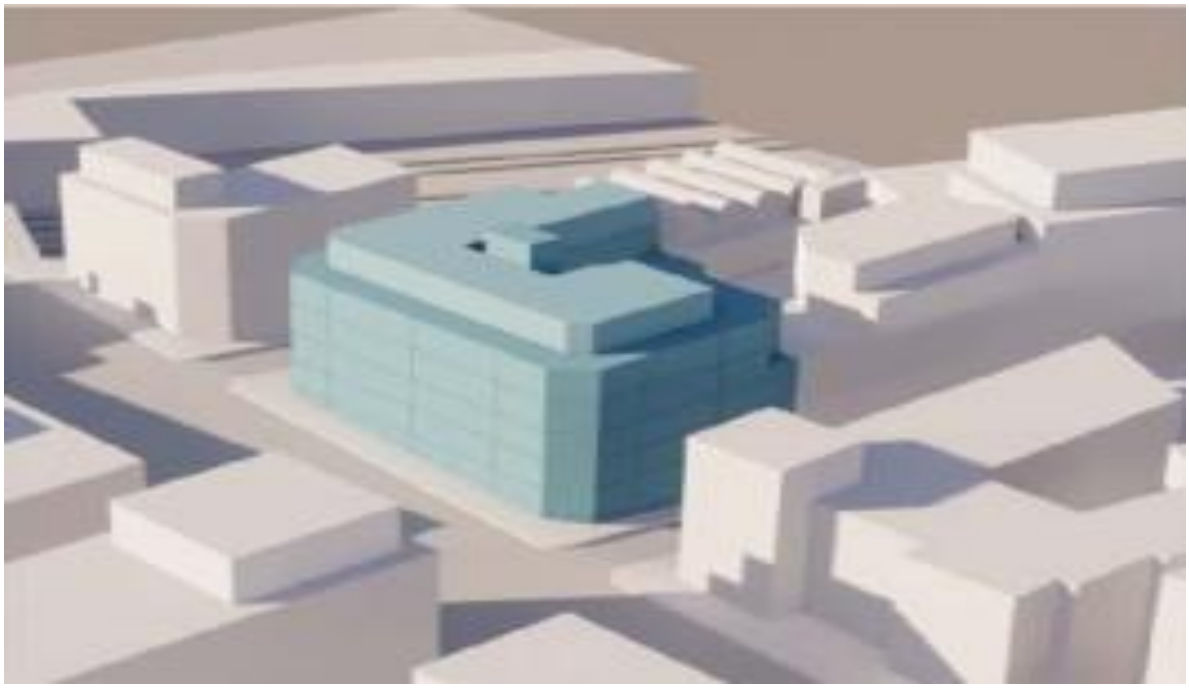
CO-LIVING DEVELOPMENT
175-177 CLEVELAND STREET, REDFERN NSW

Prepared for:

Raja Jamal l Project Director l EG
Office Location: Level 21, GPT, 1 Farrer Place, Sydney NSW 2000
Mobile 0467 761 093

Preliminary Services Report	**February 2021**	
Secretary's Environment Assessment Requirements (SEARS) Services Report	Version	P1



Job No. 26723

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Project No.	26723

Author(s) Joe Summers, Rose Sadabadi, Haibin Li, Neil Muthukuda

Approved by Richard Nicoliello

Version	**Issue Description**	**Date**
P1	Preliminary Issue	24.02.2021
P2	Preliminary Issue	26.02.2021

CONTENTS

1. Introduction

1.1 General

The Engineering Services Brief presents the following components:

Building services utility supply philosophies for the respective disciplines (electrical, sewer, gas, cold water & essential fire services mains).

1.2 Site Location

The site is located at the corner of Cleveland Street & Eveleigh Street, Redfern, NSW.

1.3 Utility Services Analysis

Dial Before You Dig (DBYD) requests were submitted on the 19 February 2021 to investigate the presence of existing utilities such as electrical, communications, water, gas and essential fire services.

