DONALD CANT WATTS CORKE

Report on the Cost Implications of Fire Sprinklers in Class 2 and 3 Buildings

Australian Building Codes Board

Cost Impact Assessment Report

12 February 2018

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1 EXECUTIVE SUMMARY

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1 EXECUTIVE SUMMARY

Donald Cant Watts Corke at the request of the Australian Building Codes Board (ABCB) have undertaken an exercise to determine the cost of three (3) possible fire sprinkler system options applied to a range of representative Class 2 and Class 3 buildings based on the following layouts in conjunction with building element offsets in order to inform a regulatory impact assessment.

The outcome of the analysis shows that the cost of installing each fire sprinkler system option was found to have a minimal cost impact and in the majority of cases a cost neutral exercise (less than 1%) of the total project value and in a few examples provides a cost saving of up +/- 1%, when trade evaluated against the savings gained of the proposed building element offsets based on a square metre basis.

Furthermore, potential added value opportunities arise when additional Net Lettable Area (NLA) is achieved with long term yield gained based on the deduction of the fire rating elements such as fire rated penetrations and enclosures on each building such as stairs, providing further value offsets in terms of market value from a real-estate residential development perspective, further outweighing and offsetting the actual cost of the sprinkler system in each building, which encourages further investigation and market analysis with property developers.

The analysis encompasses detailed cost per square metre area ($/m²) and per building type basis for each of the following building types and examples:

- A Class 2 building of six storeys with basement carpark and an average floor plate designed and constructed under the current NCC deemed-to-satisfy requirements;
- A Class 2 building of six storeys with basement carpark and with an average floor plate designed and constructed under the three fire sprinkler options (listed below) with offsets listed in Table 1;
- A large horizontal spread Class 2 building of six storeys with basement carpark and designed and constructed under the current NCC deemed-to-satisfy requirements;
- A large horizontal spread Class 2 building of six storeys with basement carpark and designed and constructed under the three fire sprinkler options (listed below) with offsets listed in Table 1;
- A Class 3 building of six storeys with basement carpark and with an average floor plate designed and constructed under the current NCC deemed-to-satisfy requirements;
- A Class 3 building of six storeys with basement carpark and with an average floor plate designed and constructed under the three fire sprinkler options (listed below) with offsets listed in Table 1;
- A large horizontal spread Class 3 building of six storeys with basement carpark and designed and constructed under the current NCC deemed-to-satisfy requirements; and
- A large horizontal spread Class 3 building of six storeys with basement carpark and designed and constructed under the three fire sprinkler options (listed below) with offsets listed in Table 1.

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The analysis encompasses comparative costings for the following possible fire sprinkler options on a cost per square metre area ($/m²) and per building type basis:

- **Option 1**: AS 2118.1:1999 Fire Sprinkler System
- **Option 2**: FPAA101D Cost-effective Automatic Fire Sprinkler System Design and Installation – Domestic Water Supply
- **Option 3**: FPAA101H Cost-effective Automatic Fire Sprinkler System Design and Installation – Hydrant Water Supply

The analysis encompasses detailed cost per square metre area (m/^{2}) and per building type based on the current deemed-to-satisfy (DTS) requirements in the National Construction Code (NCC) compared with the proposed offsets listed under the following Table 1 under each building class, scope and sprinkler options.

Table 1: List of offsets for sprinkler protected Class 2 and Class 3 buildings of six storeys

NCC subject matter	Current NCC DTS	Proposed offsets for buildings with sprinkler
Sprinklers (E1.5)	Not required	Required
Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)	-/90/90	-/60/60
Penetrations in non-loadbearing walls around fire-isolated stairways and internal bounding construction (Spec C1.1 Table 3 and Part C3)	-/60/30	-/60/15
Protect window openings in bounding construction separating a path of travel to an exit along open balcony and landing (C3.11(g)(v))	Wall wetting sprinklers; or -/60/- fire windows; or -/60/- fire shutters	Not required
Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A))	6m	12m
Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))	20m	30m
Maximum distance of travel between alternative exits (D1.5(c)(i))	45m	60m
Internal fire hydrants (E1.3)	Where the total floor area exceeds 500m^2	An external hydrant or dry fire main required. Street hydrants use as 'feed' hydrants for suction of water to boost the dry hydrant system need only meet the flow requirement of AS 2419.1 and not the pressure requirement. Note - no concession for the FPAA101H system Feed fire hydrants used for boosting are intended to provide the necessary flow rate to the fire brigade pumping appliance

NCC subject matter	Current NCC DTS	Proposed offsets for buildings with sprinkler
Spandrels (C2.6)	A 900mm spandrel or horizontal construction (both non-combustible and FRL of 60/60/60) is required if a window in an external wall is above another window in the storey below	No requirement
Smoke detection and alarm systems (Specification E2.2a Clause 3(c)(iii))	Alarms must be installed in public corridors and other internal public spaces and activate a building occupant warning system	Required (no concession)

The analysis of the above is presented in tables under summary of costs, accompanied by detailed costs within the appendices for each building class and type of fire sprinkler system options adopted in conjunction with a list of current deemed-to-satisfy requirements in the NCC compared with the proposed offsets under each option. Offsets adopted are with consideration to current practice, availability of materials and the requirements of other clauses in the NCC and any other applicable regulations.

