrant landing valves located on levels 11 through to level R. A gravity hydrant service line by-passes the hydrant pump set to serve the hydrants landing valves located on levels Ground floor through to Basement level.

Hydrant landing valves are located on each level, within a dedicated cupboard that is located area adjacent to the door to each fire stair (outside the fire egress stairs).



Figure 1: Existing fire hydrant booster assembly



Figure 2: Existing Diesel/Electric Hydrant pump



Figure 3: Fire egress stair not containing fire hydrant.



Figure 4: Fire hydrant in cupboard.



Figure 5: Roof top combined potable/fire hydrant tank.

6.1.2 Required Upgrade works

6.1.2.1 Hydrant System Water Supply

The current water supply arrangement serving the hydrant system won't comply with the AS 2419.1 2021. The current hydrant system does not incorporate a dedicated water supply from the town's main and relies on water from the combined potable/hydrant storage tank and an automatic infill provision that is supplied from the building's potable water service via potable water pumps.

A new suitably sized galvanised steel dedicated fire water break tank shall be provided in accordance with AS 2419.1 2021. The tank will need to be topped-up by a dedicated fire water service that can achieve the minimum design flow requirements of the hydrant system. A new dedicated hydrant connection will need to be provided to the authorities main within Day St that will serve as a direct top-up service to the rooftop hydrant storage tank. The new hydrant service will need to incorporate a double check detector valve in accordance with SW's guidelines.

The pumps pressurising the top-up provisions should be dedicated fire pumps rather served from the domestic water pump sets. A new hydrant pump will be provided within a dedicated pump room on Lower or Upper basement levels to pressurise the new hydrant top-up provision.

6.1.2.2 Fire Hydrant Booster Assembly

The current hydrant booster assembly would not comply with the AS 2419.1 2021 as the booster assembly does not incorporate brigade suction points (only boost points).

A new brigade booster assembly complete with suction/booster points will need to replace the current booster assembly. The current enclosure will be upgraded to allow the hydrant valves to achieve minimum clearances.

A performance solution that is prepared by the project fire engineer will be developed to address the current location of the booster assembly.

6.1.2.3 Fire Hydrant Pumpset

The existing hydrant system pump set is designed to achieve the design parameters (flow and pressure) of an Ordinance 70 system. As the design parameters for an Ordinance 70 system are less than what is required by a compliant AS 2419.1 2021 hydrant system, the current hydrant pump set will need to be replaced with a new hydrant pump set capable of achieving new design parameters required by the AS 2419.1 2021.

The new hydrant pump set shall be provided within a new dedicated fire pumproom room that will allow the fire pumps to be separated from other MEP services plant.

6.1.2.4 Fire Hydrant Landing Valves

The current location of the hydrant landing valves on each floor level would not comply with AS 2419.1 2021. Hydrants landing valves will need to be relocated with the fire egress stairs on each level to be compliant with the AS 2419.1. 2021. The fire stairs will be upgraded to accommodate the fire hydrant landing valves on each level together with the minimum stair egress widths required by the NCC.

6.1.2.5 Fire Hydrant Pipework

The current condition of hydrant system pipework is unknown and it would be a very big risk to try and pressurise it to the minimum design requirements of AS2419.1 2021 without causing pipe leaks. Additionally, the building will require hydrant pipework to incorporate a ring main which it doesn't not currently incorporate.

New hydrant pipework should be run in accordance with AS2419.1 2021.

6.2 Fire Sprinkler System

6.2.1 Existing System

The original sprinkler system was installed in 1979 to AS CA16 standards. It is envisaged upgrade works were completed after the sprinkler system's initial installation to enable the sprinkler system to achieve compliance with AS2118.1 1982 Amendment 1.

As per the site's fire sprinkler block plan, the building is served by both a primary and secondary water supply to achieve a dual water supply arrangement:

- The primary water supply is provided a 150mm connection from the authority's main within Day St.
- The secondary water supply to the sprinkler service that is provided by a 143kl concrete in-situ sprinkler water storage tank located within the basement level. Visual inspection of the sprinkler tank could not be confirmed during the site visit.