The following utilities with interests/assets in the vicinity of the site were notified in this process:

Seq. No.	Authority Name	Phone	Status
104756517	Airport Rail Link	0298489578 / 0413006517	NOTIFIED
104756519	Ausgrid	0249510899	NOTIFIED
104756515	City of Sydney (IMS)	0292659819	NOTIFIED
104756522	Jemena Gas South	1300880906	NOTIFIED
104756524	NBN Co, NswAct	1800626329	NOTIFIED
104756521	Optus and/or Uecomm, Nsw	1800505777	NOTIFIED
104756516	Roads and Maritime Services	0288370285	NOTIFIED
104756523	Sydney Water	132092	NOTIFIED
104756520	Telstra NSW, Central	1800653935	NOTIFIED
104756518	TPG Telecom (NSW)	1800786306	NOTIFIED

END OF UTILITIES LIST

2. Electrical Services Requirements

2.1 Executive Summary

- Based on the electrical maximum demand and supply offer received from Ausgrid, a new standard surface chamber substation to be installed.
- ESD report for the new development has been prepared by Waterman AHW engineers. The performance outcomes presented in this report demonstrate that the proposed development meets the Sydney city Council standards for sustainable development.
- Dial Before You Dig (DBYD) has been undertaken. Previous correspondence with Ausgrid has occurred and a new on-site chamber substation to be installed. Design of the new substation will be undertaken by a Level 3 Engineer.
- Communications services requirements can be connected from the existing infrastructure on Cleveland street.

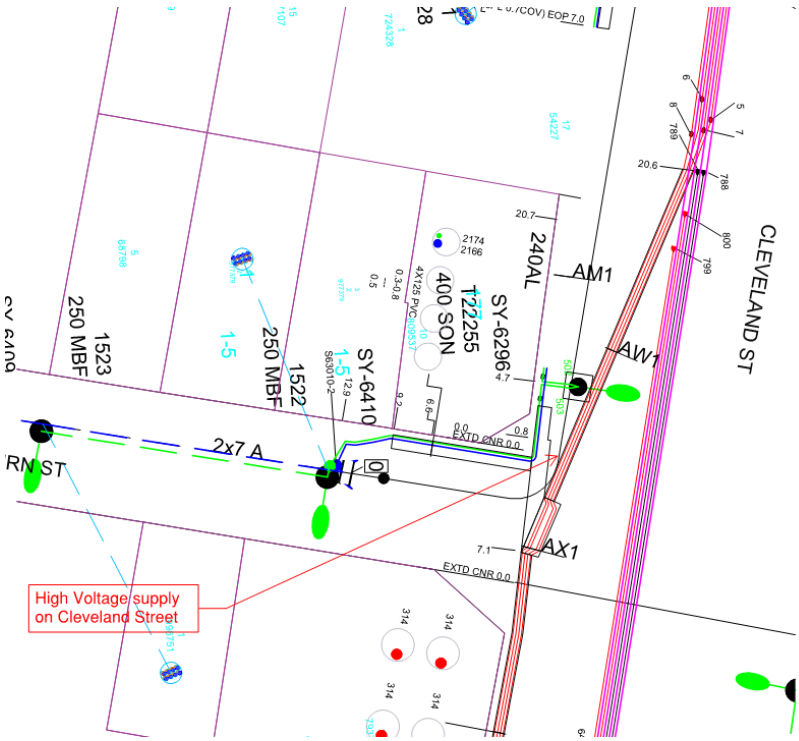
2.2 SEARS Document Key Issues Identified for Electrical

Incoming Electrical Supply

The estimated maximum demand based on AS3000 for the proposed development is 455 amps per phase. The supply offer received from Ausgrid, they have determined that a Standard Surface Chamber Substation to be installed.

Based on the preliminary desktop review of Ausgrid GIS information, there appears to be High Voltage feeders reticulating along Cleveland Street. High We believe the Voltage feed for the new proposed on-site surface chamber substation shall be connected from this supply.

Exact connection method to be determined once formal Supply Offer is available from Ausgrid.