This report focuses on a number of key requirements which have been reviewed and the scope of works has been defined in order to meet the proposed minimum requirements which are:

1. Typical Floor Areas;
2. Number of Sole-Occupancy Units (SOU) per floor;
3. Common Vertical Risers;
4. Common Corridors; and
5. Basement Car Park.

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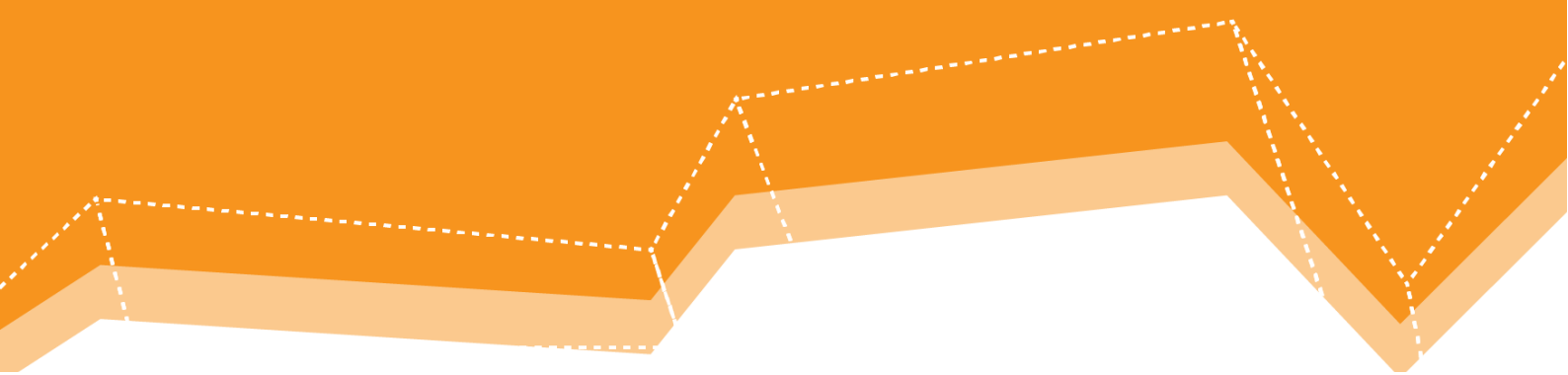
2 BASIS OF REPORT



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2 BASIS OF REPORT

2.1 Methodology

The aim of this assessment is to provide comparative costings for three (3) fire sprinkler options on a cost per square metre area ($/m²) and a per building basis to determine the cost offsets in Class 2 and 3 buildings.

The brief was to provide an analysis of the cost implications of the proposals using representative sample buildings examples of the selected building layouts and sprinkler options as the basis of reporting. The cost assessment will provide the ABCB with the information to review a summary of the cost implications by each scenario and by example of the selected building and sprinkler systems adopted in order to inform a regulatory impact assessment to allow their sector wide, and individual impacts to be assessed.

A summary is provided of the overall costs across all eight (8) building types with three (3) fire sprinkler options.

The following outlines the methodology used in preparation of the analysis:

1. Tabulate and cost the various building works requirements as described within the scope of work;
2. Compile the scope of works required for current and proposed provisions. This is done based on a first principles estimating process whereby quantities are established, then a rate applied to calculate a total cost;
3. Establish the unit rates of construction followed by 'out-turn' costs for each building element and type inclusive of contractor's preliminaries, margin and associated consultant fees;
4. Select representative sample buildings, constructed within the Metropolitan areas of Australian Capital Cities, for each building class (type) and size;
5. Confirm the approximate area cost per square metre ($/m²) cost for each sample building;
6. Quantify the approximate cost on square metre basis for the inclusion of sprinklers under three scenarios, current practice, as specified; and
7. Calculate the approximate cost for essential services maintenance for the inclusion of sprinklers for each scenario, current practice, as specified.

The cost analysis is based on Donald Cant Watts Corke's in-house residential cost database in consultation with relevant residential stakeholders, including authority, property developers, building practitioners, plumbing and fire protection services contractors in conjunction with benchmarking projects as detailed in Appendices.

We have considered current industry design practices, using professional judgement, building, architectural and hydraulic engineering principles where necessary, in conjunction with referencing the following industry accepted construction cost publications, trade accounts, price lists and accepted industry charge out rates including:

1. Rawlinson's Australian Construction Handbook (Rawlinson, Edition 35, 2017);
2. The Building Economist (Australian Institute of Quantity Surveyors, December 2017);
3. Fire Sprinkler Fitter and Plumbing Labour Hourly Rates based on Plumbing and Pipe Trades Employees Union (PPTEU) Plumbing and Fire Industry Awards & Rates as per the published CEPU– Plumbing Division (Vic) Enterprise Agreement 2016–2019 allowance adjusted (circa 25%) to suit domestic market rates;

4. Fire Alarm Labour Hourly Rates based on Electrical Trades Employees Union (ETU) Electrical Industry Awards and Rates as per the published ETU Enterprise Agreement 2016–2019;
5. Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current);
6. Reliable Automatic Sprinkler Co. AUS Dollar International Price Book Effective 1 July 2016;
7. Tyco Fire Protection Products List Price Book 2016 Effective Date 6/19/2017 with 8/14/2017 Addendum;
8. Viking Fire Protection Products List Price Book June 2016 (Current);
9. Klinefire Pty Ltd Generic Price List Effective December 2017;
10. Reece Commercial Market Price Trade Account No.3019277;
11. Middys Commercial Market Price Trade Account No. A95592; and
12. USD ($) Price List Converted to AUD ($) Rate current at December 2017.

