

**333 COLLINS STREET  
MELBOURNE  
TECHNICAL MANUAL**

**PREPARED BY**

**DATE:** January 2023

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## **APPENDIX A**

## **1. GENERAL OVERVIEW**

This document has been prepared for 333 Choice Properties for the purpose of providing the Building Owner and their prospective tenants with a services manual. Detailed in this manual are technical descriptions for the: Mechanical, Electrical, Security and Access Controls, Communications, Fire Protection, Vertical Transportation and Building Automation Systems Services with a brief description of the installed services and the design criteria associated with these services.

The technical details are a general summary only and complete details should be obtained from the Building Owner's representative and as-installed manuals of the various systems.

### **1.1 PROPERTY DESCRIPTION**

333 Collins Street, Melbourne, completed in December 1990, comprises a 29 storey office building incorporating a 19<sup>th</sup> century ground floor banking chamber in the foyer.

Typical floors are four metres high. A four level underground carpark has space for tenant cars.

The building is clad in exfoliated granite and topped by a copper clad dome. It incorporates one of the largest 19<sup>th</sup> century Gothic domed chambers.

There is 56,965m<sup>2</sup> of nett lettable area with individual floors ranging from 500m<sup>2</sup> on level 27 to 3131m<sup>2</sup> on level 4.

## 2. MECHANICAL SERVICES

### 2.1 GENERAL

The mechanical services systems in this building comprise:

- Central thermal plant of chillers, boilers, associated pumps and part load ice storage system.
- Central domestic hot water calorifier system.
- Central air handling units located in various plantrooms to provide conditioned air to the tenancy areas.
- Building Automation System DDC controls.
- Supplementary condenser cooling water loop.

### 2.2 DESIGN CRITERIA

The following represents the original design criteria upon which the base building air conditioning system has been designed.

Item	Design Criteria
External ambient conditions (for air conditioning plant full load performance)	Summer 36°C dry bulb maximum 21°C wet bulb maximum Winter 4°C dry bulb minimum
Internal conditions (for conditioning plant full load performance)	Nominally set at 22.6°C with temperatures being maintained between 21°C and 24°C
Controls tolerance for air conditioning system	±1.5°C dry bulb at point of control
Occupancy	1 person per 10m <sup>2</sup>
Outside Air	7.5 L/s person
Tenant Lighting Allowance	15W/m <sup>2</sup>
Tenant Equipment Allowance	35W/m <sup>2</sup>
Hours of Operation	8.00am to 6.00pm.
Perimeter zones	Approx. 1 per 40m <sup>2</sup>
Internal zones	Approx. 1 per 100m <sup>2</sup>
Tenant CCW Allowance	25 W/m <sup>2</sup> heat rejection
Tenant CCW Supply Temperature	24-28 degrees
Typical Tenant Toilet Exhaust Allowance	25 L/s per cubicle 50 L/s per common area

Item	Design Criteria
Nominal Tenant Tea Room/Kitchen Exhaust Allowance	100 L/s per floor (Levels 3 – 10) 50 L/s per floor (Levels 11 – 26)
Nominal Minimum Supply Air Quantity	5.5 L/s.m <sup>2</sup>

The building has been constructed for high thermal efficiency generally utilising low 'E' double glazed windows with a shading coefficient of 0.26 and 'U' value of 1.8. (The north and south facades up to level 6 are single glazed windows).

### 2.3 CENTRAL PLANT DESCRIPTION

- A central chilled water plant serves each air handling plant with chilled water generally at 6.5°C. The chilled water plant consists of multiple chillers and an ice storage system (part load only). Chillers and pumps are located in level B1, cooling towers are located in level 5 and ice storage tanks are located in level B4.  
A central heating water plant serves each air handling plant with heating water generally at 82°C (VAV air handling plants use this for warm-up only). The plant consists of duplicate fire tube boilers and pumps located on level 7.
- A domestic hot water calorifier is served by independent heating water plant at level 7 consisting of one fire tube boiler and pump.
- Chilled water plant incorporates two (2) major centrifugal chillers for peak loads and one (1) multi-step reciprocating chiller set for low load periods of operation. A fourth chiller which builds ice for the ice thermal storage system also includes a second evaporator so that it may operate as a conventional chiller for standby capacity. A small fifth chiller is located in the marketing centre building at the Collins Street end to serve local fan coils in this area.
- Multiple chillers, pumps, cooling tower and boilers provide enhanced reliability during any breakdown or maintenance activity.

### 2.4 TENANCY FLOOR AIR CONDITIONING SYSTEM

The air conditioning for the tenanted areas comprises fan assisted variable air volume (VAV) system served by multiple air handling plants.

Levels G – 4 are served by sixteen (16) similar independent local VAV air handling plants.

Levels 5 - 19 are served by four (4) large independent VAV air handling plants located on level 8.

Levels 20 - 28 are served by two (2) large independent VAV air handling plants located on level 29.

Ground floor lobby areas are served by constant volume air handling plants located on the ground floor.