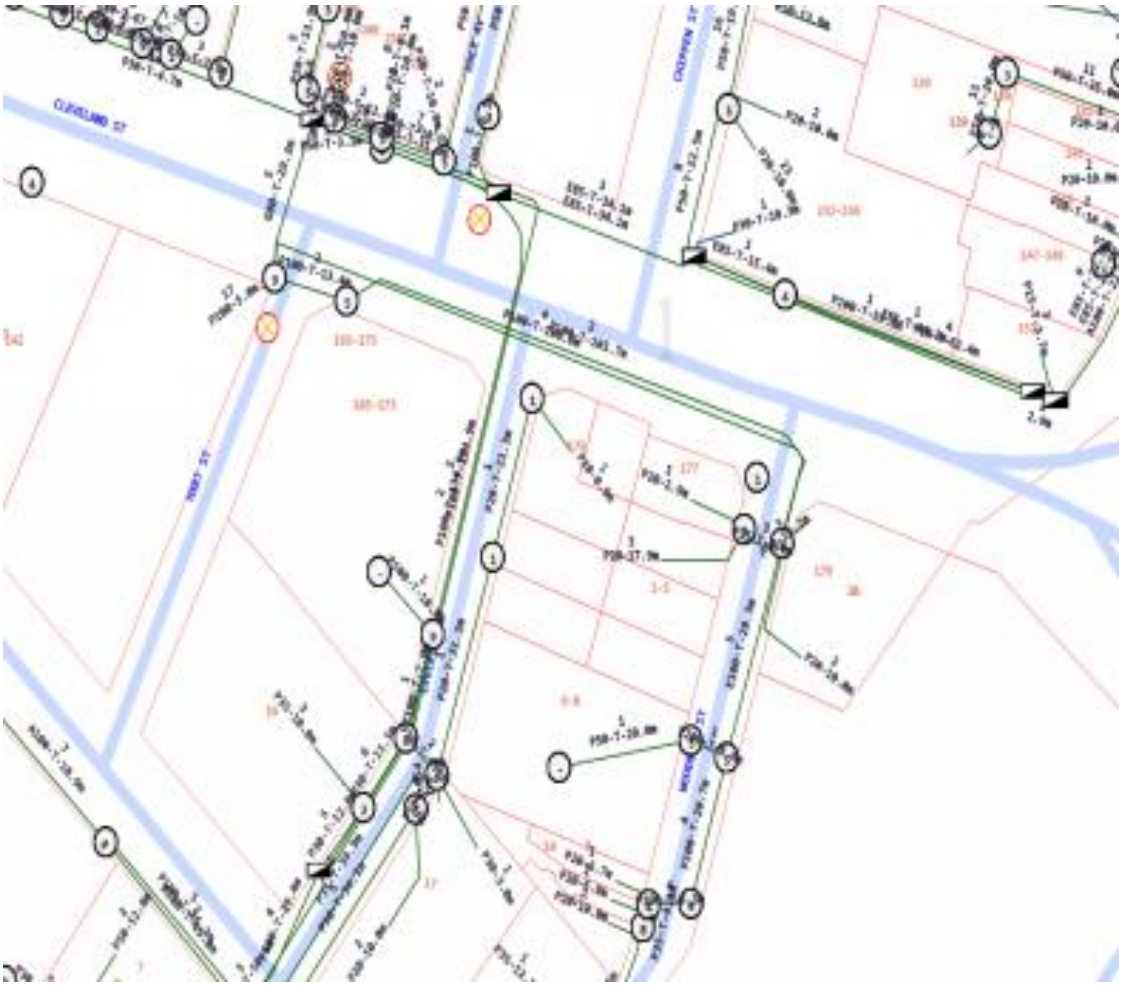


Low voltage supply from the new Chamber Substation will be connected to the Building Main Switchboard located in the Basement Level.

Incoming Communications Cable

Based on the preliminary desktop study there appears to be sufficient telecommunications capacity of the vicinity of the site to service the proposed development.

There appears to be an NBN fibre service reticulating on Cleveland Street that can be utilised for the new development.



3. Mechanical Services Requirements

3.1 Executive Summary

The intended Variable Refrigerant Volume (VRV) air conditioning systems have been suggested based on their reduced pipework requirement along with their reduced physical plant size compared to central chilled water and heating systems. On this basis less roof space is required for the condensers along with the reduced ceiling void space allowing for better integration of mechanical service within the development.

It was considered that the VRV system condensers located in various areas throughout the development would potentially have the greatest nuisance noise concern to neighbouring properties due to the numbers of condensers involved and their day and night operating periods. Once the mechanical design has developed the equipment quantities and their associated noise data will be forwarded to allow the Acoustic Specialist where they can determine any additional acoustic measures that are necessary.

3.2 SEARS Document Key Issues Identified for Mechanical

3.3 Mechanical Design Strategy

The main mechanical system strategy can be summarised as follows which will be developed through the detailed design process;

Temperature control (Cooling and Heating)

Cooling and heating shall be carried out by a number of Variable Refrigerant Volume (VRV) systems that will provide individual temperature control within in each area been served by local ceiling cassette units or ducted Fan Coil Units (FCUs) in larger Group areas / Lounge connected to their roof mounted condensers by refrigerant pipework. This solution offers the advantage of small refrigerant pipework and plant equipment compared to tradition central chilled water and heating systems, hence reducing the extent of ceiling void, riser and plant space within the development.

Ventilation

A central outside air (OA) system shall provide filtered clean air to each cassette unit or FCU to satisfy the necessary ventilation requirements.

Each individual apartment shall be provided ventilation either by openable windows or individual mechanical ventilation, depending on the final acoustic engineering requirements.

