



28 Fisher Road / 9 Francis St, Dee Why
Mixed Use Development
Building Services Engineering Report.

12th July 2022

Document Control

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12.7.2022	DA Application	Jim Gorringe	JG	V Mackay	VM

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INTRODUCTION

1.1 General

This Building Services Engineering Report has been commissioned on behalf of The George Group Architects for the development of 28 Fisher Road Dee Why for a mixed use Development with the following work portions anticipated.

- Demolition of the existing church building on the site and associated structures;
- Site preparation works including removal of landscaping and earthworks for basement parking;
- Construction of a new four storey mixed use building incorporating Church, Meeting rooms and upper level care and crisis accommodation.

This Building Services Engineering DA Report presents the following key components:

- Building Services utility supply requirements
- General Building Services methodology for the project;
- Preliminary Building Services spatial requirements;
- Ecological sustainable development principles proposed for the project.

This report should be read in conjunction with The George Group DA Plans for the project.

1.2 The Site

The subject site is located at 28 Fisher Road, Dee Why, Sydney in the Northern Beaches Local Government Area. (LGA)

The site is approximately 20km from the Sydney CBD and approximately 200m to Pittwater Road providing access to transport.

Refer to Figure 1 below:

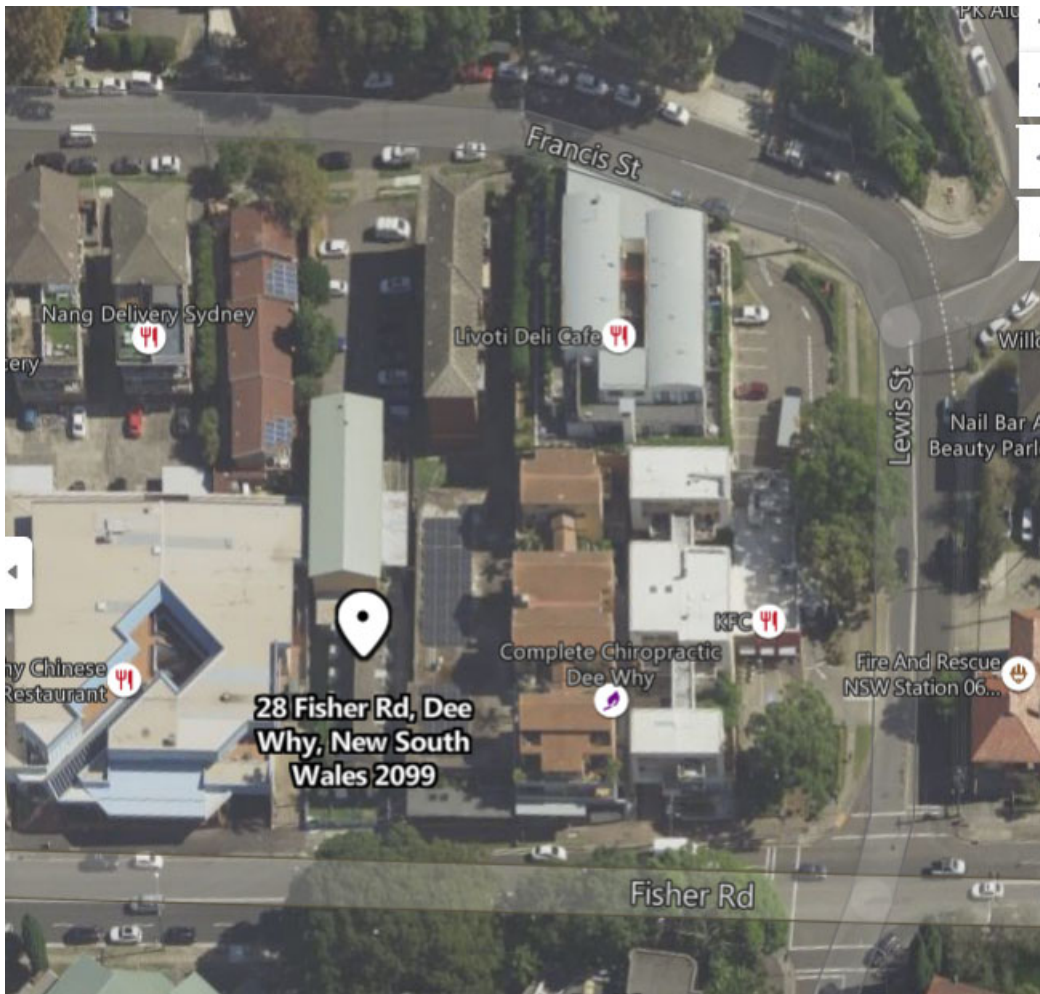


Figure 1 – Site Layout (Source: Google Maps)

The site has the following specific characteristics:

- Area 1399 m²
- Frontage to Fisher Road 15.2m
- Depth 52. m

Fall

- North to South.3m
- West to East 1.5m approx

Zoning

- B4 Mixed Use Development (Fisher Rd end)

