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HYDRAULIC & FIRE PROTECTION CONSULTING ENGINEERS
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MIRVAC DESIGN

L26, 60 MARGRET STREET,
SYDNEY NSW 2000

DESIGN INTENT & CERTIFICATION OF THE FIRE SERVICES FOR 7 RAILWAY STREET, CHATSWOOD

1.1 General

The proposed building will consist of a 43 storey tower which will be constructed on top of a 7 level basement carpark and will feature a mix of residential apartments and commercial and retail uses. The tower will have an effective height greater than 25m and as such require the following systems will form the extent of the Fire Services discipline for the building;

- Sprinkler protection throughout to BCA E1.5
- Emergency Warning Intercom and Evacuation system to BCA E4.9
- Fire Alarm Control and Indication system to BCA E2.2
- Fire Extinguishers to BCA Table E1.6

1.2 Existing Site Services

- 200∅ uPVC water main along length of Railway Street. This service shall provide the primary sprinkler water supplies for the proposed development.
- 150∅ Cast Iron Cement Lined water main along length of Help Street

2.1 Extent of proposed Fire Services

The fire services provided for the proposed development shall be in accordance with the requirements of the Building Code of Australia (BCA) and the requirements of all the relevant authorities, unless varied by an approved alternative engineered solution.

The services included in the fire services scope of work will include the following: -

- Sprinkler protection to AS2118.1-1999.
- Internal and external wall wetting sprinklers where applicable to satisfy BCA.
- Portable Fire extinguishers to AS2444-2001
- Emergency Warning and Intercommunication System to AS1670.4-2004.
- Fire Alarm Control and Indication system to AS 1670.1-2004 and AS1668.1-1998

2.2 Fire Sprinkler Protection

The building will be provided with sprinkler protection to all areas. The system will comprise of a grade 1 water supply split into 3 pressure zones consisting of Low, Mid and High stage. Sprinkler control valves will be located in sprinkler valve rooms at basement 1 level and Level 25 Plantroom. The sprinkler main pipes will rise from the control valves to service the tower. Each valve set will control no more than 9000m^2.

In commercial tenant areas only, each floor will be provided with individual monitored isolation valves to allow the isolation of a floor with minimum interruption of supply to the other residential levels connected to the same control valve assemblies.

All commercial office areas and strata offices will be constructed to open floor plan with suspended ceilings. Sprinkler protection will be provided to suit an open floor plan and will be provided with sufficient capacity to enable alterations and additions to suit most future tenancy fittouts.

Retail areas will be constructed to shell and core with no ceilings installed. All sprinklers in these areas will be installed on exposed pipework with additional feeds and capacity provided for future fittout.

Sprinkler heads to be provided throughout the development will be fast response type as follows;

General Areas

15mm 68deg.C conventional pattern exposed type sprinkler heads to exposed areas without ceilings ie; car park levels, lift pits, top of lift shafts, plant rooms and the like.

10mm 68deg.C conventional pattern ceiling void type sprinkler heads to ceiling void areas where required by the standards.

15mm 68deg.C conventional pattern fully-recessed below ceiling type sprinkler heads with cover plate to Ground Floor swimming pool, corridor areas and all lift lobbies on each floor. Cover plate to match ceiling colour to the architect's approval. Anticipated finish at this stage is white in colour.

15mm 68deg.C conventional pattern semi-recessed below ceiling type sprinkler heads to all other general areas with ceilings. Escutcheon plate and sprinkler head to match ceiling colour to the architect's approval. Anticipated finish at this stage is white in colour.

Apartments

10mm 68deg.C conventional pattern ceiling void type sprinkler heads to ceiling void areas, where applicable.

15mm 68deg.C fully-recessed (fully concealed) below ceiling type sprinkler heads with cover plate to bathrooms and areas with bulkheads. Cover plate to match ceiling colour to the architect's approval. Anticipated finish at this stage is white in colour.

10mm 68deg.C conventional pattern semi-recessed below ceiling type sprinkler heads with escutcheon plate to all other areas within the apartments. Escutcheon plate and sprinkler head to match ceiling colour to the architect's approval. Anticipated finish at this stage is white in colour.