Each individual apartment shall have its own dedicated exhaust system comprising of local exhaust fan, extract grille, ductwork and exhaust discharge louvre through the apartment façade.

Each central corridor area will be naturally ventilated by façade louvres/openable widows.

The basement car park shall have a separate exhaust system. Outside air shall enter the car park via the perforated roller shutter entrance. within the car park to avoid reduced air quality in stagnant areas.

The ground floor food tenancy will be provided with a kitchen exhaust system.

3.4 Noise and vibration

The main mechanical items plant that generate noise would be the VRV condensers located in various condenser plant areas, due to the numbers of condensers and operating periods. During the detailed design process when the exact number of condensers are known along with their locations full sound data of the units will be submitted to the Acoustic specialist once appointed to allow them to determine any additional acoustic measures that are necessary, without compromising condenser operation to minimise noise impact on neighbours and building users.

4. Hydraulics and Fire Services Requirements

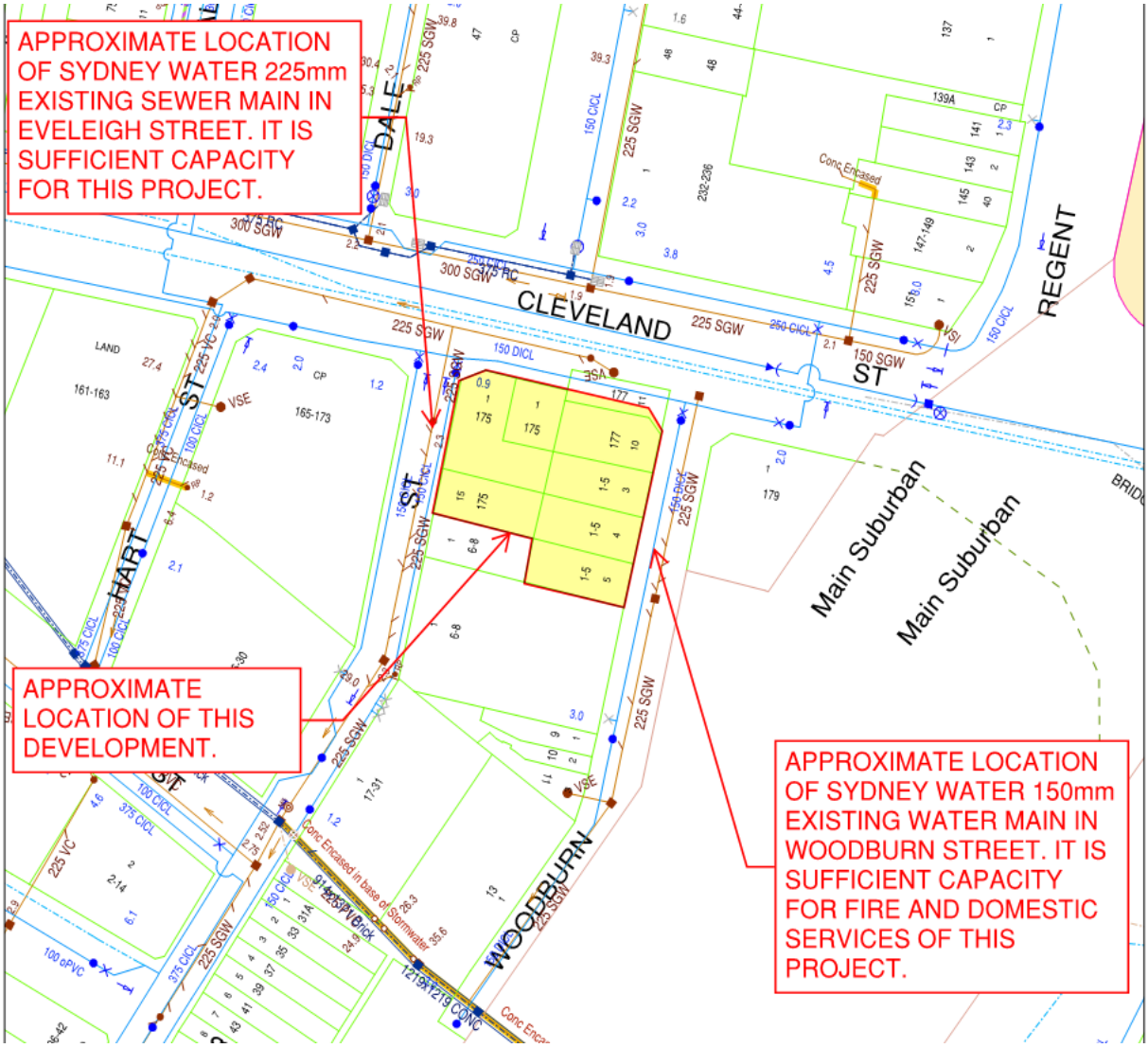
4.1 Executive Summary

Dial Before You Dig (DBYD) has been undertaken.

