

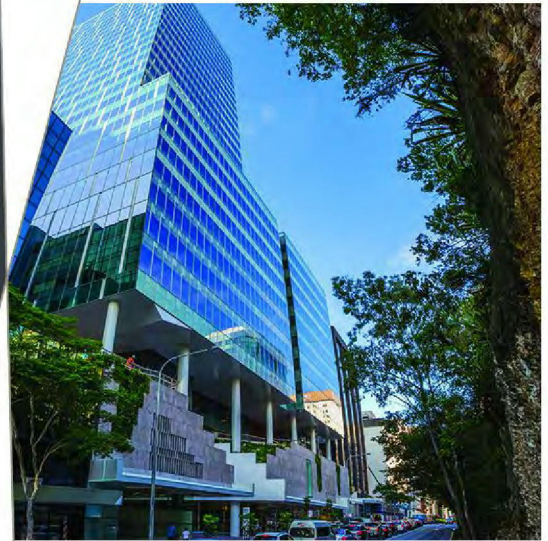
Appendix F

Services Report

Services Report

58 Anderson St, Chatswood, NSW

80821105



Prepared for
H & R Vakili

30 September 2020

Contact Information

Cardno (NSW/ACT) Pty Ltd

ABN 95 001 145 035

Level 9 - The Forum

203 Pacific Highway

St Leonards 2065

Australia

www.cardno.com

Phone +61 2 9496 7700

Fax +61 2 9496 7748

Author(s):

Name VP/BW/AP/JC

Job title

Approved By:

Name Mehdi Zeinali

Job title Building services Manager

Document Information

Prepared for H & R Vakili

Project Name 58 Anderson St, Chatswood,
NSW

File Reference 80821105.R2

Job Reference 80821105

Date 30 September 2020

Version Number 2

Effective Date 30/09/2020

Date Approved 30/09/2020

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
1	25 Sep 2020	Client Issue	VP/BW/AP/MZ	Mehdi Zeinali
2	30 Sep 2020	Final Issue	VP/BW/AP/MZ	Mehdi Zeinali

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1 Introduction

1.1 Engagement

Cardno (NSW/ACT) Pty. Ltd. (Cardno) have been engaged by H & R Vakili to create planning proposal report for a mixed use development located at 58 Anderson St, Chatswood, NSW. The report comprises of mechanical, electrical, hydraulic and fire services.

1.2 Scope

The purpose of this document is to highlight the following:

- Building services utility supply philosophies for the respective disciplines (electrical, communications, sewer, gas, stormwater, towns mains, essential fire services mains);
- General building services methodology;
- Building services spatial requirements;
- Conceptual building services designs;

1.3 Site Location

The proposed development site is located at 58 Anderson St, Chatswood, NSW.