2.2 Documentation

The review has been undertaken on the basis of the following documentation:

1. ABCB Approach to Market Sprinklers in Class 2 and 3 Buildings Reference ID: SPC23-170929;
2. ABCB Commonwealth Contract – Consultant Services Reference ID: SPC23 – 1709929 (CN014266);
3. AS 2118.1:1999 sprinkler system;
4. FPAA101D Cost-effective Automatic Fire Sprinkler System Design and Installation – Domestic Water Supply;
5. FPAA101H Cost-effective Automatic Fire Sprinkler System Design and Installation – Hydrant Water Supply; and
6. VBA Approval data Class 2 and Class 3 floor areas.

2.3 Abbreviations

ABCB	Australian Building Codes Board
AFAC	Australasian Fire Authority Council
ABCB	Australian Building Codes Board
BCA	Building Code of Australia
DTS	Deemed to Satisfy
DCWC	Donald Cant Watts Corke (VIC) Pty Ltd
FRNSW	Fire and Rescue New South Wales
FPAA	Fire Protection Association of Australia
GFA	General Floor Area
NCC	National Construction Code
SOU	Sole-Occupancy Unit
m^2	Square Metre Area
$/m^2$	Cost per Square Metre Area
VBA	Victorian Building Authority

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2.4 Clarifications

In relation to the estimates provided the following clarifications are noted:

1. Total construction costs are as at December 2017;
2. Overall calculation costs are calculated on the basis that all buildings are constructed on Greenfield sites (new building works);
3. Average floor area per storey provided by ABCB from public VBA Approval Data and ABS Approval Statistics;
4. Six (6) Storey representative for Class 2 and 3;
5. The added $/m² value provided for the Net Lettable Area (NLA) including the long term yield gained due to the deduction of the stair, has not been calculated and specifically excluded from this cost report at this time. Whilst it is recognised that further investigation is encouraged to explore this opportunity with residential developers, preliminary discussions with the market have been very positive and have acknowledged the opportunity to create an additional spatial area to provide either a larger Sole-Occupancy Unit (SOU) or perhaps add another bedroom per SOU per floor. The potential value added to each project will vary depending on building, class, type and location. The opportunity of adding further value to each project requires further detailed cost and market analysis to determine the actual values gained for the offset and is subject to a separate cost analysis including property market and developer input for each location, type and size of building project.

2.5 Assumptions

In relation to the estimates provided the following assumptions are noted:

1. The representative six (6) storey buildings analysis reflects the practice of locating Sole-Occupancy Units (SOU) with terraces on the Ground Floor, complete with the proposed offsets and three (3) Fire Sprinkler Options.
2. The additional construction time allocation of 12-16 weeks per building to install sprinklers is offset by the savings of time to concrete the secondary stair and no requirement for fire rating penetrations;
3. The additional time and expense associated with the routine ‘essential’ maintenance for each fire sprinkler system is included in each cost plan under “Maintenance & Warranty’ for each option per building for the first 12 Months Post Construction. An estimate for the additional ongoing routine maintenance costs are also provided in a separate schedule under Section 5 Summary of Maintenance Costs with breakdowns of the time and expense are provided in the detailed breakup as guideline of the estimated fire sprinkler costs in Appendix C, with Option 2 FPAA101D, modified to allow a 50% reduction on the basis of consolidating a forecasted performance based routine maintenance services in line with FPAA specifier’s advice.
4. The estimated cost for the Sprinkler System Option 1 is based on Australian Standard AS2118.1, with scope and cost benchmarked against common industry practice for a commercial mild steel system.
5. The estimated cost for Sprinkler Systems Options 2 and 3 is based on our interpretation of FPAA101D and FPAA101H in conjunction with FPAA consultation, to provide a fit-for-purpose automatic fire sprinkler system developed on existing requirements of Australian Standards, with an emphasis of providing a more cost-effective solution, that still provides some suitable level of safety by using existing water supplies in the building either utilising the existing domestic water supply or the fire hydrant water supply.