The sundry tenanted spaces at the front of the building for levels 2-6 are served by a separate two pipe fan coil system with a chilled water plant located at level 7. Heating is provided by electric heating elements within the units.

The air distribution system has been designed so as not to exceed NR38 in office areas. Generally lower levels have been achieved in practice.

### 2.4.1 Air Conditioning Features

- Temperatures in air conditioned spaces are set nominally at 22.6°C which for summer and winter peak loads should maintain temperatures between the range 24°C and 21°C respectively. The setpoint assumes a summer outdoor design maximum temperature of 36°C and winter minimum temperature of 4°C. During extreme summer and winter ambient conditions, which are outside the above design limits, the indoor temperature range may be expected to vary.
- No specific control over the relative humidity other than the dehumidification effect of the cooling coil during summer cooling. The humidity could vary between 40% to 60%.
- After hours operation of air conditioning may be initiated by tenants for the whole floor using TOS (Tenant Override System) – Web access via secure login and password for after-hours air conditioning.
- The air conditioning includes extensive zoning (approximately 1 perimeter zone per 40m<sup>2</sup> and 1 internal zone per 100m<sup>2</sup>) each with its own temperature control. Additional zones may be added for specialised tenant layout requirements. There are approximately 800 zones in total.
- Air distribution to perimeter zones is via continuous linear diffusers fitted with supply air plenums above the ceiling. Supply air plenums may be repositioned along the length of the linear diffuser to suit tenant layouts and additional plenums may be added if required. The air distribution is designed for horizontal blow utilising the coanda effect to minimise draught.
- Air distribution to internal zones is from light air plenums delivering supply air via slots at the sides of lighting fittings.
- Return air from the occupied areas to the ceiling space is via slots at the side of lighting fittings. Return air from the ceiling space plenum returns back to plant rooms via central shaft or directly back to plant rooms.
- Outside air is introduced into the building via the air handling plants. The VAV air handling plants include modulating control of outside air to maintain minimum outside air levels regardless of supply air quantity. Outside air quantities have been calculated to achieve approximately 7.5 l/s per occupant based on the occupancy allowance of 1 person/10m<sup>2</sup> nett.

## 2.5 SUNDRY VENTILATION SYSTEMS

Mechanical ventilation systems have been installed in the building in the following area and include:

- Car park exhaust ventilation system.
- Emergency Generator room ventilation and cooling system. Substation and electrical switchroom ventilation systems.
- Lift motor room air conditioning systems for major lifts and ventilation systems for minor lifts.
- MDF room air conditioning system.
- Water treatment systems to all water systems.
- Toilet exhaust systems. Toilet exhaust systems also include branches on each floor for connection of additional tenant toilet facilities.
- Tearoom exhaust systems.
- Kitchen exhaust duct risers for future use by tenants.

## 2.6 SMOKE MANAGEMENT SYSTEM

The air handling plants act as a smoke control system in conjunction with stairwell pressurisation and smoke lobbies as follows:

Ground level	– Air handling plants shutdown
Levels 1-4	– Local air handling plants combined with smoke spill air fans operate as purge system in accordance with AS 1668-Part 1 1979
Levels 5-22	– Major air handling plants operate as purge system in accordance with AS 1668-Part 1 1979 with the return air fans acting as smoke spill fans and discharging at level 10.
Levels 23-28	– Major air handling plant operates as a sandwich pressurisation system with the return air fan acting as a smoke spill fan in accordance with a referee's modification. (This was an amendment to the original design).

Tenant safety is enhanced by the following features:

- Smoke spill systems expel smoke during fire conditions.
- Stairwells are equipped with automatic pressurisation systems to minimise smoke entry and allow safe egress from the building during fire conditions.

## 2.7 SUPPLEMENTARY AIR CONDITIONING SYSTEM

A condenser water loop consisting of two cooling towers and associated pumps (located on level 29) is provided to serve additional tenant installed air conditioning equipment for special areas with take offs on every floor. The system runs on a 24 hour a day basis.

Refer to guidelines herein for connection to this system.



## 2.8 ENERGY MANAGEMENT

The buildings operating costs are kept to a minimum by use of high efficiency equipment and control strategies comprising:

- Ice thermal storage system for chilled water -cooling at off-peak electricity tariffs.
- Outside air economy systems fitted to main air handling plants for free cooling of air when ambient temperatures permit.
- Fan assisted Variable Air Volume (VAV) system utilising 'heat of light', for zone part cooling and heating.
- VAV air handling plants (using speed control for the six (6) main supply air fans).
- Low pressure fan systems.
- Full Building Automation System (BAS).