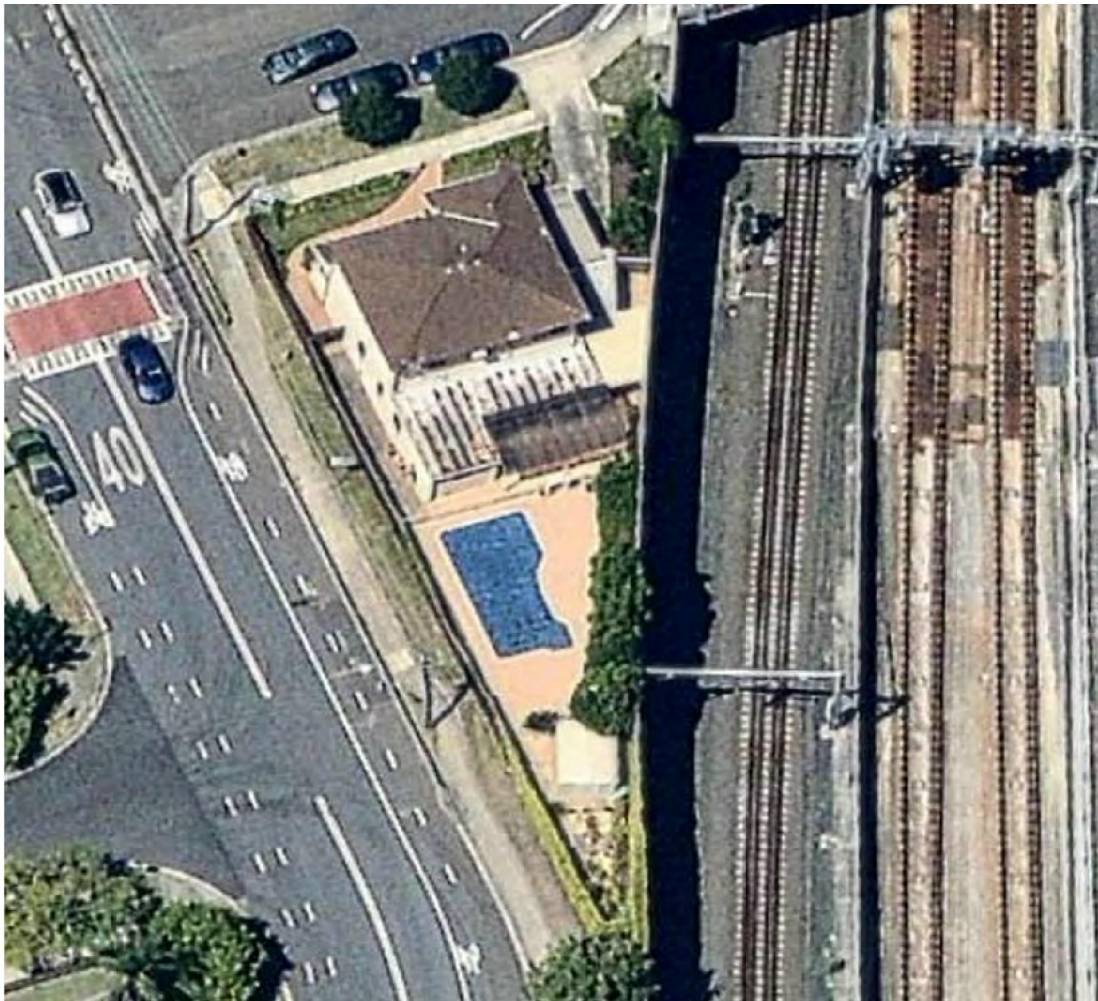


Figure 1-1 Satellite View

1.4 Proposed Development

H & R Vakili are proposing to develop the site into a mixed used development consisting of 4 main commercial levels and 10 residential levels. Ground level will primarily be used for activated retail and access to the building and carpark. level 1 has also been included for end of trip bicycle storage and amenities as well as plant spaces.

2 Mechanical Services

2.1 Regulations and Authorities

Relevant authorities having jurisdiction over this project are as follows:

- National Construction Code
- Relevant Australian Standards;
- Work Cover;
- NSW Fire & Rescue;

2.2 Design Methodology

2.2.1 Air Conditioning

Air conditioning systems will be provided for each residential unit.

Provision of an efficient Multi Split DX Reverse Cycle Air Conditioning unit with air-cooled condensers located on the screened service area located between the fire stairs.

The systems will be designed in accordance with the NCC2019 and relevant Australian Standards including but not limited to AS1668.1, AS1668.2 and AS3666.

2.2.2 Ventilation

Mechanical Ventilation needs to be provisioned where required to meet the requirements of the NCC 2019 where natural ventilation is not achievable or desirable, in accordance with the NCC 2019 and relevant Australian Standards including but not limited to AS1668.1 and AS1668.2.

2.2.3 Carpark Exhaust

Car park exhaust and supply will be provided for the basement car parking areas. Make up air will be supplied via risers from the ground floor and exhaust via riser to the ground floor in compliance with the requirements of AS1668.2. The carpark ventilation system will be provided with Variable Speed Drives (VSD) motors and CO sensors as per AS1668.2, NCC 2019 requirements to minimise energy use and limit overall system noise levels.