The water infrastructure is sufficient for fire and domestic water service requirement from the outcome of Sydney Water flow & pressure on existing 150mm water main in Woodburn Street.

The Sewer infrastructure has been reviewed and the result of the investigations and enquiries outlined herein in that there appears to be sufficient capacity in the surrounding infrastructure to support the Project. There is a 225mm existing Sydney Water in Eveleigh Street. It is sufficient capacity for this project.

4.2 Hydraulic Dial Before You Dig (DBYD) Mark Up



4.3 Statement of available water pressure and flow rate from Sydney Water

Statement of Available Pressure and Flow

Sydney WATER

Haibin Li
31 Hunter Street
Sydney NSW 2000

Attention: Haibin Li Date: 14/01/2021

Pressure & Flow Application Number: 1028065
Your Pressure Inquiry Dated: 2020-12-16
Property Address: 175 Cleveland Street, Redfern NSW 2016

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Cleveland Street	Side of Street: South
Distance & Direction from Nearest Cross Street	20 metres West from Woodburn Street
Approximate Ground Level (AHD):	21 metres
Nominal Size of Water Main (DN):	150 mm – Target Point as per sketch provided

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	54 metre head
Minimum Pressure	23 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	23
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	24 24 24 24 23 23 22 21
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30 40 50	23 22 22 22 21 21 20 19
Maximum Permissible Flow	67	16

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au
Delivering essential and sustainable water services for the benefit of the community

Suite 4, Level 8
20 Bridge St
Sydney, NSW, 2000
Australia

5th of May 2021

Mark Shapiro Architects
Bonnie Adams de Jutzuy
Suite 21, 13-29 Nichols St
SURRY HILLS NSW 2010

Project Details:
175-177 Cleveland St, Redfern
Co-Living Development

Consultants Advice Notice – Amenity Design Principles: Mechanical Services

1 Introduction

This Consultants Advice Notice (CAN) is provided to detail the intent of the mechanical services design with respect to amenity for the proposed Co-Living Development at 175-177 Cleveland St, Redfern.

2 Ventilation Summary

The critical amenity requirements for the mechanical services design are detailed in Section F "Health and amenity' of the National Construction Code 2019 (NCC2019), in particular 'Part F4 Light and ventilation' and 'Part F6 Condensation Management'. It is intended that all mechanical services provided to this development will be deemed-to-satisfy solutions for the requirements prescribed in these sections of the NCC2019.

The specific requirements for each enclosure in the development are listed below with the compliance method used to achieve a deemed-to-satisfy solution:

Enclosure	Ventilation Method	AS1668.2-2012 Minimum Ventilation Requirement	NCC2019 Compliance Method
Car Park	Mechanical Ventilation	Exhaust calculated as per AS1668.2-2012 Clause 4.4.4.	Clause 4.5: Mechanically ventilated as per AS1668.2
Electrical Switch Room	Mechanical Ventilation	4 L/s/m^2 of outdoor air	Clause 4.5: Mechanically ventilated as per AS1668.2
Plant Rooms	Mechanical Ventilation	5 L/s/m^2 of exhaust air	Clause 4.5: Mechanically ventilated as per AS1668.2

Laundry	Mechanical Ventilation	15 L/s/m^2 of exhaust air	Clause 4.5: Mechanically ventilated as per AS1668.2
Waste Rooms	Mechanical Ventilation	5 L/s/m^2 of exhaust air	Clause 4.5: Mechanically ventilated as per AS1668.2
End of Trip Facilities	Mechanical Ventilation	10 L/s/m^2 of exhaust air	Clause 4.5: Mechanically ventilated as per AS1668.2
Kitchen	Mechanical Ventilation	Exhaust calculated as per AS1668.2-2012 Clause 3.5.	Clause 4.5: Mechanically ventilated as per AS1668.2
Corridors/Lobbies	Mechanical Ventilation	1 L/s/m^2 of outdoor air	Clause 4.5: Mechanically ventilated as per AS1668.2
Accommodation Rooms – Bathrooms	Mechanical Ventilation	25 L/s/room	Clause 4.5: Mechanically ventilated as per AS1668.2
Accommodation Rooms – Kitchen	Mechanical Ventilation	N/A	Clause F6.3: Minimum 40 L/s exhaust and discharged directly via duct directly to outside
Accommodation Rooms (Street-Facing) – Living Area	Natural Ventilation	N/A	Clause 4.5, 4.6: Naturally ventilated with ventilating area not less than 5% of floor area.
Accommodation Rooms (not Street-Facing) – Living Area	Mechanical Ventilation	10 L/s/person	Clause 4.5: Mechanically ventilated as per AS1668.2
All other areas	Mechanical Ventilation	10 L/s/person of outdoor air	Clause 4.5: Mechanically ventilated as per AS1668.2