Maximum Building height

- Less than 25m

Context/Neighbouring buildings

- Mostly single and 2 storey commercial buildings with some 5 level

1.3 BCA Classification

BCA classification(s) of the development are as follows:

BCA Classification	Class 3 Residential/ Hostel 80Rooms
	Class 7a Carpark
	Class 9b Meeting rooms etc
Rise in Storeys	5
Type of Construction	Type A Construction
Effective Height	Under 25m

1.4 Mandatory BCA Energy Efficiency Requirements

Mandatory BCA Energy Efficiency requirements are as follows:

- Part J1 – Building Fabric;
- Part J2 – External Glazing;
- Part J3 – Building Sealing;
- Part J5 – Air Conditioning and Ventilation;
- Part J6 – Lighting and Power;
- Part J7 – Hot Water Supply.

Additional Considerations:

- BASIX (Residential/ Hostel);
- NaTHERS (Residential/ Hostel);
- Certification of building services to Fair Trading requirements.

2. UTILITY ENGINEERING SERVICES

2.1 Utilities Services Review / Analysis

A utilities review has been carried out in consultation with the relevant local authorities to identify the existing utilities at the site.

Dial Before You Dig (DBYD) requests were submitted to investigate the presence of existing utilities such as natural gas, water, stormwater, sewer and telecommunications and power.

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

We have replies from all statutory authorities with services on or adjacent to the site and planning has been allowed to cater for services.

The following assumptions have been made in carrying out this assessment:

- Site area, approximately 1,399.m2;
- 51 apartments/ hostel rooms;
- 34 carspaces; 11 Motor Cycle spaces and 11 Bicycle Spaces
- Peak water consumption for the site is 24 kL/day;
- Population Equivalent (PE) is of approximately 120 people (peak).

2.2 General

The proposed development site does have services encumbrances that will need to be addressed during the construction phase of the project.

2.3 Water

The proposed development will most likely require a 100mm water main connection. There is a 150mm water main on the western side of Fisher Road that can provide a connection point for both Domestic Cold Water and Fire Services to the site.

Connection into the water main will be subject to a formal Section 73 application via Sydney Water. This will be lodged when we have an approved DA for the project.

2.4 Sewer

There is also an active 225mm sewer main within the site that crosses the site and has been planned for in the documentation for the project. The sewer main will be concrete encased through the site to form a maintenance free asset for Sydney Water.

We have had initial design discussions with a Sydney Water Water Services co Ordinator to assist in the planning for the project.

Connection into the sewer main will be subject to a formal Section 73 application via Sydney Water.

This will be lodged when we have an approved DA for the project.

2.5 Flooding

From our preliminary desktop review, this site/area is not subject to flooding.

The proposed residential/hostel floor levels, basement carpark entries and any entries into the basements are designed to be above the water level on neighbouring properties for the 100 year ARI flood event plus 500mm freeboard.

Consequently, it is likely that the proposed development will require on-site detention (OSD) of stormwater. The detailed DA plans adequately make provision for the OSD requirements and have been submitted with previous DA's for the site.

Flooding and OSD considerations shall be incorporated into the detailed DA plans.

2.6 Stormwater

The responsibility for the control of stormwater runoff in the vicinity of the site is with Northern Beaches Council.

Review of service drawings obtained from Council show there are pipe network drains in the vicinity of the site.

All future stormwater works at the site must seek to comply with Council DCP.

The maintenance obligations and costs will need to be integrated into the development of the property.

Stormwater considerations have been reviewed and shall be allowed for on the detailed DA Plans.

2.7 Gas

Based on preliminary desktop reviews there appears to be 75mm gas mains in Francis Street and Fisher Road that have adequate capacity to accommodate the proposed development.

This will be subject to formal application to Jemena during the detailed DA application process.

2.8 Electrical

It is estimated that the electrical loading of the proposed new development will be in the order of:

- 100.0 Amps/Phase.

The detailed maximum demand calculation will be presented to Ausgrid for assessment as part of the initial submission on the project

Based on preliminary desktop reviews of Ausgrid GIS information there appears to be High Voltage (HV) and Low Voltage (LV) feeders traversing along Francis Street Ave.

There appears to be adequate infrastructure in the vicinity of the site to cater for the future development. Ausgrid applications for the supply of electricity to the site will be carried out during the detailed DA application process.

2.9 Telcommunications

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

The development will most likely not be serviced via NBNCo. This will be formally confirmed via formal application during the detailed DA application process. The site will most likely be serviced by Telstra.

3. BUILDING ENGINEERING SERVICES DESIGN METHODOLOGY

3.1 Mechanical Services

3.1.1 Regulations and Authorities

Relevant authorities having jurisdiction over this service are as follows:

- NCC;
- Northern Beaches Council;
- Relevant Australian Standards;
- Fire and Rescue Service NSW (FRNSW);
- BASIX.