## 2.9 MAJOR EQUIPMENT DETAILS

Item	Manufacturer	Capacity	
			BTU Conversion
(i) Chillers (5 off)			
– 1 centrifugal	Luke R134a	2,250 kW	639.78 tons
– 1 centrifugal	Luke R134a	2,250 kW	639.78 tons
– 1 reciprocating	Luke R22	500 kW	142.17 tons
– 1 screw (ice system)	Carrier R134a	730 kW day 848 kW	207.57 tons 241.12 tons
(ii) Ice Storage Tanks (2 off)	BAC	10,000 kW total	
(iii) Ice Storage Heat Exchanger (1 off)	BAC	1,500 kW	
(iv) Heating Boilers (2 off)	Hunt (series TN-AR)	930 kW each	
(v) Domestic Hot Water Boiler (1 off)	Hunt (series TN-AR)	550 kW	
(vi) Level 29 Air Handling Plants			
AHU1			
S/A Fan	Pitstock	39,100 l/s	
R/A Fan (Variable Pitch)	GEC Woods	34,100 l/s	
Cooling Coil	Muller	718 kW	
Heating Coil	Muller	194 kW	
AHU2			
S/A Fan	Pitstock	34,200 l/s	
R/A Fan (Variable Pitch)	GEC Woods	34,200 l/s	
Cooling Coil	Muller	628 kW	
Heating Coil	Muller	165 kW	
Air Filters	Email	Multipeak 99.3% at test dust 2	

Item	Manufacturer	Capacity
(vii) Level 9 Air Handling Plants		
AHU3		
S/A Fan	Pitstock	50,000 l/s
R/A Fan (Variable Pitch)	GEC Woods	43,300 l/s
Cooling Coil	Muller	918 kW
Heating Coil	Muller	242 kW
AHU4		
S/A Fan	Pitstock	49,700 l/s
R/A Fan (Variable Pitch)	GEC Woods	43,300 l/s
Cooling Coil	Muller	912 kW
Heating Coil	Muller	243 kW
AHU5		
S/A Fan	Pitstock	49,700 l/s
R/A Fan (Variable Pitch)	GEC Woods	43,300 l/s
Cooling Coil	Muller	912 kW
Heating Coil	Muller	243 kW
AHU6		
S/A Fan	Pitstock	45,600 l/s
R/A Fan (Variable Pitch)	GEC Woods	43,300 l/s
Cooling Coil	Muller	837 kW
Heating Coil	Muller	223 kW
Air Filters	Email	Multipeak 99.3% at test dust 2
(viii) Level 1-4 Air Handling Plants		
AHU7	Muller	5,200 l/s
Cooling Coil	Muller	43,300 l/s
Heating Coil	Muller	25 kW
AHU8	Muller	6,900 l/s
Cooling Coil	Muller	127 kW
Heating Coil	Muller	34 kW
AHU9	Muller	4,700 l/s
Cooling Coil	Muller	90 kW
Heating Coil	Muller	23 kW
AHU10	Muller	5,200 l/s
Cooling Coil	Muller	95 kW
Heating Coil	Muller	25 kW
AHU11	Muller	6,400 l/s
Cooling Coil	Muller	117 kW
Heating Coil	Muller	31 kW
AHU12	Muller	4,600 l/s
Cooling Coil	Muller	86 kW
Heating Coil	Muller	22 kW

Item	Manufacturer	Capacity
AHU13	Muller	5,000 l/s
Cooling Coil	Muller	92 kW
Heating Coil	Muller	24 kW
AHU14	Muller	6,000 l/s
Cooling Coil	Muller	110 kW
Heating Coil	Muller	29 kW
AHU15	Muller	4,400 l/s
Cooling Coil	Muller	87 kW
Heating Coil	Muller	21 kW
AHU16	Muller	4,500 l/s
Cooling Coil	Muller	83 kW
Heating Coil	Muller	22 kW
AHU17	Muller	5,600 l/s
Cooling Coil	Muller	103 kW
Heating Coil	Muller	27 kW
AHU18	Muller	3,500 l/s
Cooling Coil	Muller	64 kW
Heating Coil	Muller	17 kW
Air Filters	Email	V-panel 95% at Test Dust 2
(ix) Level 1-4 Smoke Spill Fans (3 off)	GEC Woods	
(x) Ground floor Air Handling Plants		
AHU19 (Ground Floor Tenants)	Muller	6,400 l/s
Cooling Coil	Muller	129 kW
Heating Coil	Muller	31 kW
AHU20	Muller	3,600 l/s
Cooling Coil	Muller	77 kW
Heating Coil	Muller	52 kW
AHU21 (Lobby)	Muller	2,500 l/s
Cooling Coil	Muller	60 kW
Heating Coil	Muller	55 kW
AHU22 (Lobby)	Muller	1,400 l/s
Cooling Coil	Muller	35 kW
Heating Coil	Muller	30 kW
Air Filters	Email	V-panel 95% at Test Dust 2
(xi) Main Cooling Towers (2 off)	BAC (VXT Series)	To match chillers
(xii) Tenant Cooling Towers	BAC (A3000 Series) BAC (A3000 Series) BAC (Ultralite 100 Series)	1,400 kW 1,400 kW (Standby) 460 kW
(xiii) Pumps	Ajax	-
(xiv) Attenuators	NAP Silentflo	-

## **2.10 GUIDELINES FOR CONDENSER WATER**

All alterations to the tenant's supplementary condenser water system must be approved by the Building Owner. Further, the following guidelines are required to be adhered to:

1. Exact usage of condenser water to be advised to the Building Owner before commencement of any works.
2. Allowance for additional condenser water over and above current allowance to be confirmed/approved by the Building Owner before commencement of any works.
3. All new packaged air conditioning units shall be fitted with water balancing valves. In addition the unit shall be complete with a bypass valve if the unit is fitted with a solenoid valve.