Car park exhaust systems will continue to run while the make-up air systems will stop in fire mode.

2.2.4 Kitchen Exhaust

Residential

Recycled exhaust systems can be used for kitchen exhaust for each unit. There are allowances for ducted kitchen exhaust for each residential apartment with discharges to the façade. This exhaust system will be designed in accordance with the NCC 2019 and AS1668.2.

2.2.5 General Exhaust

Residential laundries and toilets

Residential laundries and toilets will generally be mechanically exhausted via risers to the top of the building.

Garbage exhaust etc.

There are enough allowance for natural ventilation of the garbage room. Mechanical ventilation will be provided in case the natural ventilation is not practical. Discharges as per requirements of AS1668.2.

Plant rooms

Plant rooms will generally be exhausted at ground level where natural ventilation is not achievable or unsuitable for the application.

Fire Control Room exhaust

The fire control room shall have a fresh air system in accordance with the requirements of the NCC 2019 and AS1668.

2.3 External Design Criteria

The air conditioning system design will be based upon the following external ambient conditions:

- > Summer: 33°C DB
23°C WB
- > Winter: 7°C DB

2.4 Internal Design Conditions

The air conditioning system will be designed to maintain the following internal conditions:

- > 24°C +/- 1°C in Summer
- > 20°C +/- 1°C in Winter

No humidity control will be provided other than the normal dehumidification achieved as a result of cooling or heating incoming air.

2.5 Air Conditioning Loads

The following loads will be used in the design of the air conditioning systems:

- > Lighting Load: 5 W/m²
- > Equipment Load: 5 W/m²

2.6 Occupancy Rates & Outside Air Rates

The occupancy and outside air rates are as set out in AS1668.2

2.7 Spatial Requirements

We have reviewed the architectural concept drawings and confirm that all spatial requirements can be accommodated.

3 Electrical Services

3.1 Regulations and Authorities

Relevant authorities having jurisdiction over this project are as follows:

- National Construction Code;
- Willoughby Council;
- Relevant Australian Standards;
- Work Cover;
- NSW Fire & Rescue;
- Environmental Protection Agency;
- AS/NZ 3000 – Australian Wiring Rules;
- Service and Installation Rules of NSW;
- Ausgrid Rules and Regulations;
- Australian and Communications Media Authority (ACMA);
- Communications Alliance (CA); and
- NBNco.

3.2 Design Methodology

3.2.1 Substation

At this stage, an onsite Ausgrid kiosk substation will be provided to cater for the anticipated electrical load of the proposed development site.

The capacity of substation is assumed to be of 1 x800kVA.

The proposed substation location is shown on the architectural plans.

However, the capacity and location of the new substation is subject to Ausgrid approval and ASP3 design.

3.2.2 Electricity Supply

The electricity supply to the proposed onsite substation will be via the Ausgrid high voltage network near vicinity of the site.

The exact connection point to Ausgrid high voltage network will be provided by Ausgrid after new supply authority application is submitted for the development.

The new high voltage feeders will be reticulated underground to the new substation location.

3.2.3 Consumer Mains

The consumer mains will be two (2) fire rated reticulated via underground conduits from onsite substation to the Main Switchboard.

3.2.4 Main Switchboards

Main switchboards (MSB) will be Form 3B and IP42 rated.

There will be one switchroom on lower ground floor. The Main Switchboard will serve the entire development.

The Switchroom will be 2-hour fire rated and will have two (2) forms of egress.

Main switchboard will include:

- Supply feeders for electrical risers for distribution boards –residential and commercial;
- House services distribution section;
- Lift supply;
- Essential services distribution section;

3.2.5 Distribution boards

Distribution boards will be Form 1 construction and IP42 rated.