3 Environmentally Sustainable Design (ESD) Principles

In addition to the base energy efficiency requirements in the NCC2019, the following further ESD principles have been considered in the development of the ventilation design. It is intended that the following ESD measures are included in the final design:

- Natural ventilation for the accommodation rooms has reduced power consumption compared to mechanical ventilation.
- Mechanical ventilation to the accommodation room toilets will be interlocked with the toilet light switch.
- Car park ventilation system will be automatically speed controlled in accordance with the real-time contaminant generation rates.
- Car park make up air system will be natural via roller shutter door perforations.

4 Accommodation Rooms - Ventilation Discussion

For accommodation rooms not facing the street, compliance with NCC2019 requirements is achieved by providing openable windows with ventilating areas of minimum 5% of the floor area. Providing natural ventilation to the accommodation rooms provides a better ESD outcome compared to achieving NCC2019 compliance with mechanical ventilation.

For accommodation rooms facing the street, mechanical ventilation is required to comply with the development's acoustic requirements. It is intended that the mechanical ventilation is provided to each room via individual outdoor air supply systems, with intake louvres mounted to the external wall of each room. The ventilation rate for these systems will be sized to provide sufficient outdoor air for exhaust make up air.

Make up air for kitchen and toilet exhaust in accommodation rooms not facing streets is provided by openable windows. Whenever these exhaust systems are operating, the rooms are effectively mechanically ventilated as the make up air is drawn from the windows to the exhaust locations via the living areas.

Alternate options for providing compliant ventilation to the accommodation rooms that could be considered are detailed below:

- The natural ventilation method for the accommodation rooms not facing streets can be substituted with the mechanical ventilation system provide to the street-facing rooms.
- Provision of a central ducted outdoor air system to supply all accommodation rooms via a central outdoor air fan. This would require lower ceiling heights in corridors to accommodate ductwork.

5 Cross-Flow Ventilation

Cross-flow ventilation is not a NCC2019 deemed-to-satisfy ventilation requirement. Cross-flow ventilation can be used to improve a building's energy efficiency by reducing the need for air conditioning to achieve comfortable conditions.

Mechanical ventilation has been provided to street-facing accommodation rooms to alleviate any requirement to use openable windows for compliant ventilation, due to acoustic considerations. Similarly, relying on cross-flow ventilation for these rooms would also contradict the intent of the acoustic requirements.

A cross-flow ventilation analysis and design strategy for other rooms can be provided by a wind engineering design consultant.

6 Air Conditioning Design

The final air conditioning requirements will be determined using heat load calculation software. The inputs used for this software will be specific to this development, including the specific thermal insulation values for all proposed construction, eg. walls, windows, roofs, etc.

An allowance will be provided in the heat load calculation for the heat transmission from the artificial grass on the roof to the rooms below.

The parameters for the air conditioning heat load calculation are detailed below:

	Summer	**Winter**
Outside Ambient:	32ºCDB/23ºCWB Full solar load	6.3ºCWB No solar load
Internal Conditions:	24ºCDB ± 1ºC Target 55% RH	21ºCDB ± 1ºC and associated RH

Note 1: The above outside ambient temperatures are nominated for comfort air conditioning applications in Sydney from the 'AIRAH DA09 Application Manual'.

Yours sincerely
Waterman AHW Pty Ltd

JOE SUMMERS
Mechanical Engineer

Suite 4, Level 8
20 Bridge St
Sydney, NSW, 2000
Australia

4th of May 2021

Mark Shapiro Architects
Bonnie Adams de Jutzuy
Suite 21, 13-29 Nichols St
SURRY HILLS NSW 2010

Project Details:
175-177 Cleveland St, Redfern
Co-Living Development

Consultants Advice Notice – Ventilation Principles

1 Introduction

This Consultants Advice Notice (CAN) is provided to detail the intent of the ventilation design for the proposed Co-Living Development at 175-177 Cleveland St, Redfern.