3.1.2 Design Methodology

Air Conditioning

Provision of an efficient:

- Air cooled, split type air conditioning system (this will be based on final design).

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

Individual air conditioning systems will be provided for each residential unit and generally for each retail/commercial tenancy. Reverse cycle (heating and cooling) and zoned. Fan coil units will be integrated into bulkheads. Fan coil units will be allocated per respective unit types as required.

Ventilation

Provision of mechanical ventilation where required to meet the requirements of the BCA where natural ventilation is not achievable or desirable, in accordance with the BCA and relevant Australian Standards including but not limited to AS1668.1, AS1668.2 and AS3666.

Car park Exhaust

It is envisaged that the carpark will require carpark ventilation in accordance with AS1668.

Supply air will significantly be achieved naturally via the garage door and to louvres where possible. Where natural ventilation is not sufficient in servicing areas of the basement a mechanical supply air system will be considered.

Exhaust will be provided to the carpark and discharged at low level in lieu of reticulating to the roof. Any exhaust stack will be designed to discharge 3m above any pedestrian trafficable areas and 6m from the boundary and any other supply or exhaust points. The discharge will be controlled and substantially diluted so that there are no adverse effects to the residential apartments above.

Automatic Smoke Exhaust

Not applicable – building is under 25m.

Kitchen Exhaust

Commercial

Externally ducted range hoods will be provided for the majority of the residential apartments. It is envisaged this will be achieved by horizontally ducted exhausts.

General Exhaust

Residential laundries and toilets

Residential laundries and toilets will be mechanically exhausted to meet code requirements.

Garbage etc.

The garbage areas will be mechanically exhausted to the requirements of AS1668.2.

Plant rooms

Plantrooms will generally be exhausted to meet code requirements.

Stair Pressurisation

Not applicable – building is under 25m and basement carpark does not extend beyond 2 levels.

Air Conditioning

Air conditioning will be provided to all apartments by reverse cycle day / night changeover systems which are an effective sustainable system for all owners.

3.1.4 ESD Initiatives

At this stage, the following ESD initiatives are proposed:

- High efficiency (high COP) AC motors and equipment;
- Cross flow ventilation to apartments;
- Insulated ductwork;
- Variable speed drives on all fan motors;
- Individual toilet exhaust fans interlocked to local light switches.

3.2 Fire Services

3.2.1 Regulations and Authorities

Relevant authorities having jurisdiction over this service are as follows:

- NCC;
- Northern Beaches Council;
- Relevant Australian Standards;
- Fire and Rescue Service NSW (FRNSW).

3.2.2 Design Methodology

Sprinklers

Sprinklers to AS2118 will be required to the whole building.

Automatic Fire Detection Systems

Full addressable, automatic fire detection systems will be provided throughout the development in accordance with:

- AS1670;
- AS1668;
- NCC
- Fire Engineered Solution (if applicable).

A Fire Indicator Panel (FIP) will be required in the main building entry and MIMIC panels in all the other building entries.

Building Occupant Warning Systems

EWIS will be provide throughout the entire development to comply with BCA and AS2220.1 and AS1670.

Fire Extinguishers

Fire extinguishers will be provided throughout the building in accordance with the BCA.

Residential lobbies will have extinguishers within 10m of all apartments in lieu of fire hose reels.

Fire Tanks

Not applicable – building is under 25m and existing water supply is adequate.

3.2.3 ESD Initiatives

Reuse water to be used for testing. Any waste test water shall be captured for reused and landscape irrigation.

3.3 Hydraulic Services

3.3.1 General

The hydraulic services documented for the development will be in accordance with the requirements of the relevant authorities.

3.3.2 Regulations and Authorities

Relevant authorities having jurisdiction over this service are as follows:

- NCC;
- Northern Beaches Council;
- Relevant Australian Standards;
- Fire and Rescue Service NSW (FRNSW);
- BASIX Requirements;

3.3.3 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 respective sewer main Sydney Water designate for the site.

The existing Sydney Water sewer main crossing the site will be integrated into the planning of the building as part of the works.

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

3.3.4 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 will gravitate to the Northern Beaches Council controlled drainage system in the adjacent streets via a combined rainwater harvesting and onsite detention (OSD) system.

An onsite stormwater detention (OSD) tank will be required for the proposed development in accordance with Northern Beaches Council Stormwater Drainage requirements.

A rainwater harvesting tank will intercept roof water run-off from the new roof and re-use the water for the purpose of landscape irrigation.

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

Rainwater collected shall be filtered and reused for irrigation and landscape watering on the project.

3.3.5 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 respective and designated Sydney Water main(s).

The cold water service will be reticulated to all fixtures, faucets, and points of connection with a minimum pressure of 180kpa at the most disadvantaged point.

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

Cold water metering for the individual apartments will be allowed for in accordance with latest Sydney Water requirements and the Section 73 Notice of Requirements from Sydney Water for the site.

3.3.6 Gas Service

The gas service regulated supply will be connected to Jemena main(s).