### **3. ELECTRICAL SERVICES**

#### **3.1 DESIGN DETAILS**

##### **3.1.1 Substations**

The building has a two (2) room substation in basement B1 with underground high voltage feeder cables from the Citipower network. The substation provides for an ultimate capacity of 12 MVA which far exceeds present or future expectations for the building. Fully tenanted, a maximum demand of 5-6 MVA is more likely. The Electricity Retailer is AGL.

##### **3.1.2 Mains and Standby Power Supplies**

There are four (4) main switchboards in the main switch room, adjacent the substation in basement B1. MSBs 1 & 2 are fed from substation area No.1 and supply the main mechanical plant, lifts, emergency and auxiliary services. MSBs 3 & 4 are fed from the second substation area and provide general light and power to public and tenancy areas. This design approach provides isolation between main plant and general light and power supplies to minimise possible mains born interference to tenants' power.

Two (2) 1,500 kVA standby generators are installed to provide back-up during mains black-outs or at other times such as during industrial disputes. 'Generator operation is commanded by the building automation system (BAS) which manages the standby power loadings to suit the mains failure condition applicable. The combined generator plant capacity of 3,000 kVA will therefore support at least 50% of the total load expected for the building. Based on this, a maximum standby power allowance of 30 VA/m<sup>2</sup> is requested in the design of 'essential circuits' within tenancies. Significant load shedding would only be required during failure of all normal building supplies.

The generator control system and switchboard, located in Basement B 1, can switch power to either or both main switchboards.

The generator room has capacity for another future set if required.

The BAS controls the main switchboard air circuit breakers (i.e. main building loads) in addition to local distribution board contactors and main building lighting loads. This allows various combination of loads to be connected either automatically or commanded manually depending on supply availability.

A 15 kW uninterruptible power supply (UPS) is provided for critical building systems such as the security system and building automation system (BAS).

##### **3.1.3 Tenancy Power Supplies**

Separate risers supply unmetered power to tenancies on floors G-2, 3-5, 6-9 (low rise), 10-19 (mid-rise) and 20-28 (high rise) respectively. Risers are designed and power is provided to each floor Electrical Services Room to cater for tenant loads of up to 60 VA/m<sup>2</sup> (42 VA/m<sup>2</sup> Power, 18 VA/m<sup>2</sup> Lighting) of nett lettable area. Separate risers supply public area distribution boards on each floor.

Contactor panels, controlled by the BAS are provided with tenant and public area distribution boards for load shedding in conjunction with the operation of the standby generator.

Metering accommodation for tenancy light and power circuiting is arranged for multiple tenancies on each floor. The number varies according to floor area from up to 9 on the lower floors, 6 in the mid-rise floors and down to 2 on Levels 27 and 28. Tenancy load centres are arranged to match these multiple tenant groups.

Lighting and power sub-circuits in tenant areas were originally designed with at least 20% spare capacity for additional fixtures and outlets.

##### **3.1.4 Building Design Brief for Existing and New Tenants**

Original design on power failure to the building – total tenants' area lighting switch to 50% lighting, allowing lighting over total tenants area controlled by building BAS system.

Power outlets on power failure switched to 50% essential power (generator)

Power supply to tenants load sheds to 50% on power failure

Alterations to tenant switchboards must have 50% essential supply and 50% non-essential supply.

All controls to the switchboard by BAS system to be 24volt pulse relays.

The above may assist design engineers and can be altered with the approval of the building owner. This is required to the integrity of the buildings backup generator.

### **3.1.5 Lighting**

Luminaries in open office areas are recessed 500mm x 500mm ultra low brightness type to provide an average maintained luminance of 450 lux. The fittings are a 'light air' type designed to accept an air boot for air conditioning.

Base building wiring looms in office areas are fitted with an additional active wire to allow local switching to be readily provided for fit-outs.

### **3.1.6 Emergency and Exit Lighting**

Emergency and exit lighting is provided throughout the building.

Zone works is a computerised testing and diagnostic maintenance system for all the emergency and exit lights from the ground level up to level 29. This is managed by the building operations manager with backbone to service public areas and tenancies.

A central battery in the basement operates the emergency lighting in the basement car park areas, car park stairs and main tower stairs. In other areas, office floors, etc., single point fittings are installed with local battery packs.

### **3.1.7 Core Area Distribution**

On office floors (1-26) three (3) fire-rated distribution rooms are provided in the core area for respective Electrical, Communications and Telecom equipment. (Floors 27 and 28 have cupboards for these services due to the relatively small areas of these levels).

An electrical riser shaft located adjacent to the electrical services room on each tenancy level houses a 400 amp tee-off connection.

The tee-off connection supplies a 'Minipack' CFS unit located within the Electrical services room on each level.