Deletion of sprinkler protection to the balconies will be considered and would form part of an approved engineered solution.

2.3 Hazard Categories

Occupancy	Class	Hazard
Car Park	7	OH2
Commercial Office	5	LH/OH1
Retail	6	OH3
Residential	2	LH

2.4 General requirements

The sprinkler valve enclosure shall be a secure room or enclosure with direct access to a road or open space.

The water supply shall be a Grade 1, as per the BCA and comprising as follows;

- Towns main connection with multistage booster pump. (Primary Supply)
- 25KL roof top sprinkler tank boosted by a single stage diesel pump (Secondary Supply)

Note; the use of a BCA Grade 1 supply consisting of a 25KL tank will form part of a proposed alternative solution

The sprinklers system, in conjunction with the fire alarm system, will initiate the smoke hazard management system.

The main sprinkler isolation valves will be monitored.

2.5 Internal and External Wall Wetting Sprinklers

Level 1

Internal wall wetting sprinkler protection will be provided to openings on the ground level within 6m of the fire egress paths as necessary.

2.6 Portable Fire Extinguishers

The building will be provided with portable fire extinguishers in accordance with Building Code of Australia table E1.6 and AS2444. This will include;

- CO_2 extinguishers in lift motor rooms
- CO_2 or DCP extinguishers adjacent all electrical services switchboards sustaining emergency equipment in fire mode.
- Dry chemical Powder extinguishers in all areas where flammable liquids are stored in excess of 50L, excluding that held within the tanks of motor vehicles.

2.7 Emergency Warning and Intercommunication Systems

The building will be provided with an Emergency Warning and Intercommunication System in accordance with AS1670.4 and AS2220.2.

The Master Emergency Control Panel will be located in the fire control room. The Master Emergency Control Panel will receive zoned inputs from the Fire Indicator Panel, via a high level interface, to allow automatic cascading evacuation.

Each floor will be zoned as a separate evacuation zone with recessed ceiling speakers providing voice, alert and evacuation tones.

A Wardens Intercommunication Point (WIP) will be provided in the Fire Hose Reel Cabinet on each floor.

The Emergency Warning and Intercommunication System will also serve as the Building Occupant Warning System function required by the sprinkler and detection systems.

2.8 Smoke Detection

The building will be provided with automatic smoke detection complying with AS 1670.1 and AS1668. The system will be monitored by control and indicating equipment comprising of a Fire Indicator Panel located in the fire control room at ground level.

The system will be an analogue or digital addressable system and will use fire signatures or multiple detection criteria to eliminate false alarms.

The Fire Indicator Panel will incorporate a Fire Fan Control Panel (FFCP) with AS1668 controls to provide manual control of fans and essential dampers. The FFCP will communicate via the Fire Indicator Panel with addressable relay modules located adjacent to the mechanical services switchboards.

2.9 Residential Detection

The residential apartments will be provided with mains powered smoke alarms to AS 3786, as per BCA and as further specified under the electrical scope of works.

2.10 Fire Control Rooms

A fire control room will be provided as the building is over 50m and will comply with BCA Specification E1.8. Specification E1.8 as follows;

- Access to public road or open space will not involve an aggregate change in level greater then 300mm.
- Two paths of travel
- Recommend at least 60/60/60 (120/120/120 for > 50m eff. height)
- Minimum floor area of $10m^2$
- Minimum length of internal side not less then 2.5m.
- Ventilation by natural or dedicated pressurisation system.
- Sign on door.
- Emergency lighting.
- Ambient sound level < 65dBA.

All of the above fire services described will be provided to satisfy the requirements of the BCA for this building. In addition, we can confirm that the Sydney Water advice received shows that the street water main has the capacity to supply sufficient water to the sprinkler systems primary supply fully in accordance with the BAC and Australian Standards requirements.

Yours Faithfully

ROBERT BOSCH
Director
DP CONSULTING GROUP Pty Ltd