The system will be reticulated to the domestic hot water plant, and kitchen gas appliances etc.

Gas metering (including hot water metering) for the individual apartments will be allowed for in accordance with latest Jemena requirements.

Capacity and associated metering will be available for future connection of the proposed retail tenancies.

The new gas service(s) will be in accordance with the AS 5601 and the requirements of Jemena.

3.3.7 Hot Water Systems

Hot water systems for the development will be designed and provided for as per relevant codes and usage requirements.

3.3.8 Fire Hydrant Service

The system will incorporate a connection to the respective and designated Sydney Water main(s) in the adjacent streets, a hydrant booster valve located adjacent the building entry in Fisher Road and internal fire hydrants located within fire isolated exits.

A pump room incorporating the required pump set, (electric and diesel), will be provided with direct street access. The pumps will be designed to provide the required flow rates and pressures.

The fire hydrant service will be in accordance with the Building Code of Australia requirements and AS2419 - Fire Hydrant Installations.

3.3.9 Fire Hose Reel System

The fire hose reel system will be in accordance with the Building Code of Australia requirements and AS2441 - Fire Hose Reel Installations.

3.3.10 Sanitary Fixtures, Faucets and General Equipment

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

The sanitary fixtures and faucets will be of a reasonable standard throughout to achieve high levels of energy and water efficiency.

The types of fittings and fixtures will be in accordance with BASIX requirements.

3.3.12 ESD Initiatives

At this stage, the following ESD initiatives are proposed:

- Rainwater harvesting for landscape irrigation & laundries
- Low flow fittings and fixtures to meet Basix requirements;
- Additional insulation to hot water pipework;
- Water meters for major water services within the development with effective mechanisms to monitor water consumption.

3.4 Electrical Services

3.4.1 Regulations and Authorities

Relevant authorities having jurisdiction over this service are as follows:

- NCC
- Northern Beaches Council
- Relevant Australian Standards;
- Fire and Rescue NSW;
- AS/NZ 3000 – Australian Wiring Rules;
- Service and Installation Rules of NSW;
- Ausgrid Rules and Regulations;
- Australian and Communications Media Authority (ACMA);
- Australian Communications Industry Forum (ACIF);
- Telstra/Optus;
- NBNCo.

3.4.2 Design Methodology

Substation

Onsite Ausgrid substations will be provided to cater for the anticipated electrical load of the proposed development site if required capacity is not available from existing supplies.

The capacity of substation if required will be in the order 1,000kVA.

The substation will be one central surface chamber substation or kiosk serviced directly off Francis Street

Electricity Supply

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

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

Emergency Power Generation

Not applicable.

Consumer Mains

The consumer mains will be two (2) hour fire rated and reticulate from the respective onsite substations to the respective main switchboard(s).

Main Switch Boards

Main switch boards will be Form 3B and IP42 rated.

It is proposed that there will one (1) main switch board servicing the development.

The electrical main switch room(s) will have two (2) forms of egress and fully comply with Ausgrid and NSW Service Rules requirements.

The main switch board(s) will have a “house” and “tenant” section(s).

Distribution Boards

Distribution boards will be Form 1 construction and IP42 rated.

Distribution boards will be provided as follows:

- “House” areas of the development.

Subcircuit Cabling

Subcircuit cabling will be in accordance with AS3008 and AS3000.

Subcircuit cabling will be sized to cater for:

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

Subcircuit cabling will be XLPE type with the exception where fire rated cabling will be provided for essential/emergency services in accordance with the BCA.

Earthing

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

House and Tenant Metering

“House” distribution boards will be metered at the respective main switch board.

Tenant metering will be carried out floor by floor.

An embedded electrical network for the entire development will be provisioned for. This includes: residential units; retail; and commercial tenancies. The electrical systems will be designed to ensure that this remains an option for the project.

General Lighting

General internal lighting will be provided in accordance with AS1680.

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

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.

Telecommunications

The new development will have a one central building distributor (MDF's). Conduits will be provided to the property boundary for future lead in reticulation by the Telstra (or any other Telco's that will have a presence in the building). NBNCo will also be consulted with respect to their requirements.

The residential/ hostel level(s) will have floor distributors (IDF's) in common areas with local distributors (FDP's) in each of the rooms

The backbone cabling and pathways to the residential levels will be in accordance with NBN requirements.

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

MATV and PAYTV

A dedicated and centralised "free to air" digital capable MATV system will be provided to the buildings.

There will be an RG11 backbone to splitters located on each level within the telecommunications floor distributors (IDF's).

The residential portion of the development will be fully cabled up to the apartments.

The MATV/PAYTV system will also consist of:

- space on the roof for a satellite antenna/dish;
- space within the centralised telecommunications building distributor (MDF) for PAYTV equipment.