6. The pipe materials adopted for the Sprinkler System Option 2 FPAA101D system, is equivalent to the domestic plumbing practice of utilising flexible Cross-Polyethylene (PE-X), with minimal pipework "push-fit" fittings (similar to a purified water system to minimise point of failure), with no labelling or signage, complete with domestic plastic pipe clipping in lieu of an industry and commercially accepted plastic pipe fire system such as a rigid Chlorinated Polyvinyl Chloride (CPVC) being a thermoplastic produced by chlorination of polyvinyl chloride (PVC) resin which can withstand higher temperatures specifically designed for fire in lieu of the standard domestic plumbing Cross-Polyethylene (PE-X) pipework for the FPAA101D system as verified for use by FPAA.
7. Watermarked fittings and sprinkler heads have assumed will be adopted for full use for the domestic Fire Sprinkler System Option 2 FPAA101D as verified by FPAA in accordance with the Australian Standards for the Water Supply AS3500.1.
8. Individual project costs including rates have been adjusted to match the format area's provided by the ABCB;
9. The highest offset (i.e. highest cost savings scenario) was applied to both Class 2 and Class 3 buildings. This was assumed as follows:
    a. The deduction of 1 No. Core comprising of additional Substructure, 180mm thick precast walls, RC staircase, precast lid, internal and external doors, exit signage and lighting;
    b. The deduction of the Non-loadbearing walls around fire-isolated stairways comprising of furring channel, 16mm thick FR plasterboard lining and paint;
    c. The offset to reduce the fire rating of the non-loadbearing walls around fire isolated stairway from -/90/90 to -/60/60 this is essentially the adjustment from 16mm FR plasterboard to 13mm FR plasterboard. This value has been included in offset item 1.2; and
    d. Please also note that for this offset builder's preliminaries, overheads and margins are excluded as both amounts are generated from a cost perspective and focus.
10. Cost Offsets for deducting spandrels has been considered as negligible in Class 2 buildings of this nature and size. Our observations of standard industry practice are that vertical separation of external walls and facades by method of Balconies and RC slab design satisfy the required design requirements. Furthermore, detailed investigation is required to consider the implications of removing the current requirement of the material for a 900mm spandrel. The current DtS FRL requirement is 60/60/60 and non-combustible.
11. Cost Offsets for deducting spandrels has been considered as negligible in Class 3 buildings of this nature and size. Our observations of standard industry practice are that vertical separation of external walls and facades by method of and RC slab design satisfy the required design requirements. Furthermore, detailed investigation is required to consider the implications of removing the current requirement of the material for a 900mm spandrel. The current DtS FRL requirement is 60/60/60 and non-combustible.
12. The representative six (6) storey buildings reflects common practice to locate a Class 7 carpark (subterranean) basement level of new Class 2 and Class 3 buildings and have assumed that this space would be required to be sprinkler protected under current NCC deemed-to-satisfy requirements (more than 40 cars) and hence some fire sprinkler infrastructure would exist under the status quo;
13. The representative six (6) storey buildings analysis reflects no mixed (retail-office) use on the ground floor for this size building.
14. The representative six (6) storey buildings reflects the practice to locate balconies in Class 2 Buildings for each SOU and have assumed that this space would be required to be sprinkler protected under current NCC deemed-to-satisfy requirements;

15. The representative six (6) storey buildings reflects common practice to exclude balconies on Class 3 Buildings for each SOU being for long term or transient living for a number of unrelated persons such as student, hostel, backpackers accommodation or residential part of a hotel, motel, school or detention centre; and
16. The representative six (6) storey buildings reflects common practice to exclude balconies on Class 3 Buildings for each SOU being for long term or transient living for a number of unrelated persons such as student, hostel, backpackers accommodation or residential part of a hotel, motel, school or detention centre; and
17. Building costs are generally total costs relative to the section of the building being analysed and are inclusive of builder's preliminaries, overheads and margin, together with project design and delivery costs. Rates where noted are inclusive of the material supply, labour and all sundries required for installation.

2.6 Exclusions

All estimates contained in this report exclude:

- Goods and Services Tax (GST);
- Base Building Costs already included in the current NCC deemed-to-satisfy requirements such as Internal Fire Hydrants and risers;
- Site specific fire and hydraulic infrastructure such as boosters, risers, tanks and pumps;
- Site specific wall wetting sprinklers and fire shutters;
- Residential aged-care buildings and the like;
- Chlorinated polyvinyl chloride (CPVC);
- Basement Car park;
- Sprinklers for "fit-for purposes systems" in ceiling spaces, toilets, bathrooms ensuites, cupboards, wardrobes, pantries, alcoves and recesses less than 3.0m^2 SOU hallways, entries, stairs and the like (not exceeding 1.5m in width) or small architectural features such as planter box windows and bay windows (not applicable);
- Testable dual check valves, remote test drains, monitoring and isolation valves (not applicable) for the domestic fire sprinkler system FPAA101D;
- Non-Watermarked fittings and sprinkler heads for the domestic fire sprinkler system FPAA101D;
- Pipework exceeding 32mm in the SOU for the domestic fire sprinkler system FPAA101D;
- Labelling and signage of pipework for the domestic fire sprinkler system FPAA101D;
- Ground Floor Mixed Used;
- Balconies in Class 3 Buildings;
- Design fees, authority fees, contingency and costs associated with staging;
- Current Pricing as at December 2017;
- Site Specific Latent conditions; and
- Painting, floor finishes, power, smoke ventilation and security costs equipment rooms.

If any of the above items are a requirement it would apply to all scenarios, hence, they will have zero cost impact.

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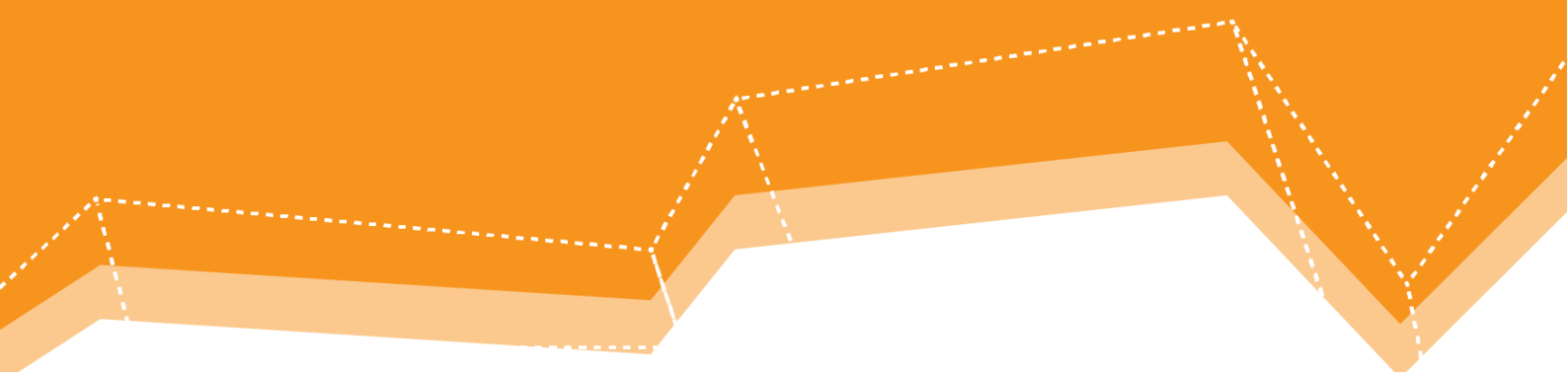
3 INFORMATION USED IN SAMPLE PROJECTS