A sprinkler pump room is located adjacent to the sprinkler water storage tank on Basement level 1. The pump room contains the two (Electric and Diesel) sprinkler booster pumps. The electric sprinkler pump is connected to the town's main and the diesel sprinkler pump draws water from the sprinkler water storage tank. Both pump sets are Horizontal End Suction Centrifugal type pumps.

The sprinkler system's brigade booster assembly is located within a dedicated enclosure on Sands St. The assembly incorporates dual booster points.

A sprinkler valve room is located on Ground level and incorporates access via Sand St. The sprinkler valve room contains 4 x 100mm sprinkler alarm valves installed in a manifold type of arrangement. Each sprinkler alarm valve supplies the sprinklers services in the following areas:

- Sprinkler Alarm valve 1 – Basement level to Level 2
- Sprinkler Alarm valve 2 – Level 3 to 5
- Sprinkler Alarm valve 3 – Level 6 to 8
- Sprinkler Alarm valve 4 – Level 9 to LMR Roof.

Each floor level contains a sprinkler control valve assembly that is located within a dedicated cupboard. The control valve assembly consists of a monitored isolation valve, flow switch and test/drain-down facilities. A main sprinkler service extends from the control valve assembly to serve the sprinkler services located on that floor level.

Wall wetting sprinklers were visually inspected. It is envisaged the wall wetting sprinklers are installed to protect the atrium glazing on Levels Level 1 & Level R as part of a performance solution.

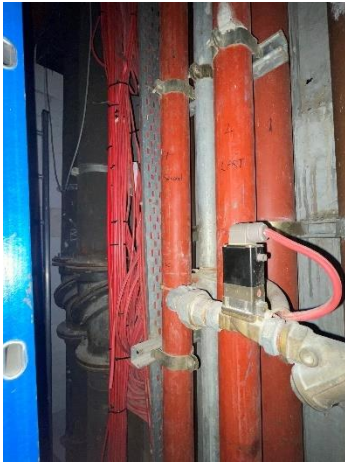


Figure 6: On-floor sprinkler control valve assembly

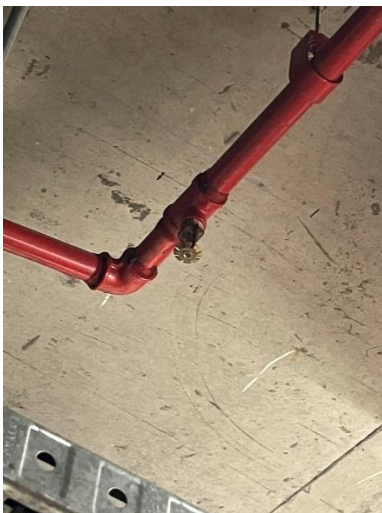


Figure 7: Sprinkler heads example and sprinkler pipes



Figure 8: Sprinkler heads example and sprinkler pipes



Figure 9: Electric Sprinkler pump



Figure 10: Diesel Sprinkler pump

6.2.2 Required Upgrade works

6.2.2.1 Fire Sprinkler Booster Assembly

A new brigade booster assembly complete with suction/booster points will need to replace the current booster assembly. The current enclosure will be upgraded to allow the hydrant valves to achieve minimum clearances.

A new double check detector valve will need to be retrofitted onto the incoming sprinkler service to comply with SW's guidelines.

A new brigade booster assembly complete with suction/booster points will need to replace the current booster assembly. The current enclosure will be upgraded to allow the hydrant valves to achieve minimum clearances.

A performance solution that is prepared by the project fire engineer will be developed to address the current location of the booster assembly.

6.2.2.2 Fire Sprinkler Range Pipes

It is envisaged the building utilises 10mm orifice type size sprinkler heads for all light hazard areas and for concealed in-ceiling areas. The AS 2118.1 2017 requires the minimum size of sprinkler heads for these areas to now adopt a 15mm orifice type sprinkler. To ensure compliance, all sprinkler range pipes within areas that incorporate in-ceiling sprinklers will need to be replaced to allow 15mm orifice type sprinkler heads to be installed. All current below ceiling sprinklers in light hazard areas shall be replaced.