Security

CCTV

The CCTV system will consist of the following:

- Head end located in the building managers office;
- 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 instructed by the Northern Beaches Council in their DA conditions of consent;
- 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 building managers office;
- IP based, individually addressable, card readers located at the following points:
 - the vehicle and pedestrian entries to the building;
 - main foyer entries;
 - Lifts;
 - Fire Stairs for re-entry on various levels and to achieve BCA compliance.
- Data backbone cabling to accommodate the CCTV camera 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;
 - main residential foyer entries;
 - Loading dock turntable.

Lightning and Surge Protection

Not applicable.

Power Factor Correction

Not applicable.

Public Domain Lighting

Public Domain Lighting will be provided in accordance with:

- Northern Beaches Council; and
- AS 1158.

3.4.3 ESD Initiatives

At this stage, the following ESD initiatives are proposed:

- Automated lighting control;
- Energy efficient lighting and lighting systems;
- Lighting levels and lighting power densities to all other areas in accordance with BCA – Section J requirements;
- Zoned (less than 100m²) and master switching;
- Digital power metering of all submains;
- Reduction of “spill” lighting.

3.5 Vertical Transportation/Lifts

3.5.1 General

Vertical transportation services will be provided to the following areas of the development:

- Accessible Roof
- Residential;/ Hostel levels
- Ground Floor
- Carpark.

3.5.3 Regulations and Authorities

Relevant authorities having jurisdiction over this service are as follows:

- Building Code of Australia;
- Northern Beaches Council;
- Relevant Australian Standards;
- Work Cover;
- DDA Code;
- Fire and Rescue NSW;
- BASIX.

3.5.4 Design Methodology

Lift Performance

Lift performance to the respective areas will be as follows:

AREA	% HANDLING CAPACITY	WAITING INTERVAL TIME
Residential	5 – 7%	40 – 90 seconds

Number of Lifts

The following numbers of lifts will be provided to the respective areas:

AREA	NUMBER OF LIFTS	CAPACITY	COMMENTS
Residential / Hostel	2	1 x 17 person (disabled)	This lift will need stretcher facilities

*To be confirmed during DA design development phase of the project.