Distribution board will be located within each alternative floor electrical cupboard for residential floors and on each floor for commercial floors.

Distribution boards will provide supply for as follows:

- Each residential apartment;
- “House” areas of Carpark, lift lobbies and plant areas;

3.2.6 Sub-circuit Cabling

Sub circuit cabling will be in accordance with AS3008 and AS3000.

Sub circuit cabling will be sized to cater for:

- the respective load;
- fault current rating; and
- voltage drop.

Sub circuit cabling will be PVC/PVC and XLPE/PVC type with the exception where fire rated cabling will be provided for safety services in accordance with the NCC 2019.

3.2.7 Earthing

A MEN earthing system will be provided to the building in accordance with AS3000, Service and Installation Rules of NSW.

3.2.8 House and Tenants Metering

“House” distribution boards will be metered at the main switchboard.

Residential apartments will be metered on a floor by floor basis from a central location on the respective alternative level.

3.2.9 General Lighting

General internal lighting will be provided in accordance with AS1680.

External lighting will be in accordance with AS1158 and local Council requirements. External lighting will be controlled via photoelectric cells and timers.

Internal lighting control for the following areas as follows:

- Carpark lighting – time clock and movement detectors;
- Common areas – movement detectors/local switching;
- Commercial areas – movement detectors/local switching;
- Apartments – local switching;

3.2.10 Exit and Emergency Lighting

Single point exit and emergency lighting will be provided with test switches at the respective distribution boards.

Exit and emergency lighting will be in accordance with AS2293.

3.2.11 Telecommunications

NBN will provide lead-in fibre cables to the new development’s main distributor.

Following will be provided for the lead in fibre cables:

- Lead in cable pit and pipe system from street network to the building entrance.
- Provision of cable tray route and conduit to each residential apartment Network Terminating Device (NTD);

Cabling infrastructure will comply with ACMA regulations and relevant Australian Standards

The central building distributor will be sized accordingly to accommodate three (3) telecommunications carriers.

The central building distributor will be located in the communication room.

The building will have full mobile phone coverage via an in-house distributed antenna system.

3.2.12 MATV and PAYTV

MATV antenna will be installed on roof complete with associated cabling, amplifiers and MATV filtered headend located within the communication room.

PAYTV lead-in cable shall be from street and Foxtel filtered headend located within in the communication room.

A dedicated and centralised “free to air” digital and PAYTV system will be provided to the building.

There will be an RG11 backbone to splitters located on each level within the respective building telecommunications riser cupboards. For the residential levels, RG6 horizontal cables will be reticulated from the splitters on the respective levels to the individual apartments.

3.2.13 Security

CCTV

The CCTV system will consist of the following:

- Head end located in in the communication room;
- IP based, individually addressable, CCTV cameras located at the following points:
 - > the vehicle and pedestrian entries to the building;
 - > main foyers;
 - > lift lobbies;
 - > carpark;
 - > building perimeter;
 - > exit points of the building;
 - > public areas;
 - > as well as any other locations deemed necessary for security purposes;
- Data backbone cabling to accommodate the CCTV camera infrastructure;
- Digital Video Recording (DVR) system capable of providing thirty (30) day storage capacity.

Intruder Detection

At this stage intruder detection will be provided by the individual tenants.

The access control system proposed will be capable of supporting intruder detection field devices.

Access Control

The Access Control system will consist of the following:

- Head end located in the Main campus distributor room;
- IP based, individually addressable, card readers located at the following points:
 - > the vehicle and pedestrian entries to the building;
 - > residential entries;
 - > commercial entries;
 - > residential lifts;
 - > Carpark boom gate.
- Data backbone cabling to accommodate the access control infrastructure;
- Reed switches to all building perimeter doors;

- Access control proximity cards;
- Door controllers;
- Intercom points to the following locations:
 - > the vehicle and pedestrian entries to the building;
 - > Residential foyer entries.

