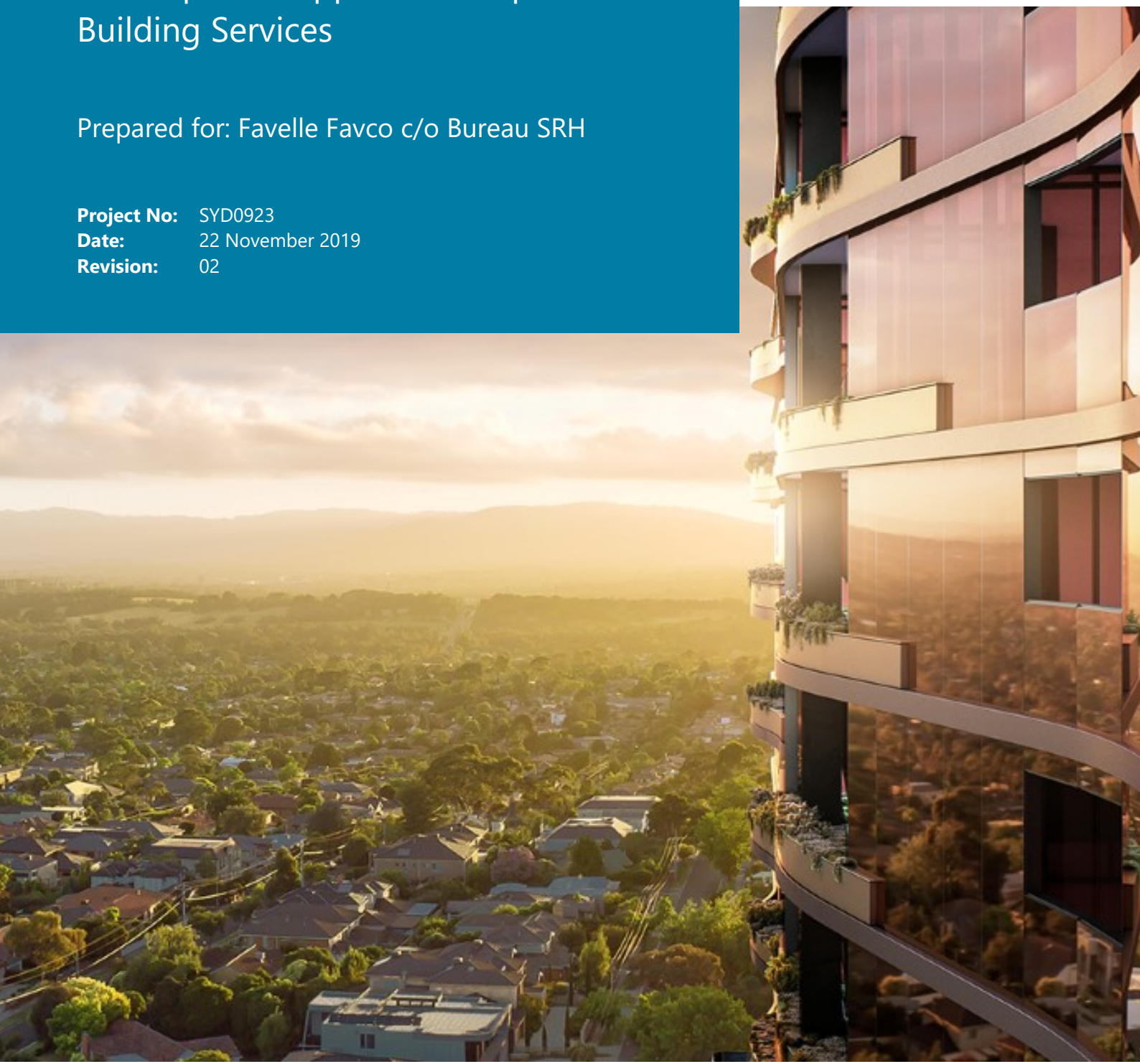
28 Yarrunga St, Prestons

Development Application Report
Building Services

Prepared for: Favelle Favco c/o Bureau SRH

Project No: SYD0923
Date: 22 November 2019
Revision: 02



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Project:	28 Yarrunga St, Prestons
Location:	28 Yarrunga St Prestons, NSW
Prepared by:	ADP Consulting Pty Ltd Level 3, 8 Spring Street Sydney NSW 2000
Project No:	SYD0923
Revision:	02
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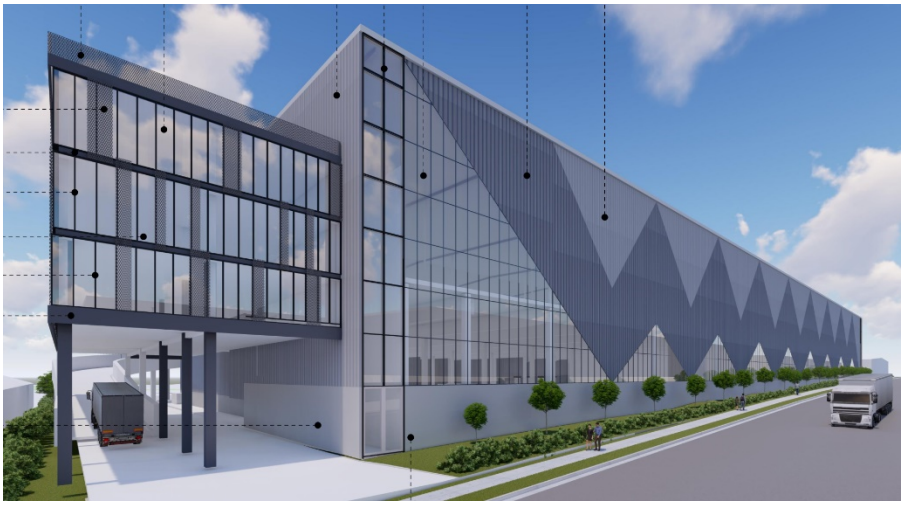
1. Introduction

Purpose

Favelle Favco C/O Bureau SRH have engaged ADP to provide Services design for the site 28 Yarrunga St, Prestons. The design by Bureau SRH has been used for ADP's concept design and this report.

This report has been developed to provide a Mechanical, Electrical, Fire and Hydraulic services overview of the project for council planners and stakeholders.



Regulations and Standards

The building services design shall meet the requirements of the following Regulations and Standards with any variations thereto accompanied by approvals from the relevant authorities including amendments agreed pursuant to fire engineering analysis and reporting:

- National Constriction Code (NCC) 2019.
- Occupational Health and Safety Act 2004.
- AS/NZS 1668 Part 1 – Part 4 – Ventilation and Air conditioning in Buildings
- AS 1670.1 – Fire detection, warning, control and intercom systems
- AS 3000 – Wiring Rules.
- AS 3080 – Telecommunications Installations.
- AS 4254 – Ductwork for air handling systems in buildings
- AS 3500. 1-4 – Water, Sanitary and Stormwater