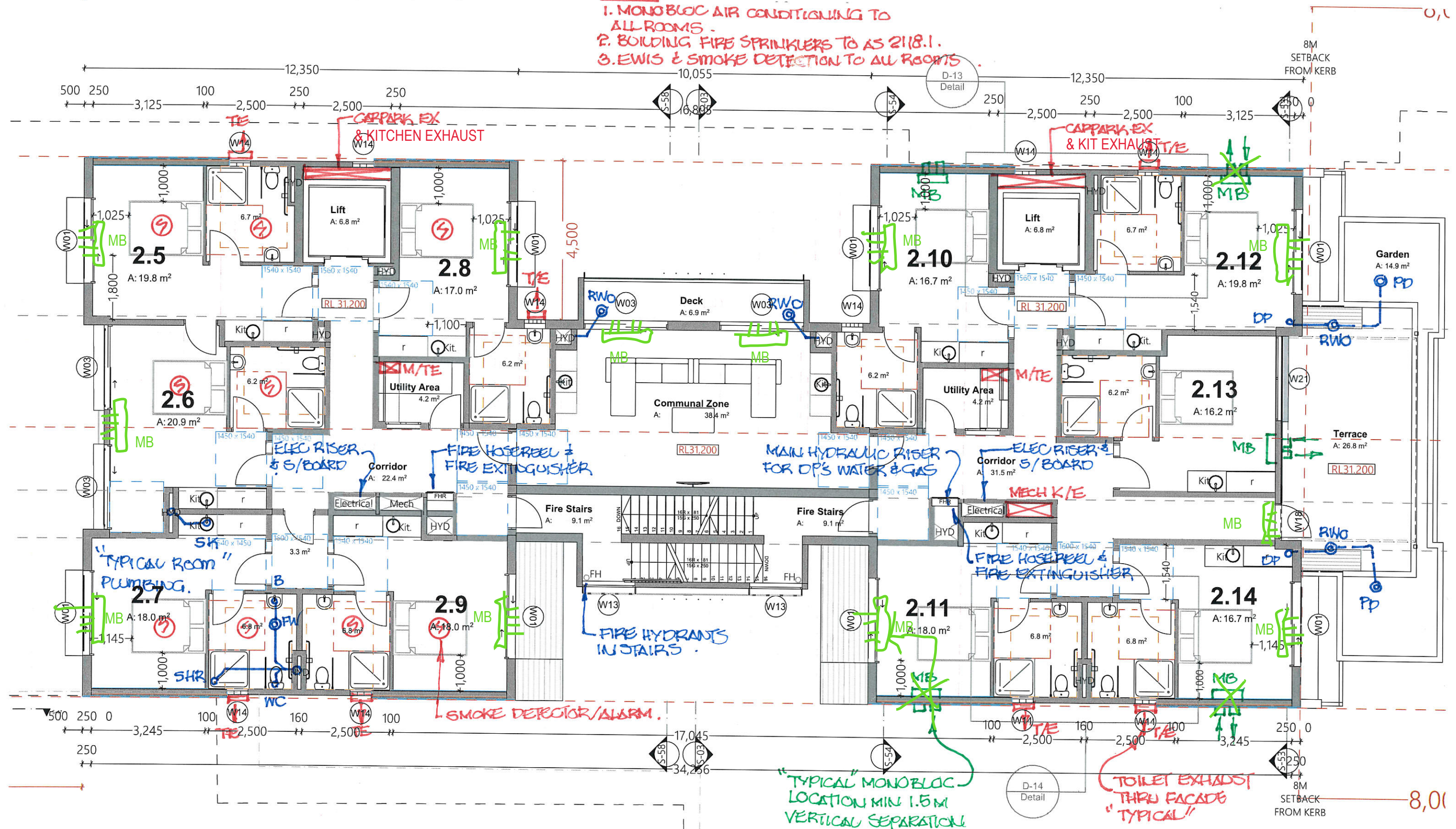
3.5.5 ESD Initiatives

At this stage, the following ESD initiatives are proposed:

- High efficiency lift motors;

Energy efficient lighting in lift cars with after hours motion

- NOTES.**
1. MONOBLOC AIR CONDITIONING TO ALL ROOMS.
 2. BUILDING FIRE SPRINKLERS TO AS 218.1.
 3. EWIS & SMOKE DETECTION TO ALL ROOMS.



TYPICAL BUILDING SERVICES LAYOUT. **PROPOSED FISHER ROAD LEVEL 2 PLAN PLAN**

@ A3

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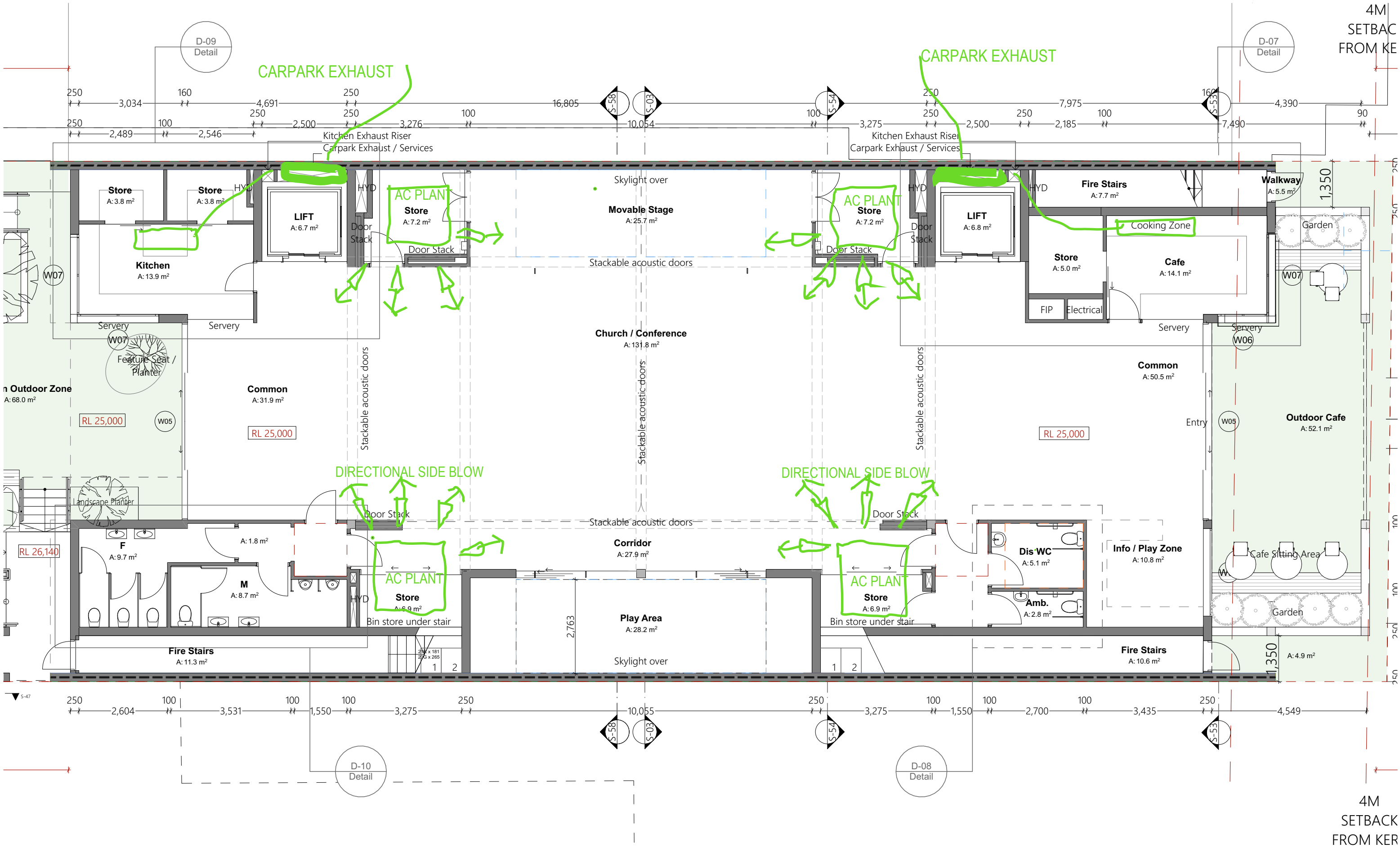
ISSUE	AMENDMENT DETAILS	DATE
CD	CONCEPT DESIGN	28.11.18
DA	PRE DEVELOPMENT APPLICATION	15.04.20
DA	DEVELOPMENT APPLICATION	18.08.20
DA	DEVELOPMENT APPLICATION	16.12.20
DA	DEVELOPMENT APPLICATION	14.05.22
DA	NEW DEVELOPMENT APPLICATION	JULY.22