The 'Minipack' CFS units each incorporate a fused incoming 400A main switch and 5 number 200A CFS outgoing units, fused to suit tenant requirements.

The Electrical Services rooms also house the distribution boards associated with the supplies above, tenants meter panels, relay panels for load shedding and associated BAS control panels. A small distribution board is also provided for reticulation of UPS to core area BAS and security panels on each floor.

The Communications Rooms contain master antennae television (MATV) and AM radio main trunk and splitters, emergency warning and intercommunications (EWIS) panels, security system panels and other tenants' communications equipment.

The Telecom Rooms contain the telephone backbone cabling, floor distributor frame and optical fibre riser and termination equipment.

### **3.1.8 Cable Management**

Systems of 2-compartment skirting duct are installed in office areas to permit separate reticulation of power, telephone and other communications (data) cables. Skirting ducts are linked to the ceiling space at every column.

The ceiling space is accessible and facilitates wiring connections to be made to internal partitions or workstations.

If tenants desire, a 150mm high access floor may be provided anywhere in the lease space and the higher floor to ceiling height (2850mm) allows the standard 2700mm ceiling height to be maintained without alteration to in-ceiling services.

### **3.1.9 Lightning Protection**

A lightning protection system is installed to prevent/minimise damage to the building and its contents during electrical storms.

### **3.1.10 Emergency Warning and Intercommunications System (EWIS)**

An EWIS is installed in the building to provide warning in the event of an emergency and assist in orderly evacuation of occupants. A master control panel is installed in the Ground Floor Fire Control Room adjacent the Fire Indicator Panel. A secondary control panel is installed in the security control room.

Warden intercommunication points (WIPs) are provided on each floor to provide communication to the system control panel. Under normal conditions the secondary control panel operates the system and therefore allows calls to the Security Room from a WIP on any floor.

Speakers are installed throughout the building for announcements or to sound alert and evacuation tones, either automatically upon a fire alarm signal or manually from one of the control panels.

The EWIS internal communication is via a network of transponders on each floor linked by a serial data cable. These transponders have power supplies with back-up batteries to operate the floor equipment such as speakers and WIPs.

### 3.2 MAJOR EQUIPMENT DETAILS

	Manufacturer/Supplier
Lighting Fittings - Lease Space Areas	Trisonic 26W LED
Lighting Fittings – Lift Lobbies	Middys – 15W LED
Lighting Fittings – Bathrooms	Middys – 9W LED
Main Switchboards	Ansir
Main Switchboard Air Circuit Breakers	Nilsen
Distribution & Tenant Switchboards	NHP/Terasaki
Dome Lighting & Building Facade Floodlighting	Thorn/All 1,000 CSI, 200W LED
Skirting duct	ECD
Uninterruptible Power Supply (UPS)	Vertiv / Emerson
Emergency Lighting Central System Control Cubicle	P J Law & Co.
Emergency Warning and Intercommunications System Controllers	Siemens

#### 3.2.1 Standby Generators

2 x 1500 kW A diesel generator sets supplied by Detroit Engine & Turbine Co.

Engines	1540 kW Detroit 2 stroke turbo charged, intercooled diesels
Generators	New age with solid state voltage regulation
Generator Switchboard	O'Donnell Griffin
Synchronisation Control Equipment	Woodward



## **4. SECURITY AND ACCESS CONTROLS**

### **4.1 DESIGN DETAILS**

#### **4.1.1 Security Network**

The security network includes a distributed network of modules linked to a central control room on level 1. Most tenancy security systems are connected to (or may be considered as an extension of) this network to permit tenants to use a common card for base building and tenancy access control doors. It also allows the level 1 control room to monitor points within tenancy areas.

The security system also includes the following: - Serial interface to building lift controller.

- Car park boom gate and roller shutter door controls.
- Stair door electric locking and monitoring system with manual break glass overrides.
- Door monitoring of service and plant areas including the Electrical, Communications and Telecom rooms on each floor, stairs, plant rooms, building entry and other critical area doors.
- Monitoring of car park duress alarms.
- Low level interface with BAS to monitor fault alarms.

Stairwell doors are secured from the stair side, although monitored break-glass door- release devices are provided at every level on one central stair and on each alternate level on other stairs. Doors with release devices can be programmed to remain open during specified periods (eg. normal hours) to facilitate interfloor access for tenants occupying multiple levels. Alternatively, access control readers can be added by tenants to operate the release devices from within the stairs.

Access control card readers are Cotag proximity type. After-hours access to the building, car park and tenant floors (via lifts) is restricted to authorised proximity-card holders. Each card is individually coded for event logging or lock-out of lost cards. The security controllers can also operate security lighting along the access route to the particular cardholder's floor(s).

After-hours access to the building perimeter is provided for pedestrian traffic at the West Arcade and car park ramp. An after-hours access point is provided for vehicular traffic at the car park ramp off Flinders Lane.

An access control reader is also fitted to the basement stair at The Sebel Melbourne. It is therefore an alternative entry point to the building by virtue of the tunnels under Flinders Lane.