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3 INFORMATION USED IN SAMPLE PROJECTS

Provided below are details of the building layouts used in preparing this report together with the key assumptions relevant to the estimates.

Class 2 Average Floor Areas

1. A Class 2 building of 6 storeys with basement carpark and an average floor plate designed and constructed under the current NCC deemed-to-satisfy requirements.
2. A Class 2 building of 6 storeys with basement carpark and with an average floor plate of designed and constructed under the three fire sprinkler options with offsets listed in Table 1.
3. Average floor area plate of 900m² per floor with a total areas of 5,400m² overall per building.
4. Eight (8) SOU per floor with total of 48 SOU per building.
5. Two (2) Bedroom SOU with a total of two (2) Water Closets (WC) per SOU.
6. Typical construction consists of post-tensioned in-situ concrete structural slab with brick veneer construction mainly. Internal party walls comprise mainly of lightweight fire rated shaft wall system and concrete block construction to riser and stair walls.
7. It is assumed risers provided in as specified scenarios are sufficient to accommodate proposed specification for vertical risers.
8. The selected complex is considered standard quality and within metropolitan environment within 20 kilometres of Central Business District (CBD).
9. Balcony with horizontal side wall sprinkler protection.

Class 2 Large Floor Areas

1. A large horizontal spread Class 2 building of 6 storeys with basement carpark and designed and constructed under the current NCC deemed-to-satisfy requirements.
2. A large horizontal spread Class 2 building of 6 storeys with basement carpark and designed and constructed under the three fire sprinkler options listed with offsets listed in Table 1.
3. Large floor area plate of 1,200m² per floor with a total areas of 7,200m² overall per building.
4. Twelve (12) SOU per floor with total of 72 SOU per building.
5. Two (2) Bedroom SOU with a total of two (2) Water Closets (WC) per SOU.
6. Typical construction consists of post-tensioned in-situ concrete structural slab with brick veneer construction mainly. Internal party walls comprise mainly of lightweight fire rated shaft wall system and concrete block construction to riser and stair walls.
7. It is assumed risers provided in as specified scenarios are sufficient to accommodate proposed specification for vertical risers.

8. The selected complex is considered standard quality and within metropolitan environment within 20 kilometres of Central Business District (CBD).
9. Balcony with horizontal side wall sprinkler protection.

Class 3 Average Floor Areas

1. A Class 3 building of 6 storeys with basement carpark and an average floor plate designed and constructed under the current NCC deemed-to-satisfy requirements.
2. A Class 3 building of 6 storeys with basement carpark and with an average floor plate of designed and constructed under the three fire sprinkler options with offsets listed in Table 1.
3. Average floor area plate of 900m² per floor with a total areas of 5,400m² overall per building.
4. Sixteen (16) SOU per floor with total of 96 SOU per building.
5. One (1) Bedroom SOU with a total of one (1) Water Closets (WC) per SOU.
6. Typical construction consists of post-tensioned in-situ concrete structural slab with brick veneer construction mainly. Internal party walls comprise mainly of lightweight fire rated shaft wall system and concrete block construction to riser and stair walls.
7. It is assumed risers provided in as specified scenarios are sufficient to accommodate proposed specification for vertical risers.
8. The selected complex is considered standard quality and within metropolitan environment within 20 kilometres of Central Business District (CBD).
9. No balcony or ceiling space in living areas (exposed soffit) with horizontal side wall sprinkler protection;

Class 3 Large Floor Areas

1. A Class 3 building of 6 storeys with basement carpark and an average floor plate designed and constructed under the current NCC deemed-to-satisfy requirements.
2. A Class 3 building of 6 storeys with basement carpark and with an average floor plate of designed and constructed under the three fire sprinkler options with offsets listed in Table 1.
3. Average floor area plate of 1,200m² per floor with a total areas of 7,200m² overall per building.
4. Twenty Four (24) SOU per floor with total of 144 SOU per building.
5. One (1) Bedroom SOU with a total of one (1) Water Closets (WC) per SOU.
6. Typical construction consists of post-tensioned in-situ concrete structural slab with brick veneer construction mainly. Internal party walls comprise mainly of lightweight fire rated shaft wall system and concrete block construction to riser and stair walls.
7. It is assumed risers provided in as specified scenarios are sufficient to accommodate proposed specification for vertical risers.
8. The selected complex is considered standard quality and within metropolitan environment within 20 kilometres of Central Business District (CBD).
9. No balcony or ceiling space in living areas (exposed soffit) with horizontal side wall sprinkler protection.