GENERAL NOTES
 BUILDER TO CHECK AND VERIFY ALL
 DIMENSIONS, LEVELS AND ANGLES ON SITE
 PRIOR TO COMMENCEMENT OF WORK AND/OR
 MANUFACTURE OF COMPONENTS.
 ALL WORKS TO CONFORM WITH ALL BCA AND
 OTHER RELEVANT AUTHORITY REQUIREMENTS.

SCALE	As shown
DRAWN	KVA
DATE	JUNE 2022
CHECKED	Philip.G
STAGE	DA

CLIENT / ADDRESS
 28 FISHER RD + 9 FRANCIS ST
 DEE WHY, NSW, 2099,
 AUSTRALIA
 PROJECT
 MIXED-USE COMMUNITY CENTRE

DRAWING TITLE
 PROPOSED
 FISHER ROAD LEVEL 2 PLAN
 BUILDING SERVICES
 DRAWING NO. AMENDMENT
 4089/5.14 DA



PROPOSED FISHER ROAD GROUND LEVEL PLAN

1:100 @ A3



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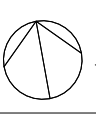
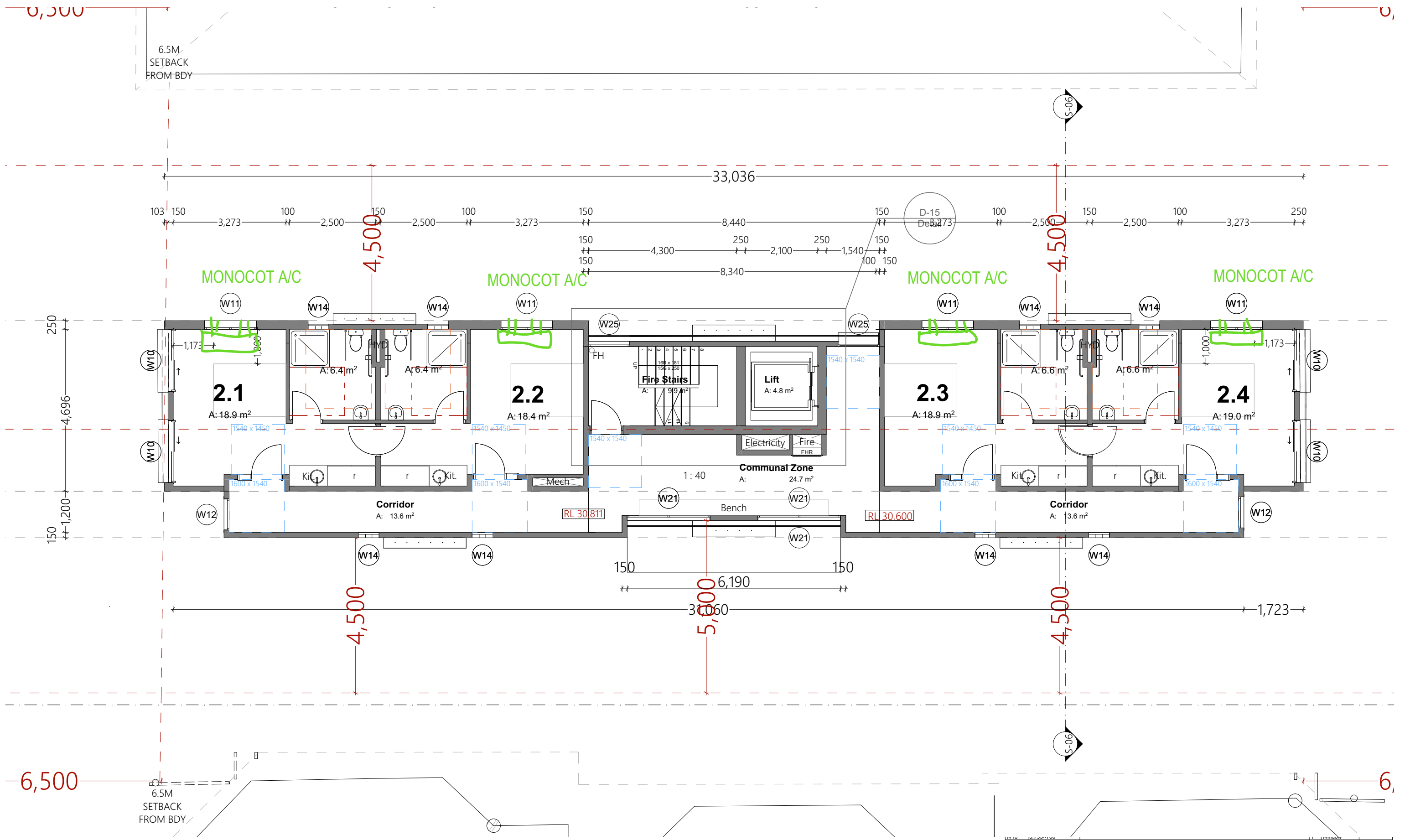
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FISHER ROAD GROUND LEVEL
DRAWING NO. 4089/5.11
AMENDMENT
DA