3.2.14 Lightning and Surge Protection

Lightning protection will be provided in accordance with AS1768.

Primary surge protection will be provided at the main switch board(s) and telecommunications building distributor (MDF). No secondary surge will be provided at this stage. If this is required, then the individual tenants will provide this.

3.2.15 Power Factor Correction

Power factor correction will be provided at the main switch board(s) in accordance with the Installation and Service Rules of NSW.

The power factor correction units proposed will correct the power to a factor of 0.95 or better.

3.3 Public Domain Lighting

Public Domain Lighting will be provided in accordance with:

- Local Council; and
- AS 1158.

3.4 Spatial Requirements

We have reviewed the architectural concept drawings and confirm that all spatial requirements can be accommodated.

4 Fire Services

4.1 Regulations and Authorities

Relevant authorities having jurisdiction over this project are as follows:

- National Construction Code;
- Local Council;
- Relevant Australian Standards;
- Work Cover;
- NSW Fire & Rescue;
- Environmental Protection Agency.

4.2 Design Methodology

4.2.1 Fire Sprinklers

A combined fire sprinkler hydrant system utilising common, water supplies, tank, fire pumps and pipe work main risers located in the fire stairs would be provided in accordance with:

- AS 2118.6;
- AS 2419
- AS 2118
- NCC 2019;
- Fire Engineered “Alternate Solution” where applicable.

4.2.2 Fire Services Water Supplies

A Grade 1 water supply via connection from the ‘town’s main water main and the provision of a 120,000 litre (approx.) combined fire sprinkler / hydrant water storage tank located in Basement would be provided in accordance with:

- NCC 2019;
- AS 2118;
- AS 2419;

The pump rooms incorporate the required combined sprinkler hydrant diesel and electric pump set. The pump room should be provided with direct street access or a Fire Engineered alternative solution would be required.

Another pump room incorporating a fire brigade relay pump will be provided on level 1, subject to a fire engineering report.

The pumps will be designed to provide the required flow rates and pressures.

The system will incorporate a connection to the Sydney Water main in the adjacent street, a combined sprinkler hydrant booster valve will be located adjacent the building entry

4.2.3 Fire Hydrant Service

Internal fire hydrants located within fire-isolated exits of each level.

The fire hydrant service will be in accordance with the National Construction Code requirements and AS2419 - Fire Hydrant Installations.

4.2.4 Fire Hose Reel System

The system will be connected to the metered domestic cold water supply with hose reels located within four (4) meters of fire-isolated exits on all non-residential floors.

Fire Hose reel system will be in accordance with the National Construction Code requirements and AS 2491.

4.2.5 Automatic Fire Detection Systems

Full addressable, automatic fire detection system protection reporting to the Main Fire Indicator Panel serving will be provided throughout the development in accordance with:

- AS1670;
- AS1668;
- NCC 2019;
- Fire Engineered “Alternate Solutions” where applicable.

A fire control room has been allowed for in the ground floor main entry area of the building. The Main Fire Indicator Panel for the proposed development will be located within this fire control room.

Smoke alarms will be provided within the residential apartments in accordance with NCC 2019 and AS3786.

4.2.6 Emergency Warning and Intercommunication Systems (EWIS)

An Emergency Warning and Intercommunication System (EWIS) including speakers, break glass alarms and warden intercom phones will be provided throughout the building.

- AS 1670.4;
- NCC 2019;
- Fire Engineered “Alternate Solution” where applicable.

The EWIS Master Emergency Control Panel (MECP) for the proposed development will be located within this fire control centre.

Visual indicators will also be provided in plant rooms.

4.2.7 Fire Extinguishers

Fire extinguishers will be provided throughout the building in accordance with the NCC 2019 and AS2444..

4.3 Spatial Requirements

We have reviewed the architectural concept drawings and confirm that all spatial requirements can be accommodated.