6.2.2.3 Fire Sprinkler Tank

The capacity of the existing sprinkler tank located on Basement level will need to be surveyed. Depending on the size, the tank may need to be upsized to comply with the water storage requirements of AS 2118.1 2017 and the building's revised fire engineering report.

6.2.2.4 Fire Sprinkler Pumpset

While the existing sprinkler pumps appear to be in good condition, as the building will be providing additional floor levels, the current pump's design duty would be too small for them to be reused. New sprinkler pumps will need to be provided and size to accommodate new building scheme. A new fire services pump room will be provided to enable the new fire pumpsets to achieve compliance.

6.3 Fire Hose Reel and Fire Extinguishers System

6.3.1 Existing System

Due to the current arrangement of the fire hose reel service, it is envisaged the fire hose reel system has been designed to Ordinance 70. This will need to be confirmed on building's AFSS.

Fire hose reels are located adjacent to each hydrant landing valve. Based on visual inspection, each hose reel drum within the building appears to incorporate a 30m hose.

Each hose reel is provided with a dedicated 25mm water supply that extends from the nearest hydrant service riser.

At each hydrant/hose reel location, a CO2 fire extinguisher has been provided.



Figure 11: Fire hose reel



Figure 12: CO2 Fire extinguisher

6.3.2 Required Upgrade works

6.3.2.1 Fire Hose Reels

All fire hose reels within the building that incorporate a 30m hose length would not comply with the AS 2441. 2005 as it requires all fire hose reels to incorporate a minimum 36m hose length. All current hose reels shall be removed and replaced with new fire hose reels that incorporate a 36m hose.

As an alternative, there may be an opportunity for the fire engineer to develop a performance solution to remove fire hose reels from all class 2, 3 & 5 areas of the building.

6.3.2.2 Fire Extinguishers

It is envisaged the current type and quantity of fire extinguisher provided throughout the building achieve compliance with the AS 2444-2001. However, in most areas of the building it would be more beneficial to provide ABE type fire extinguishers instead of dry chemical type extinguishers that are currently installed. An ABE type fire extinguisher would be more relevant to the class of fire risks expected within all building areas. It is recommended to swap out all CO2 fire extinguishers with ABE type fire extinguishers. Additional CO2 fire extinguishers serving electrical DB boards or Comms rooms would also be provided.

6.4 Fire Detection and EWIS System

6.4.1 Existing System

There is no existing as-built information of the dry fire system. It is envisaged the detection system has been designed and commissioned to AS 1670.1-2004 requirements. The EWIS system is believed to have been designed to AS 2220.1 1978. This will need to be confirmed once the building's AFSS is received.

The building's main fire control room is located on Ground level and is accessed via Sand St. The fire control room houses the building's main Fire Detection Control Indicating Equipment (FDCIE), the Emergency Warning and Intercom System (EWIS) panel and the Fire Fan Control panel (FFCP). The current FDCIE panel installed is a Siemens FC series fire panel. A dedicated Fire Fan Control Module (FFCP) that enables manual control of the building's smoke control systems is mounted directly adjacent. The EWIS panel located adjacent to the FIP is a SIMPLEX QE90 type panel.

The current EWIS panel is arranged to so that each floor level is an individual fire zone.

A dedicated Fire Detection and EWIS fire cabling riser extends up through the building and is located within the fire sprinkler control valve cupboard adjacent to the central fire stair on each level.

Smoke Detection devices

Smoke and heat detectors are located throughout the building on each floor. The detectors are a Siemens type detector and based on visual inspection appear to be an addressable type detector. The current spacing of detectors was not surveyed on-site.

Early Warning and Intercom System

EWIS speakers are provided on each floor level throughout the building. It is unknown if the current spacing of EWIS speakers throughout each floor achieve compliant sound pressure levels and speech intelligibility requirements.

Multiple WIP and ECP's are provided on each level, located within the fire hydrant/hose reel cupboard adjacent to the female amenities.

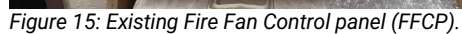
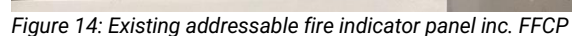
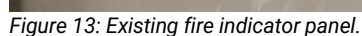




Figure 16: Existing EWIS panel.