- AS 2419.1+.6 – Fire Hydrant design and combined systems
- AS2118.1 2017 – Fire Sprinkler Design

The Concept DA design is capable of satisfying BCA and authority requirements.

2. Mechanical Services

2.1 Office A/C

In-ceiling ducted VRV units will be located in each office tenancy to serve all areas. Individual roof top (or externally located) air cooled condensers will be located on roof above each office suites for individual tenancies.

A split-system wall mounted air conditioning will be provided to the comms rooms and any other plant rooms as required.

2.2 Outside Air

Outside air shall be provided to each office tenancy via louvers/roof cowls.

Warehouse spaces shall be naturally ventilated via permanent ventilation openings.

2.3 Toilet Exhaust

A toilet exhaust system serving office and warehouse amenities will be provided.

All toilet exhaust fans will be located on roof level for discharge and not to the façade.

2.4 Automatic Smoke Exhaust System

In accordance with BCA E2.2.b , an automatic smoke exhaust system will be provided to serve each level of each building. Fans are currently documented on the roof with shafts to the ground level. This strategy is to be further developed in accordance with BCA Report/FER requirements

2.5 Stair Pressurisation

In accordance with BCA Report/FER, a stair pressurisation system(s) will be provided to each fire isolated stairway over 25m effective height. The stair pressurisation system comprises a supply air shaft running adjacent to each stairwell serving above ground where the building height exceeds 25 metres. Louvres will be provided at each level for pressurization relief.