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4 SUMMARY OF CAPITAL COSTS

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4 SUMMARY OF CAPITAL COSTS

In preparing the costs associated with proposed specification changes the following observations have been made.

Table 2: Class 2 Average Floor Area

Fire Sprinkler Options	Current DTS Building Cost $/m²	Fire Sprinkler Cost $/m²	Fire Sprinkler Offsets $/m²	Cost Offset $/m²	Proposed Building Cost $/m²
Option 1: AS2118.1	$2,602	$50	-$47	$3	$2,605
Option 2: FPAA101D	$2,602	$25	-$47	-$22	$2,580
Option 3: FPAA101H	$2,602	$45	-$47	-$2	$2,600

Table 3: Class 2 Large Floor Area

Fire Sprinkler Options	Current DTS Building Cost $/m²	Fire Sprinkler Cost $/m²	Fire Sprinkler Offsets $/m²	Cost Offset $/m²	Proposed Building Cost $/m²
Option 1: AS2118.1	$2,602	$50	-$36	$14	$2,616
Option 2: FPAA101D	$2,602	$28	-$36	-$8	$2,594
Option 3: FPAA101H	$2,602	$46	-$36	$10	$2,612

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Table 4: Class 3 Average Floor Area

Fire Sprinkler Options	Current DTS Building Cost $/m²	Fire Sprinkler Cost $/m²	Fire Sprinkler Offsets $/m²	Cost Offset $/m²	Proposed Building Cost $/m²
Option 1: AS2118.1	$3,472	$51	-$47	-$11	$3,476
Option 2: FPAA101D	$3,472	$28	-$47	-$5	$3,453
Option 3: FPAA101H	$3,472	$44	-$47	-$18	$3,454

Table 5: Class 3 Large Floor Plate

Fire Sprinkler Options	Current DTS Cost $/m²	Fire Sprinkler Cost $/m²	Fire Sprinkler Offsets $/m²	Cost Offset $/m²	Proposed Building Cost $/m²
Option 1: AS2118.1	$3,472	$52	-$36	$16	$3,488
Option 2: FAA101D	$3,472	$31	-$36	-$5	$3,467
Option 3: FPAA101H	$3,472	$44	-$36	$8	$3,480

Please refer to Appendices for detailed costs.

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4 SUMMARY OF MAINTENANCE COSTS

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5 SUMMARY OF MAINTENANCE COSTS

Table 6: Summary of Maintenance Costs per Annum (PA) per m²

Fire Sprinkler Options	Class 2 Average Floor Building Cost	Class 2 Larger Floor Building Cost	Class 3 Average Floor Building Cost	Class 3 Larger Floor Building Cost
Option 1: AS2118.1	$6,119	$6,415	$6,415	$6,710
Option 2: FPAA101D	$719	$896	$883	$965
Option 3: FPAA101H	$3,060	$3,207	$3,207	$3,355

Table 7: Summary of Maintenance Costs per Annum (PA) per m²

Fire Sprinkler Options	Class 2 Average Floor $/m²	Class 2 Larger Floor $/m²	Class 3 Average Floor $/m²	Class 3 Larger Floor $/m²
Option 1: AS2118.1	$1.13	$0.89	$1.19	$0.93
Option 2: FPAA101D	$0.13	$0.12	$0.16	$0.13
Option 3: FPAA101H	$0.57	$0.45	$0.59	$0.46

Please refer to Appendices for detailed costs.

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APPENDIX A (i) - TOTAL BUILDING COSTS AND OFFSETS

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ABCB - Class 2 Summary Sheet

CLASS 2	SPRINKLER OFFSETS OUTLINE			Ave floorplate by ABCB - 900m2				Large horizontal spread - 1200m2			
Item No.	NCC subject matter	Current NCC DtS	Proposed offsets for sprinklered building	DtS	Option 1 - AS2118	Option 2 - FPA101D	Option 3 - FPA101H	DtS	Option 1 - AS2118	Option 2 - FPA101D	Option 3 - FPA101H
				Current Building Cost/m2	$ 2,602			Current Building Cost/m2	$ 2,602		
1. - Fire Protection Offsets				$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2
1.1	Sprinklers (E1.5)	Not required	Required	*Not required*	$ 50.30	$ 25.43	$ 44.62	*Not required*	$ 49.87	$ 27.74	$ 46.25
1.2	Penetrations in non-loadbearing walls around fire-isolated stairways and internal bounding construction (Spec C1.1 Table 3 and Part C3)	-/60/30	-/60/15	$ 1.91	($ 1.91)	($ 1.91)	($ 1.91)	$ 2.03	($ 2.03)	($ 2.03)	($ 2.03)
1.3	Protect window openings in bounding construction separating a path of travel to an exit along open balcony and landing (C3.11(g)(v))	Wall wetting sprinklers; or -/60/- fire windows; or -/60/- fire shutters	Not required	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
1.4	Internal fire hydrants (E1.3)	Where the total floor area exceeds 500m^2	An external hydrant or dry fire main required. Street hydrants use as 'feed' hydrants for suction of water to boost the dry hydrant system need only meet the flow requirement of AS 2419.1 and not the pressure requirement. Note - no concession for the FPAA101H system. *Feed fire hydrants used for boosting are intended to provide the necessary flow rate to the fire brigade pumping appliance.*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
2. - Architectural Offsets				$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2
2.1	Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)	-/90/90	-/60/60	$ 3.89	($ 3.89)	($ 3.89)	($ 3.89)	$ 2.92	($ 2.92)	($ 2.92)	($ 2.92)
2.2	Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A))	6m	12m	$ 41.09	($ 41.09)	($ 41.09)	($ 41.09)	$ 30.82	($ 30.82)	($ 30.82)	($ 30.82)
2.3	Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))	20m	30m								
2.4	Maximum distance of travel between alternative exits (D1.5(c)(i))	45m	60m								
2.5	Spandrels (C2.6)	A 900mm spandrel or horizontal construction (both non-combustible and FRL of 60/60/60) is required if a window in an external wall is above another window in the storey below	No requirement	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Total Offsets to applied Sprinkler Options $/m2					$ 3.40	($ 21.47)	($ 2.27)		$ 14.11	($ 8.03)	$ 10.48
Proposed Building Costs / m2 (Offsets included)					**$ 2,605**	**$ 2,581**	**$ 2,600**		**$ 2,616**	**$ 2,594**	**$ 2,612**