Figure 17: Existing smoke detector.



Figure 18: WIP/ECP points within cupboard.



Figure 19: EWIS horn speakers and strobe lights

6.4.2 Required Upgrade works

6.4.2.1 Main FIP & EWIS System panel

Due to the age of the existing FIP and EWIS panels, they will be made obsolete over the next few years. As a result, replacement parts for these models will be impossible to source. It is recommended both the FIP and EWIS panel is replaced with a newer version.

Additionally, it is a non-compliance to have the fire control room that contains the sprinkler alarm valves as the room currently does. A new fire control room that achieves compliance with the NCC will need to be provided within on ground floor level.

6.4.2.2 FFCP

The current Fire Fan Control panel FFCP is very old and should be replaced with a newer version that achieves compliance with AS1670.1 to enable easier monitoring and control of the mechanical smoke control systems.

6.4.2.3 Smoke Detectors and Detection Cabling Infrastructure

Due to the age of the existing fire detection system, it is envisaged the detection cabling infrastructure won't comply with the cabling identification requirements of the AS 1670.1 2018 and will need to be replaced with new detection cabling throughout the building.

The existing smoke detectors installed throughout the building won't comply with the latest version of AS 7240 and will need to be replaced with new addressable detectors that achieve compliance with AS 7240.

6.4.2.4 EWIS Speakers and EWIS Cabling Infrastructure

Due to the age of the existing EWIS system, it is envisaged the EWIS cabling infrastructure won't comply with the cabling identification requirements of the AS 1670.4 2018 and will need to be replaced with new EWIS cabling throughout the building.

The existing EWIS speakers installed throughout the building won't comply with the latest versions of AS 7240.24 and will need to be replaced with new EWIS speakers that achieve compliance with AS 7240.24.

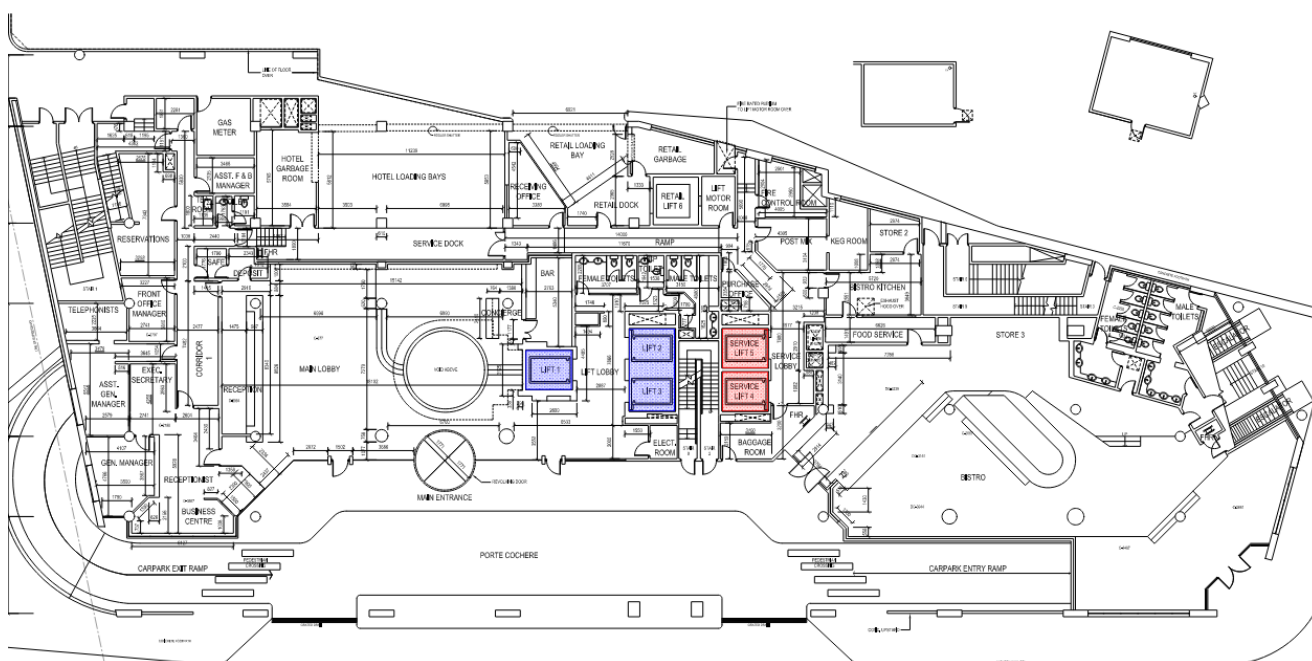
While the Vigilante QE90 EWIS panel still achieves compliance with AS 2220.1, due to its age it will be made obsolete over the next few years. As a result, replacement parts for this the panel will be hard to source and long wait times would be expected. It is recommended the EWIS panel is replaced with a newer version EWIS panel as part of these works.