5 Hydraulic Services

5.1 Regulations and Authorities

Relevant authorities having jurisdiction over this project are as follows:

- National Construction Code;
- Willoughby Council;
- AS 3500;
- Work Cover;
- NSW Fire & Rescue;
- Environmental Protection Agency
- Sydney Water.
- NCC Vol. 3 2019. Plumbing Code of Australia

5.2 Design Methodology

5.2.1 General

The hydraulic services documented for the development will be in accordance with the requirements of the relevant authorities. Sydney Water will be contacted with regards to Section 73 requirements and Pressure Inquiry of the mains water supply in the vicinity of the site.

5.2.2 Sewer Drainage & Sanitary Plumbing

The sewer drainage and sanitary plumbing system will collect the discharge from the various sanitary fixtures and drainage points throughout and will gravitate to the existing Sydney Water Sewer Mains in Anderson Street.

The system will be designed in accordance with AS3500 the National Drainage and Plumbing Code.

Final connections and arrangements for the sewer are subject to further negotiations with Sydney Water.

5.2.3 Stormwater Drainage & Downpipes

Gravity stormwater drainage will be provided from the roof areas to cater for a 1:20 and 1:100 year storm and may be gravitated to the Sydney Water controlled drainage system in the adjacent streets via a rainwater harvesting and overflows to stormwater system..

A rainwater harvesting tank will intercept roof water run-off from the new roof for possible re-use of the water for the purpose of toilet flushing, landscape irrigation and laundry re-use may also be considered as per BASIX requirements.

The stormwater drainage system will be designed in accordance with Parramatta City Council current stormwater guidelines, "Australian Rainfall and Runoff" and AS3500 the National Drainage and Plumbing Code.

The proposed rainwater harvesting tanks will be documented on the concept plans appended to this document for further reference.

5.2.4 Cold Water Service

The cold water service for domestic supply will be a metered mains-fed system and be complete with new connections to the Sydney Water's main in Anderson Street. Booster pumps may be required depending on the pressure in the mains.

The cold water service will be reticulated to all fixtures, faucets, and points of connection.

Independent metering will also be provided to the proposed strata units.

The cold water service will be in accordance with AS3500 the National Drainage and Plumbing Code.

5.2.5 Domestic Hot Water Service

The domestic hot water service will provide controlled temperature hot water to all fixtures and faucets requiring hot water.

The domestic hot water for the residential may be provided via gas centralised hot water system. The reticulation of hot (60 deg.) water will be provided via individually controlled Thermostatic Mixing Valves, UV sterilisation (optional), circulating pumps and possibly a ring main system.

The hot/warm water service will be in accordance with AS3500 the National Drainage and Plumbing Code.

5.2.6 Gas Service

The gas service regulated supply will be connected to Jemena main where accepted by the authority in Anderson Street.

Independent gas metering will be provided to service the each of the various users subject to further negotiations with Jemena.

The system could be reticulated to the domestic hot water plant, and kitchen cook tops.

Any kitchen cooktops will be fitted with flame failure devices.

The new gas service(s) will be in accordance with the AS 5601.1:2010 and the requirements of Jemena.

5.2.7 Sanitary Fixtures, Faucets and General Equipment

All equipment such as sinks, basins and tapware will be specified by the architect.

The sanitary fixtures and faucets will be of a reasonable standard throughout to achieve high levels of energy and water efficiency. These may be 3A WELS rated (equivalent to previous AAA rating) or better in accordance with the requirements for this type and class of building.

Water reduction will achieved via the use of dual flush cisterns for the water closets (3 litre half / 6 litre full flush), and the use of water flow controls on faucets and temperature limiting devices.

Shower hoses to be low flow type.

Isolation valves required to all toilets, bathrooms and kitchens.

5.2.8 In-house Flow Metering

The following areas shall be independently metered via a NHP type metering system or equivalent. Head-end software will be installed on the building managers PC.

5.3 Spatial Requirements

We have reviewed the architectural concept drawings and confirm that all spatial requirements can be accommodated.