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ABCB - Class 3 Summary Sheet

CLASS 3	SPRINKLER OFFSETS OUTLINE			Ave floorplate by ABCB - 900m2				Large horizontal spread - 1200m2			
Item No.	NCC subject matter	Current NCC DtS	Proposed offsets for sprinklered building	DtS	Option 1 - AS2118	Option 2 - FPA101D	Option 3 - FPA101H	DtS	Option 1 - AS2118	Option 2 - FPA101D	Option 3 - FPA101H
				Current Building Cost/m2	$		3,472	Current Building Cost/m2	$		3,472
1. - Fire Protection Offsets				$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2
1.1	Sprinklers (E1.5)	Not required	Required	*Not required*	$ 51.09	$ 28.37	$ 43.66	*Not required*	$ 52.12	$ 31.12	$ 44.47
1.2	Penetrations in non-loadbearing walls around fire-isolated stairways and internal bounding construction (Spec C1.1 Table 3 and Part C3)	-/60/30	-/60/15	$ 2.33	($ 2.33)	($ 2.33)	($ 2.33)	$ 2.33	($ 2.33)	($ 2.33)	($ 2.33)
1.3	Protect window openings in bounding construction separating a path of travel to an exit along open balcony and landing (C3.11(g)(v))	Wall wetting sprinklers; or -/60/- fire windows; or -/60/- fire shutters	Not required	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
1.4	Internal fire hydrants (E1.3)	Where the total floor area exceeds 500m^2	An external hydrant or dry fire main required. Street hydrants use as 'feed' hydrants for suction of water to boost the dry hydrant system need only meet the flow requirement of AS 2419.1 and not the pressure requirement. Note - no concession for the FPAA101H system. *Feed fire hydrants used for boosting are intended to provide the necessary flow rate to the fire brigade pumping appliance.*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
2. - Architectural Offsets				$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2	$/m2
2.1	Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)	-/90/90	-/60/60	$ 3.89	($ 3.89)	($ 3.89)	($ 3.89)	$ 2.92	($ 2.92)	($ 2.92)	($ 2.92)
2.2	Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A))	6m	12m	$ 41.09	($ 41.09)	($ 41.09)	($ 41.09)	$ 30.82	($ 30.82)	($ 30.82)	($ 30.82)
2.3	Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))	20m	30m								
2.4	Maximum distance of travel between alternative exits (D1.5(c)(i))	45m	60m								
2.5	Spandrels (C2.6)	A 900mm spandrel or horizontal construction (both non-combustible and FRL of 60/60/60) is required if a window in an external wall is above another window in the storey below	No requirement	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Total Offsets to applied Sprinkler Options $/m2					$ 3.78	($ 18.94)	($ 3.66)		$ 16.05	($ 4.95)	$ 8.41
Proposed Building Costs / m2 (Offsets included)					**$ 3,476**	**$ 3,453**	**$ 3,469**		**$ 3,488**	**$ 3,467**	**$ 3,480**

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APPENDIX A (ii) - FIRE SPRINKLER COSTS AND OFFSETS

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ABCB - Class 2 Summary Sheet Average (900m2) Floorplate

CLASS 2	Sprinklers				Fire Rating of Penetrations		
	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
Option 1 AS2118	Quantity	570	1,467	5,400	540	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$50.30		$1.91	$48.39
	Total			$271,612		$10,289	$261,323.00
Option 2 FPA101D	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	504	1,454	5,400	544	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$25.43		$1.91	$23.52
	Total			$137,295		$10,289	$127,006.00
Option 3 FPA101H	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	504	1,428	5,400	544	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$44.62		$1.91	$42.71
	Total			$240,949		$10,289	$230,660.00

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ABCB - Class 2 Summary Sheet Large (1200m2) Floorplate

CLASS 2	Sprinklers				Fire Rating of Penetrations		
	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
Option 1 AS2118	Quantity	762	2,112	7,200	780	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$49.87		$2.03	$47.85
	Total			$359,099		$14,589	$344,510.00
Option 2 FPA101D	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	744	2,124	7,200	780	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$27.74		$2.03	$25.71
	Total			$199,703		$14,589	$185,114.00
Option 3 FPA101H	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	744	2,072	7,200	780	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$46.25		$2.03	$44.22
	Total			$332,978		$14,589	$318,389.00

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ABCB - Class 3 Summary Sheet Average (900m2) Floorplate