7 Vertical Transportation Services

7.1 Overview

The inspection of the existing lifts was prima facie only and was conducted from the lift landing lobbies within the lift cars and within the lift machine room as required. LCI did not access the lift shaft and did not inspect the equipment located within these spaces.

The existing vertical transportation services currently installed consist of three (3) guest passenger lifts for front of house serving ground to level 10 inclusive and two (2) dedicated service lifts for back of house serving basement level, carpark level and ground to level 10 inclusive centrally located in core arrangement below:



Ground Level

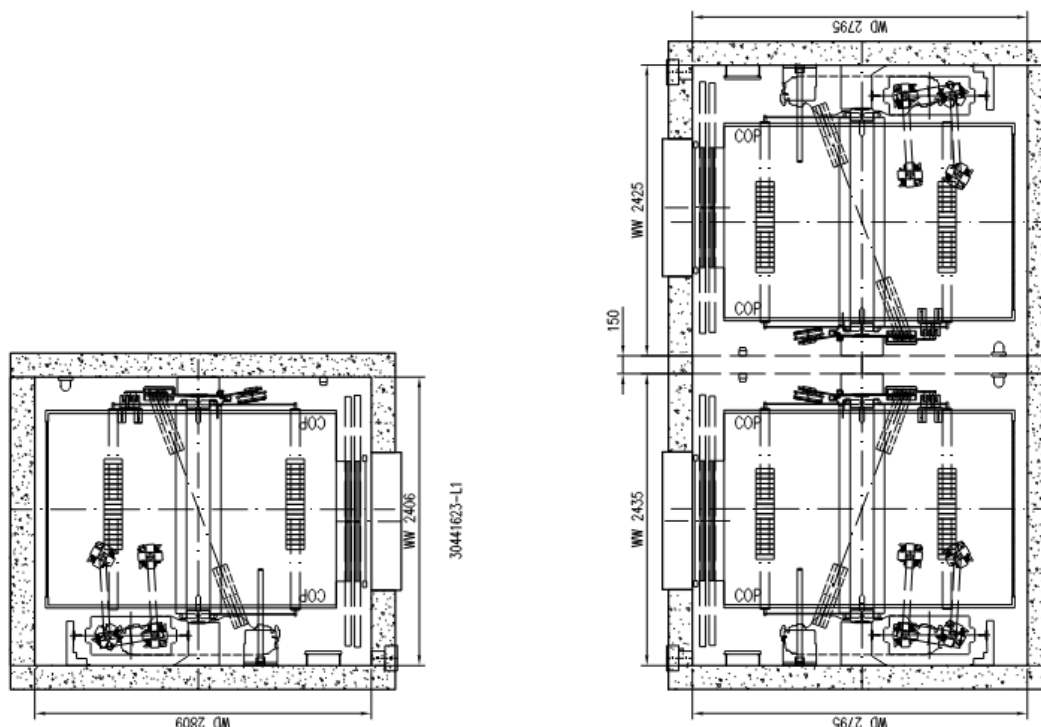
7.2 Guest Lift No.1, 2 & 3

The existing guest passenger lifts are Kone Elevator model Monospace gearless traction machine room less (MRL) passenger lifts newly installed by Kone Elevators for replacement circa. 2013 into the existing shafts and appeared in very good condition with minimal wear and tear for their operational life with continuous service of approx. 11 years.