2.6 Car Park Ventilation

A mechanical ventilation system will be provided to serve the basement carpark. A car park exhaust riser will be provided to discharge via weatherproof louvres at roof level. Carpark make-up air will be provided via make-air riser from roof level and the weatherproof louvres will be provided on roof level for intake. The carpark exhaust and make-up air fans will be located on roof level.

2.7 Loading Dock and Driveway Ventilation

Loading dock and driveway exhaust risers will be provided for ground and level 1 loading docks and discharge via weatherproof louvres at roof level . Make up air will be provided from either side of the building via driveway entry and exit. The loading dock exhaust fans will be located on level 1 at high level.

2.8 Miscellaneous Ventilation

Mechanical ventilation will be provided to all plant rooms (as required) including but not limited to garbage rooms, fire pump room, switch rooms, main distribution board rooms, comms rooms, rainwater tank rooms and gas metre rooms. Exhaust discharge for these rooms will be at roof level.

3. Electrical

3.1 Electrical Supply and Main Switchboards

Based on the preliminary electrical demand calculation, it is expected that two (2) off 1500KVA pad mount substations will be required for the development electrical load. Additional space will be coordinated within the main switchroom to allow for flexibility in future tenant fitout requirements.

The supply authority, Endeavour Energy, will own and operate the new transformers and HV supply cabling. Endeavour energy have in place spatial and access requirements when locating a transformer on a private site which must be incorporated into the infrastructure design by a Level 3 Accredited Service Provider (ASP3). The final location of the pad mount transformers will be coordinated with the ADP ASP3 designer and architects, in line with supply authority requirements.

Two electrical main switch rooms are proposed for the building, one to serve the front half of the building and one the rear half. Each electrical switch room will house a new MSB that will supply their respective zones.

Switch rooms generally contains switchboards and other electrical equipment such as controls, power factor correction (PFC) and metering devices, for the consolidation and distribution of electrical supplies. Protection devices in the form of circuit breakers or fuses are also installed to limit the supply sizes and provided automatic disconnection in the case of a fault.

3.2 Generator Backup Supply

ADP have not proposed any backup electrical supply at this stage.

3.3 Distribution Boards

3.3.1 Base Building Power

Distribution boards for house services (communal services) shall be located throughout the building within riser cupboards. The location and quantity of house distribution boards is subject to further detailed design and coordination with the architect.

Due to the large-scale nature of the proposed building (particularly in regard to circuit length limitation), it is anticipated two (2) off house distribution are required for each level per building stage.

3.3.2 Tenancy Power

It is currently proposed that a single distribution board shall be provided each tenancy as part of the base building provisions for future connection by tenant. The rating of these tenancy boards shall be subject to detailed design and load estimate.

Additional distribution boards are likely required by larger tenancies due to both circuit length restrictions and additional equipment load.

3.4 Communications Rooms

A new main communications room is proposed for the development, to house external communications services. The communications room will house required incoming services connections and equipment, with additional space for supplementary base building and tenancy services as required.

Smaller building distributor rooms or node cupboards will be proposed to support base building and tenancy and base building services and reticulation, located throughout the building, and will connect back to the communications room. Node room/cupboards shall be designed and positioned to meet the physical limitations of copper horizontal cabling lengths.

4. Fire

4.1 Fire Hydrant

The fire hydrant service shall be provided for the whole building. The site is serviced by two water mains; a potable water main with a flow 30L/s and a non-potable main with flow at 0.66L/s. The fire hydrant system will supply 30L/s in accordance with AS2419, for a sprinkled building greater than 10,0000m2. The system will incorporate booster assembly, booster pumps and a ring main to serve all levels spaces.

4.2 Fire sprinkler

The fire sprinkler service shall be provided for the whole building including in-rack sprinkler allowance, the fit out of which is to be by tenants.

The fire sprinkler system is currently sized as a High Hazard category 4 system, this system allows for a storage height of 9m and storage of items such as furniture, synthetic fibre products and textiles but excludes the storage of ammunition and wax paraffin products (or similar).

The system will incorporate booster, pumps, valve room, coverage to all tenant areas, capped valves for rack protection by tenants.

The fire sprinkler storage tank has been preliminarily calculated at 920,000L for a building under 25m effective height and with the above fire category. Should future tenants require a higher hazard category for the sprinkler system, additional water storage tank spatial allowances will be coordinated with the architectural design to allow for future expansion.