2 Ventilation Summary

All enclosures within the development are intended to be provided with ventilation in accordance with the requirements of the National Construction Code 2019 (NCC2019) and *AS1668.2-2012 The use of ventilation and airconditioning in buildings Part 2: Mechanical ventilation.* The requirements of the enclosures and the design intent is detailed below.

Enclosure	Ventilation Method	AS1668.2-2012 Minimum Ventilation Requirement	NCC2019 Compliance Method
Car Park	Mechanical Ventilation	Exhaust calculated as per AS1668.2-2012 Clause 4.4.4.	Clause 4.5: Mechanically ventilated as per AS1668.2
Electrical Switch Room	Mechanical Ventilation	4 L/s/m^2 of outdoor air	Clause 4.5: Mechanically ventilated as per AS1668.2
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Waste Rooms	Mechanical Ventilation	5 L/s/m^2 of exhaust air	Clause 4.5: Mechanically ventilated as per AS1668.2
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Kitchen	Mechanical Ventilation	Exhaust calculated as per AS1668.2-2012 Clause 3.5.	Clause 4.5: Mechanically ventilated as per AS1668.2
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Accommodation Rooms – Bathrooms	Mechanical Ventilation	25 L/s/room	Clause 4.5: Mechanically ventilated as per AS1668.2
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All other areas	Mechanical Ventilation	10 L/s/person of outdoor air	Clause 4.5: Mechanically ventilated as per AS1668.2

3 Environmentally Sustainable Design (ESD) Principles

In addition to the base energy efficiency requirements in the NCC2019, the following further ESD principles have been considered in the development of the ventilation design. It is intended that the following ESD measures are included in the final design:

- Natural ventilation for the accommodation rooms has reduced power consumption compared to mechanical ventilation.
- Mechanical ventilation to the accommodation room toilets will be interlocked with the toilet light switch.
- Car park ventilation system will be automatically speed controlled in accordance with the real-time contaminant generation rates.
- Car park make up air system will be natural via roller shutter door perforations.

4 Accommodation Rooms - Ventilation Discussion

Compliance with NCC2019 requirements is achieved for the accommodation rooms living areas by providing openable windows with ventilating areas of minimum 5% of the floor area. Providing natural ventilation to the accommodation rooms provides a better ESD outcome compared to achieving NCC2019 compliance with mechanical ventilation.

Make up air for kitchen and toilet exhaust in the accommodation rooms is provided by openable windows. Whenever these exhaust systems are operating, the rooms are effectively mechanically ventilated as the make up air is drawn from the windows to the exhaust locations via the living areas.

Alternate options for providing compliant ventilation to the accommodation rooms that could be considered are detailed below:

- Individual ducted outdoor air systems provided to each accommodation room via louvres on façade, in lieu of openable windows.
- Provision of a central ducted outdoor air system to supply all accommodation rooms via a central outdoor air fan.

5 Cross-Flow Ventilation

Cross-flow ventilation is not a NCC2019 deemed-to-satisfy ventilation requirement. Cross-flow ventilation can be used to improve a building’s energy efficiency by reducing the need for air conditioning to achieve comfortable conditions.

A cross-flow ventilation analysis and design strategy can be provided by a wind engineering design consultant.

Yours sincerely
Waterman AHW Pty Ltd

JOE SUMMERS
Mechanical Engineer

DA Support Statement

Our Ref: S20194.00_R1

EG I Raja Jamal
Level 21, Governor Phillip Tower, 1 Farrer Place, Sydney NSW 2000
Email: rjamal@eg.com.au
Date: 19 February 2021

Re: 175-177 Cleveland Street, Redfern – DA Support Statement Revision 1

Dear Raja,

We have reviewed the DA drawings for the above project with the high-level list of non-compliances highlighted below which have been reviewed by MCD Fire Engineering.