These lifts are 26 passenger 2000 kg rated load for capacity with speed of 2.50 m/s and are adequately provisioned for their intended use.

The lift equipment is installed certified complying to AS1735.1:2003 and appears compliant to the current NCC/BCA 2022 mandatory requirements for **C4D11 - Openings in fire-isolated lift shafts** and **E3D8 - Accessible features required for passenger lifts** with the exception of a handrail complying with the provisions for a mandatory handrail in AS 1735.12.

The design life for this model lift is in the order of 20 years subject to usage and continued ongoing maintenance with OEM service schedule. On this basis the current operational life for these lifts should provide for ongoing continuous operation up to approx. 2033 with the view that there will upgrade to Kone LCE controllers and KDM90 drives, and user interface fixturs and fittings with new interior finishes fitout within this period.



Lift No. 1, 2 & 3

7.3 Service Lift No.4 & 5

The existing service lifts are original as installed passenger lifts circa. 1991 with full modernisation of the existing equipment by Kone Elevators circa. 2013 with the exception of the original geared machines which appear to have been retained. The lifts appeared in good condition with consideration for heavy usage during their operational life.

These lifts are 16 passenger 1150 Kg rated load for capacity with speed of 1.75 m/s and are of minimal size for their intended use.

The modernisation of lift equipment appears installed complying to AS1735 and appears compliant to the current NCC/BCA 2022 mandatory requirements for **E3D8 - Accessible features required for passenger lifts** with the exception of a handrail complying with the provisions for a mandatory handrail in AS 1735.12 and automatic audible information within the lift car to identify the level each time the car stops.

On the basis the original lift equipment was installed in 1991 it is assumed the landing doors were certified by Otis Elevators complying to AS1735.11:1986 - Fire rated landing doors and were again re-certified with opinion by a qualified practitioner after the modernisation of the door system in circa. 2013. On this basis it is assumed that the openings in the shaft are compliant to the current NCC/BCA 2022 mandatory requirements for **C4D11 - Openings in fire-isolated lift shafts**.

LCI assumes the effective height of the building is more than 25 metres, It is noted that warden intercoms (WIP) were not observed in any of the lifts so consider that none of these lifts are nominated emergency lifts NCC/BCA 2022 complying **E3D5 - Emergency lifts**.

Where the effective height of the building is more than 25 metres must be served by at least one (1) emergency lift. Where two or more passenger lifts are installed and serve the same storeys, excluding a lift that is within an atrium and not contained wholly within a shaft, at least two emergency lifts must be provided to serve those storeys; and if located within different shafts, at least one emergency lift must be provided in each shaft.

The design life for the modernised components of these lifts is in the order of 15 years for the controllers, drives, lift car and landing control buttons and signalisation, and in the order of 20 years for the car door operator and landing door system. The original Otis Elevator as installed geared machine has reasonably cycled beyond it's operational design life of approx. 25 - 30 years with continuous operation for a period of 33 years.

Complete replacement of these lifts with larger lift cars (minimum 21 passenger 1600 Kg rated load) can be reasonably considered and is recommended during the proposed extension works.



Original as-installed Otis Elevator Geared Machine

Lehr Consultants International (Australia) Pty Ltd (ABN 92 124 107 973) is the evolution of a firm which began in 1969. Challenging the standard approach to Building Services engineering, LCI offers traditional and innovative consulting services worldwide, as well as access to cutting edge technological thought, applications and proprietary systems.

We are proudly 100% owned and operated in Australia by our staff.

VISIT US

www.lciconsultants.com.au



MELBOURNE

Level 2/616 St Kilda Rd
Melbourne, VIC 3004
P (03) 9230 5600

SYDNEY

Level 5/73 Miller St
North Sydney, NSW 2060
P: (02) 9157 0570

BRISBANE

Level 1/293 Queen St
Brisbane City, QLD 4000
P (07) 3831 3300

PERTH

Level 15/123 St Georges
Terrace Perth, WA 6000
P: (08) 9242 5857

CANBERRA

Level 2/1 Farrell Place
Canberra, ACT 2601
P: (02) 9157 0570

ADELAIDE

Level 4, 91 King William St
Adelaide, SA, 5000
P: (08) 7078 8896