The system has been calculated to comply with AS2118.1 (2017), as per NCC2019 requirements.

The existing warehouse if retained operationally is not proposed as having a fire sprinkler service.

This strategy has been discussed and agreed with Fire and Rescue NSW in meeting with Bureau SRH with FRNSW reference FRN19/2529.

4.3 Detection and Alarm

Fire and smoke detection along with alarm and warning systems are provided throughout the whole building in accordance with Australian standards. Monitoring of the fire systems shall be provided via a fire control centre located on the ground floor, where the fire brigades can co-ordinate fire-fighting activities.

5. Hydraulic

5.1 Water Service

The site is serviced by two (2) water mains owned by the Sydney Water Corporation. One (1) potable water and one (1) recycled water. Both mains will be connected, with the potable water proposed for drinking and washing and fire Hydrant connection and the recycled for toilet flushing and fire sprinkler supply.

Pumps will be provided at ground level to service each usage.

Potable water will be extended to all amenities and capped tenant provisions. Recycled water will be extended to toilet flushing.

5.2 Hot Water

The hot water for the building will be provided by plant located adjacent to use for base building amenities. Temperature control will be provided locally by thermostatic mixing valves. No heated water will be provided for tenant usage.

5.3 GAS

No gas is proposed for the development.

5.4 Sanitary

There is currently no sewer connection to site. The closest sewer main is in adjacent property number 20. Connection to this main is being investigated by water servicing coordinators and will be coordinated by the project civil engineer.

At this preliminary stage, it is assumed that this main will be suitable for connection and gravity drained throughout the site.

6. Vertical Transportation

6.1 Summary

Vertical transportation (lifts) have been considered as part of the project design development.

Preliminary analysis indicates sufficient vertical transportation travel times can be achieved with the currently proposed lifts.

6.2 Analysis Methodology

A lift traffic analysis for the development was performed using Elevate 8 in accordance with standard industry practice. Results were generated via simulation with a Barney Up-Peak profile used for the up-peak analysis. Only the Up-Peak analysis was performed.

6.3 Assessments

There are similarities between the size and profiles of different areas serviced by several lifts, and so, for simplicity of this report, it was deemed unnecessary to analyse all lifts. The following is a description of the lifts represented by each analysis performed.

- **Analysis 1 –** Lifts located in the corners: Lifts 1.1, 1.3, 2.1 & 2.3
- **Analysis 2** – Lifts located centrally: Lifts 1.2 & 2.2

It should be noted that the results of the lift traffic analysis are theoretical only and may not be representative of real-world service performance and quality.

The following assumptions were made:

- Occupants entering the site from the street do so at level Ground P1
- Lifts are not used for goods movements (as access to warehouses is via the ramps and loading docks)
- Car parking is for building occupants only

The analysis carried out by ADP has used the areas for NLA and car parking as scheduled by Bureau SRH.

6.4 Results

Analysis 1 | Corner Lifts

The results of lift traffic analysis for the lifts located in the corners of the development, Lifts 1.1, 1.3, 2.1 and 2.3, is presented in Table 1 below.

Table 1 Corner Lifts Traffic Analysis Results

No. Lifts	HC (%)	AWT (s)
Criteria	13	≤ 30
1	13	23
2	13	10

The results of the lift traffic analysis indicate the following:

> One (1 off.) lift provides a lift service quality commensurate with PCA Grade A; an AWT of 23 seconds is achieved at an HC of 13%.

Analysis 2 | Centre Lifts

The results of lift traffic analysis for the lifts located in the centre of the development, Lifts 1.2 and 2.2, is presented in Table 2 below.

Table 2 Centre Lifts Traffic Analysis Results

No. Lifts	HC (%)	AWT (s)
Criteria	13	≤ 30
1	13	51
2	13	26

The results of the lift traffic analysis indicate the following:

> One (1 off.) lift does not provide satisfactory lift service quality. The nominal criteria are not satisfied at an HC of 13% with an AWT of 51 seconds.

> The addition of a second lift improves lift service quality and satisfies the nominal criteria. An AWT of 26 seconds results at a 13% HC and is commensurate with PCA Grade A for office buildings.

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