#### **4.1.2 Central Security Room**

The central security room monitors alarms throughout the building. It can also command/override network points as required.

In addition to the security network the Control Room is also equipped with a BAS terminal access to monitor various alarms, lift systems monitor and EWIS secondary panel. A closed circuit television (CCTV) system is installed to provide visual surveillance of the car park entry, basement and ground floor entrance areas. 24 number CCTV cameras are utilized.

A low level (contact monitoring) interface is also provided to the BAS such that the security system can monitor critical BAS alarms.

### 4.1.3 Lift Controls

A high level interface is provided to the building lift controller to allow lock-off of particular floors by the security system. Access to locked-off floors may be granted to authorised card holders via the readers within the lift cars. On most tenanted floors, after-hours access to a floor is coordinated with the security lighting controls so that the core area lighting operates when the car arrives at the floor.

A remote terminal is installed in the Guards Control Room for controlling goods lift access to particular levels. This facility is provided to manage delivery of goods, cleaners' access and trade/fit-out personnel use of goods lifts.

## 4.2 MAJOR EQUIPMENT DETAILS

	<b>Manufacturer/Supplier</b>
Digital Recording	Dallmier HDD Recorder, 30 days backup
Camera System	Panasonic and Sony Hi-Resolution colour cameras
Proximity	HID card readers
Door Control Locking	Siemens Sipass access control system
Door Control Locking	Siemens HID mobile via paid licence
Central Monitoring and Colour Graphics Terminal	Siemens Sipass

## **5. COMMUNICATIONS FACILITIES**

### **5.1 BASEMENT COMMUNICATIONS ROOM**

Telstra maintains equipment within a basement communications facility to provide exchange services from within the building. Telstra's facility, an RCS Remote, interfaces with a Nortel OMS-100 at Exhibition Exchange.

The basement communications facility is connected by copper and optical fibre to two (2) separate telephone exchanges, one entering via Collins Street and one via Flinders Lane to allow diverse routing to be established by tenants who require redundancy.

4 x Telstra ISDN lines are patched within the basement communications room to locations within the building for video conferencing.

#### **Building Distribution**

The building main distributor (main distribution frame) is located next to the Telecom Room in Basement B2. Backbone cables connect the main distributor to local floor distributors in the Telecom Room on each office floor in a conventional star wired topology. Krone vertical back mounts and termination modules are installed in the floor Telecom Rooms for cross-connection of backbone and floor cabling.

Floor cabling comprises twisted copper pairs capable of supporting data rates of 10 Mbit/sec. In most office areas floor distribution cabling is terminated on local Krone distribution frames in ceiling spaces.

In addition to the copper backbone cables, a network of optical fibre cables is installed from the basement communications room to the Telecom and Communications Rooms (12 fibres to each room) on each office floor. Single and multi-mode optical fibres are provided, via diverse routing, to each of the floor Telecom and Communications Rooms.

### **5.2 BROADBAND DATA SERVICE PROVIDERS**

The following carriers provide broadband services within the 333 Collins street building:

- Telstra, Main equipment located B2 MDF room
- Powertel, Main equipment located B2 MDF room
- Optus, Main equipment located B2 MDF room
- Verizon, Main equipment located B3
- AAPT, Main equipment located B2 MDF room
- UE Access, Main equipment located MDF room, B2 and B3

## 6. FIRE PROTECTION SYSTEMS

### 6.1 GENERAL

The building is fully protected by an automatic fire sprinkler system, a fire hydrant and hose reel system and a fire detection and alarm system.

### 6.2 AUTOMATIC FIRE SPRINKLER SYSTEM

The automatic fire sprinkler system has been designed and installed in accordance with Australian Standard AS 2118-1985 to Ordinary Hazard Group I for office areas and Ordinary Hazard Group II for car park areas.

The automatic fire sprinkler system has three pressure stages as follows;

Level B4 to Level 9	Low Pressure Stage (Towns Main Only)
Level 10 to Level 23	Medium Pressure Stage (Pump - first stage)
Level 24 to level 29	High Pressure Stage (Pump - second stage)

The fire sprinkler booster pump installation consists of two electric driven, two stage pumps. One pump provides pressure for the medium and high pressure stages (two stage pump) while the other acts as a standby, being powered by the building's stand-by generator during mains power failure.

Jacking pumps are utilised to maintain pressure in the rising mains of the medium and high pressure stages.

The control valve installation is set up as follows:

Control Valve	Location	Levels Served
CV1	B1	G, L1
CV2	B1	L2, L3
CV3	B1	B4-B1
CV4	B1	L7-L9
CV5	B1	L4-L6
CV6	Level 9	L10, L11
CV7	Level 9	L12-L14
CV8	Level 9	L15-L17
CV9	Level 9	L18-L20
CV10	Level 9	L20-L23
CV11	Level 29	L24-L29

### **6.3 WATER SUPPLY**

A Grade I water supply is provided to the automatic fire sprinkler system and the fire hydrant and hose reel system via 150mm take offs in both the towns mains in Flinders Lane and the town's main in Collins Street. Each tapping is provided with a trident connection for reticulation of water to the separate services (domestic sprinkler/hydrant).