PROPOSED FRANCIS STREET LEVEL 2 PLAN PLAN

1:100 @ A3



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PROJECT
MIXED-USE COMMUNITY CENTRE

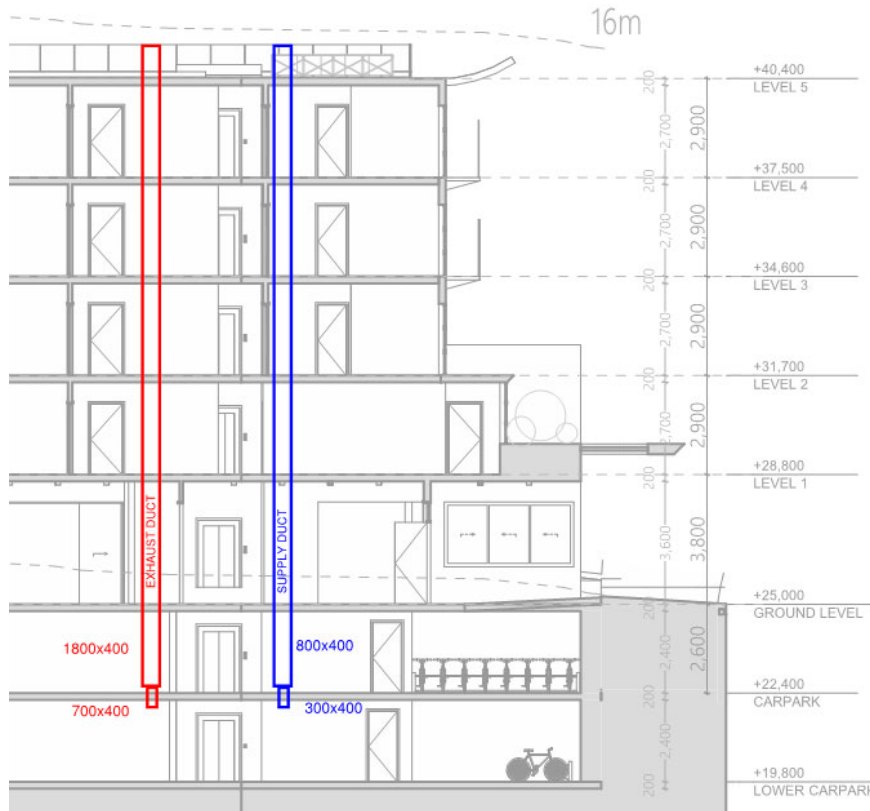
DRAWING TITLE
**PROPOSED
FRANCIS STREET LEVEL 2 PLAN**
DRAWING NO. 4089/5.17
AMENDMENT DA

Philip George

From: Karan Dhir <Karan@mesh-group.com>
Sent: Thursday, 23 July 2020 2:07 PM
To: Philip George; James Gorringer
Cc: arch@georgegroup.com.au
Subject: Re: 28 Fisher Road Dee Why
Attachments: Mechanical Ventilation - add in acoustics report.docx

Hi Phil,

1. The requirements for mechanical works in relation to acoustic performance requirements are attached for insertion in the acoustic report.
2. If there are any gas/water meter cupboards on any levels, there shall be a provision of 150x200 riser for the cupboards, discharging to roof.
3. The supply and exhaust risers for car park shall be as per below image, the location is not final and there is no requirement for height above roof point, it is generally 1.5 m assembly. The supply and exhaust needs to be minimum 6 m away from each other.
4. The requirement for supply air for the auditorium is approx. 1200x400 opening which can be in the light well on the southern side.
5. Toilet/kitchen exhaust for the boarding units shall be on the sides of the building.
6. AC outdoor units if any shall be located in the north and south side lightwells or on roof (whichever is nearest).



I hope this helps for mechanical systems.

Regards,