Table 1: Summary of Performance Solution

No	DtS Clause	Description of non-compliance	Performance Requirement (A2.2(3) & A2.4)	Method of meeting Performance Requirements (A2.1)	Assessment Method (A2.2(2))
1.	C1.1, Spec C1.1	To review reduction of FRLs in Class 6 areas (Ground floor) from 3 hours down to 2 hours.	CP1, CP2	A2.1(1)	A2.2(2)(b)(ii)
2.	C1.1, Spec C1.1	To review reduction of FRLs in Class 7b areas representing 13.5% instead of a maximum of 10% (basement floor) from 4 hrs down to 2 hrs.	CP1, CP2	A2.1(1)	A2.2(2)(b)(ii)
3.	C1.1, C3.11	Rooms located off the residential corridors located on level 1 (Entry Lounge & Lobby) and Level 5 (communal lounge and kitchen) are not fire separated by means of an FRL achieving 60/60/60 instead they are directly connected with no separation.	CP1, CP2	A2.1(1)	A2.2(2)(b)(ii)
4.	C2.10	To review glazed lift passing more than 2 levels and not being fire isolated from building/floors.	CP1, CP2	A2.1(1)	A2.2(2)(b)(ii)
5.	C2.14	To review public corridors on residential level being more than 40 m but not provided with smoke separation.	CP2, EP2.2	A2.1(1)	A2.2(2)(d)
6.	C3.2	To review openings less than 3 m from side boundary (courtyard) not being protected as per BCA C3.2.	CP2	A2.1(1)	A2.2(2)(b)(ii)
7.	D1.4(a), Spec E1.5(a)	To review extended travel distance on upper levels of more than 12 m (sprinkler protected), of up to 14 m.	DP4, EP2.2	A2.1(1)	A2.2(2)(d)
8.	D1.4(c)	To review extended travel distance in ground floor areas of more than: ▪ 20 m to Point of Choice (POC) ▪ 40 m to Nearest Exit (NE).	DP4, EP2.2	A2.1(1)	A2.2(2)(d)
9.	D1.7(b)	To review the western fire-isolated stair discharges into a covered area on Ground Floor that is ▪ not open for at least 1/3 of its perimeter. ▪ less than 6 m from discharge to open. ▪ less than 3 m in clear ceiling height. ▪ Incorporates “re-entry” to the building (underpass/lower entry).	DP4, DP5, EP2.2	A2.1(1)	A2.2(2)(b)(ii)

No	DtS Clause	Description of non-compliance	Performance Requirement (A2.2(3) & A2.4)	Method of meeting Performance Requirements (A2.1)	Assessment Method (A2.2(2))
10.	D1.9	To review the non-fire-isolated stair serving roof terrace (Level 6) to discharge on Level 5 and transfers to another fire-isolated stair, i.e., not via its own continuous flights till the final ground floor level for egress.	DP4, EP2.2	A2.1(1)	A2.2(2)(b)(ii)
11.	D2.4	To review there is no smoke separation for rising and descending flights for both fire-isolated stairs.	CP2, DP4, DP5, EP2.2	A2.1(1)	A2.2(2)(b)(ii)
12.	D2.19	The automatic door located on level 1 which serves the residential lobby is not proposed to fail open upon activation of a fire alarm or alternatively loss of power due to security reasons.	DP4, EP2.2	A2.1(1)	A2.2(2)(b)(ii)
13.	E1.3, AS 2419.1	The following deviations apply to the proposed location of the booster assembly as well as the associated pumps and valves: • The hydrant booster assembly is not located within site of the main entry as the building contain multiple entries across multiple streets. • The booster is not located on the sites known street address; • The pump room does not have direct access from a fire isolated stair. Access is required through means of an airlock; and • Fire Hydrants are located on a mid-landing in lieu of being located on the level in which it serves.	EP1.3	A2.1(1)	A2.2(2)(b)(ii)
14.	E1.5, AS 2118.1	The following deviations apply to the proposed location of the booster assembly as well as the associated pumps and valves: • The sprinkler booster assembly is not located within site of the main entry as the building contain multiple entries across multiple streets; • Access to the sprinkler isolation valves is located through traversing up a fire isolated stair in lieu of being located on the level of the roadway.	EP1.4	A2.1(1)	A2.2(2)(b)(ii)

We can confirm that an initial assessment has been carried out by MCD Fire Engineering and, as part of the Construction Certificate stage, a further detailed assessment in preparing a Fire Engineering Report will be undertaken in consultation with the Principal Certifying Authority, which will demonstrate that the above issues will comply with the Performance Requirements of the National Construction Code (NCC), Volume One aka as the BCA 2019 (Amendment 1): Building Code of Australia.

This may be via either or a combination of the following:

- Become DtS by way of design development.
- Comparison to the BCA DtS Provisions.
- Compliance with the BCA Performance Requirements.

Yours Sincerely

Mark McDaid | Managing Director | MCD Fire Engineering Pty Ltd
MSc(Fire) | BSc(Fire) | PGDip(Fire) | Dip(Const) | Cert(Const)
MIEAust | CPEng | NER (Mech & Fire)| CEng (IRE) | MSFS | MAAC | MNFPA | MSFPE
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