MFB booster connections are provided for each stage of both the automatic fire sprinkler system and the fire hydrant and hose reel system.

### **6.4 FIRE HYDRANT AND HOSEREEL SYSTEM**

The fire hydrant and hose reel system consists of hydrants and hose reels located throughout the building designed in accordance with the then current Australian Standards AS 2419 and AS 2441. The system is divided into three pressure stages similar to the automatic fire sprinkler system complete with electric driven, two stage pump sets (one primary, one standby).

### **6.5 SMOKE DETECTION AND ALARM SYSTEM**

The building includes a smoke detection and alarm system to initiate smoke hazard management and evacuation procedures through the Emergency Warning and Intercommunication Systems (EWIS). It also provides indication and alarms related to operation of sprinkler flow switches (installed in sprinkler pipework on each level of the building), smoke detectors, monitored valves and fire sprinkler alarm pressure switches. The system automatically notifies the MFB on initiation of a general fire alarm.

### **6.6 PORTABLE FIRE EXTINGUISHERS**

Portable fire extinguishers are provided throughout the building in accordance with MFB requirements - generally located adjacent switchboards, kitchen facilities, etc.

### **6.7 FALSE ALARMS**

Any fire alarm caused by a tenant within the building which is charged by the Fire Brigade will be fully recovered by the respectable person causing the damage.

### **6.8 FALSE ALARM EXTERNAL ASE MONITORING SYSTEM**

Code red fire

## 6.9 MAJOR EQUIPMENT DETAILS

<b>Item</b>	<b>Make</b>
(i) Automatic Fire Sprinkler System	
Booster Pumps	Ajax-Ritz
Flow Switches	Potter
Control Valve Assemblies	Central
MFB Booster Connection	Dobbie Dico
(ii) Fire Hydrant and Hose Reel	
Booster Pumps	Ajax-Ritz
MFB Booster Connection	Dobbie Dico
(iii) Fire Detection and Alarm System	
Fire Indicator Panel	Cerberus PRO FC726FIP

## 7. VERTICAL TRANSPORTATION

### 7.1 DESIGN DETAILS

High speed computerised control and power systems utilising technology providing the following features:

- Dynamic control response.
- Load weighing monitoring via micro switches for improved performance.
- Anti-nuisance device to eliminate false calls interfering with lift performance.
- Car out-of-service facility to eliminate break-down of one lift interfering with overall lift performance.
- Exclusive control facility.
- Landing call monitoring to ensure all calls are answered within a pre-set time. . High level interfacing with security/access control system.

Passenger are designed as a 3 bank lift system with the following targeted performance:

	<b>Waiting Interval</b>	<b>Carrying Capacity</b>
Low Rise performance	23 seconds	15%
Mid Rise Performance	25 seconds	14%
High Rise Performance	30 seconds	17%

Separate car park shuttle lifts also of high speed computerised control type are provided.

Two large high speed goods lifts are provided for tenant use.

All lifts can be used as fireman's emergency lifts except the lifts serving the marketing centre building at the Collins Street end. The goods lifts are suitable for stretcher transportation.

#### 7.1.1 Performance and capacities

<b>Lift</b>	<b>Quantity</b>	<b>Capacity</b>	<b>Levels Served</b>	<b>Speed m/sec</b>
Passenger Lifts	6 low rise	26 persons	G, 1-10	3
	6 mid rise	26 persons	G, 10-20	4
	4 high rise	20 persons	G, 20-27	7
Goods Lifts	2	2,300 kg	B1, 3-28/B1, 2-27	3
	1	2,000 kg	B1, G, 1, 2	1
Car Park Shuttle Lifts	2	20 persons	B4-B1, G	1.75
Existing Collins Street Building	1	12 persons	G, 1-6	1

All lifts were manufactured by Boral Lifts.

## **8. BUILDING AUTOMATION SYSTEM (BAS / APOGEE)**

### **8.1 DESIGN DETAILS**

- Distributed network of direct digital control (DDC) and other microprocessor based control units linked to a central front-end processor for control and monitoring of mechanical plant and other building systems.
- Front-end processor for overall control and monitoring comprising central computer, colour graphic displays, data logging, storage and retrieval equipment.
- Remote terminals in main plant rooms for local data entry and fault diagnosis.
- Interfaces to other major building systems including lift controllers, fire services and security equipment.
- Direct IP (Web) access for remote monitoring and fault analysis.
- T O S (Tenant Override System) - Web access via secure login and password for after hour's air conditioning.
- Control of the building's standby generator installation including monitoring and control of the standby power loadings to suit the mains failure condition applicable. This may be done via automatic regimes which are programmed to respond to the combinations of supplies available, or via manual command at a BAS terminal.

### **8.2 MAJOR EQUIPMENT DETAILS**

Siemens Building Technologies 600 with 'Insight AT' front end, Version 2.8, with Firmware Version 12.5. 4,000 physically connected points including 700 for power distribution monitoring and control. Also via remote access.

T O S (Tenant Override System) after hours Air Conditioning Web Based Access



**9. MAIN CONTRACTORS**

Mechanical	Entire Air Conditioning Pty Ltd
Building Automation System	Siemens Building Technologies
Electrical	Datanet Electrical
Fire Protection	Chubb Fire
Security/Access Control	Siemens Building Technologies
Telecommunications	Any approved Licenced Carrier
Generators	System Insight
Lifts	Otis Elevators
Plumbing	Advance Plumbing CBS Plumbing
Fire Alarm	Chubb Fire

## APPENDIX A

	333 Collins Street	Property Council of Australia (PCA) Office Grade Benchmark
<b>MECHANICAL SERVICES</b>		
Air Conditioning Design Criteria	Summer	PCA silent on criteria.
	<ul style="list-style-type: none"> <li>Ambient 35°C DB / 21°C WB</li> </ul>	
	<ul style="list-style-type: none"> <li>Internal 22.6°C</li> </ul>	
	<ul style="list-style-type: none"> <li>Tolerance ± 1.5°C</li> </ul>	
	Winter	
	<ul style="list-style-type: none"> <li>Ambient 4°C DB</li> </ul>	
	<ul style="list-style-type: none"> <li>Internal 22.6°C</li> </ul>	
	<ul style="list-style-type: none"> <li>Tolerance ± 1.5°C</li> </ul>	
Design Loads		
Power	35W/m <sup>2</sup>	Exceeds Premium (25W/m <sup>2</sup> )
Lighting	15W/m <sup>2</sup>	Premium
People	1 person/10m <sup>2</sup>	PCA silent but this is as per Code.
System Type	Separate Perimeter and Internal VAV systems with Trim Heating	N/A
Outside Air Quantity	7.5l/s per person with high efficiency filters	PCA silent on issue

	333 Collins Street	Property Council of Australia (PCA) Office Grade Benchmark
Thermal Zoning		
Perimeter	Approximately 1 per 40m <sup>2</sup>	Exceeds Premium (70m <sup>2</sup> )
Internal	Approximately 1 per 100m <sup>2</sup>	Grade A
Supplementary Cooling provided	(25W/m <sup>2</sup> Heat Rejection)	Premium
Glazing Quality	High Thermal Efficiency: Double Glazing with low e coating with shading coefficient 0.26 and U-Value 1.8. North and South Façade up to level 6 are single glazed.	Exceeds Premium. PCA silent.
Ancillary Outside Air	Nil	Premium requires supplementary outside air system.
Tenancy Toilet Exhaust	Nominal 25 L/s per cubicle and 50 L/s per common area	Exceeds Premium. PCA silent.
Tenancy Tea Room/ Kitchen Exhaust	Nominal 100 L/s per floor (Levels 3 – 10) Nominal 50 L/s per floor (Levels 11 – 26)	Exceeds Premium. PCA silent.
Air Diffusers	Perimeter air diffusion via continuous linear diffusers with supply air plenums and interior diffusion via light air fittings.	
After Hours Operation	Whole floor operation initiated by web access. T O S (Tenant Override System) via web.	Premium
Energy Performance	Air handlers with Economy Cycle.	Exceeds Premium. PCA silent.
	Ice thermal storage system for chilled water – cooling occurring at off peak electricity tariffs	Exceeds Premium. PCA silent.
Fire Mode Operation	Activation of stair pressurisation system and operation of AHU purge and sandwich systems in accordance with code requirements.	N/A

	333 Collins Street	Property Council of Australia (PCA) Office Grade Benchmark
Ventilation Systems	Ventilation systems for car park, lift motor rooms, plant rooms etc. comply with regulatory requirements.	N/A
<b>BUILDING MANAGEMENT SYSTEMS</b>		
Configuration	DDC control for all temperature zones with remote monitoring and setpoint adjustment.	Premium
	DDC system will be capable of monitoring other building control functions, lighting, lift controllers, fire services and security equipment.	Premium
<b>ELECTRICAL SERVICES &amp; COMMUNICATIONS</b>		
Power,	42 VA/m <sup>2</sup> of net lettable area available for tenant loads	Exceeds Premium (31 VA/m <sup>2</sup> )
Lighting	Recessed 500 x 500mm ultra low brightness luminaries to provide an average illuminance of 450 lx	Premium
Stand-By Power	50% total load capacity or 30VA / m sq. within tenancies for essential services.	Exceeds Premium
Data	Separate risers with fibre optics.	Premium

	333 Collins Street	Property Council of Australia (PCA) Office Grade Benchmark
<b>VERTICAL TRANSPORTATION</b>		
Waiting Interval	23 seconds Low Rise	Premium
	25 seconds Medium Rise	Premium
	30 seconds High Rise	Grade A but most CBD Premium buildings have times of 30 seconds.
Handling Capacity	15% Low Rise	Premium
	14% Medium Rise	Grade A
	17% High Rise	Premium
Floor Loading	400kg/m <sup>2</sup>	Meinhardt Bonacci Structural Engineers. All loadings must be certified by Meinhardt Bonacci.