CLASS 3	Sprinklers				Fire Rating of Penetrations		
	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
Option 1 AS2118	Quantity	558	1,264	5,400	636	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$51.09		$2.33	$48.77
	Total			$275,911		$12,566	$263,345.00
Option 2 FPA101D	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	456	1,415	5,400	608	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$28.37		$2.33	$26.04
	Total			$153,206		$12,566	$140,640.00
Option 3 FPA101H	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	456	1,225	5,400	636	5,400	5,400
	Unit	no	m	m2	no	m2	m2
	Rate			$43.66		$2.33	$41.33
	Total			$235,757		$12,566	$223,191.00

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ABCB - Class 3 Summary Sheet Large (1200m2) Floorplate

CLASS 3	Sprinklers				Fire Rating of Penetrations		
	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
Option 1 AS2118	Quantity	822	1,808	7,200	860	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$52.12		$2.33	$49.79
	Total			$375,264		$16,749	$358,515.00
Option 2 FPA101D	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	672	2,066	7,200	860	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$31.12		$2.33	$28.79
	Total			$224,036		$16,749	$207,287.00
Option 3 FPA101H	Description	Sprinkler Heads	Sprinkler Pipework	Total Cost	Total No of Penetrations	Fire Rating & Penetration Cost	Total End Cost
	Quantity	672	1,718	7,200	860	7,200	7,200
	Unit	no	m	m2	no	m2	m2
	Rate			$44.47		$2.33	$42.15
	Total			$320,206		$16,749	$303,457.00

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APPENDIX A (iii) - ARCHITECTURAL COSTS AND OFFSETS

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ABCB - Class 2 - Average Format Benchmark Costs

BUILDING with 6 Storeys and Basement Carpark		Sprinkler Options 1, 2 & 3			CLASS 2 - Average Format	
	DCWC Recommended	Project A	Project B	Project C	Project D	Project E
2.1 Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)						
Assumptions and Recommendations	Note.	Programme - Programme disruption and variance due to the change in material specification is considered negligable Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Lining to internal core walls comprising 16mm Fyrchek plasterboard to one side, studwork and paint	$82	$70	$80	$82	$82	$85
Furring channel / Stud	$35	-	$35	$35	$35	$35
Lining	$35	-	$35	$35	$35	$35
Insulation	Excl.	-	-	-	-	-
Paint	$12	-	$10	$12	$12	$15
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Deduction of cost/m2 to allow for 13mm Fyrechek plasterboard	-$2	Deduction as outlined in the CSR Gyprock Red Book - requirement to change from -/90/90 to -/60/60				
Lining to internal core walls comprising 13mm Fyrchek plasterboard to one side, studwork and paint	$80	$68	$78	$80	$80	$83
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	900 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**-$24,534**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	48	8 apartments each level - over 6 levels				
Total $/Apt	**-$511**					
2.1 - Total Saving $/GFA	**-$4**					
2.2 Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A)) **2.3 Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))** **2.4 Maximum distance of travel between alternative exits (D1.5(c)(i))**						
Assumptions and Recommendations	Note.	Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Deduction of secondary core due to reduction of the Required Distance of Travel	$258,897	**$239,856**	**$258,240**	**$255,540**	**$233,404**	**$286,048**
180mm thick precast wall	$122,573	$111,104	$125,440	$125,440	$107,520	$143,360
Rate - 180mm thick precast wall		$310	$350	$350	$300	$400
RC Staircase	$78,400	$78,400	$78,400	$78,400	$78,400	$78,400
Rate - RC Staircase		$3,500	$3,500	$3,500	$3,000	$3,500
Precast concrete lid to stair core	$5,236	$4,680	$6,000	$5,250	$5,000	$5,250
Internal Doors - 6No.	$10,140	$8,400	$12,000	$9,600	$7,500	$13,200
External Door - 1No. to egress, allow 1No. to basement	$4,280	$3,000	$4,000	$4,000	$6,000	$4,400
Exit signage	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Basic lighting to stairwell	$3,500	$3,500	$3,500	$3,500	$3,500	$3,500
Raft Footings	$28,169	$27,172	$26,300	$26,750	$24,884	$35,738
Excavation incl. disposal - m3		$1,715	$5,022	$3,500	$2,100	$2,625
Concrete incl. blinding - m3		$5,880	$12,488	$9,800	$9,765	$13,475
Reinforcement - tonnes		$4,410	$8,736	$10,500	$10,719	$7,718
Formwork - m2		$1,092	incl.	$1,200	$1,320	$3,600
Treatments incl. sub-base- m2		$1,575	incl.	$1,750	$980	$4,000
Temporary shoring wall to raft footing		incl.	incl.	incl.	incl.	$4,320
E/O Slab Rates for stair footings and underpit wall.		$12,500	incl.	incl.	incl.	incl.
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	900 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**$258,897**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	48	8 apartments each level - over 6 levels				
Total $/Apt	**$5,394**					
Total Saving $/GFA	**$41**					

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 2 - Large Format Benchmark Costs

BUILDING with 6 Storeys and Basement Carpark		Sprinkler Options 1, 2 & 3			CLASS 2 - Large Format	
	DCWC Recommended	Project A	Project B	Project C	Project D	Project E
2.1 Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)						
Assumptions and Recommendations	Note.	Programme - Programme disruption and variance due to the change in material specification is considered negligable Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Lining to internal core walls comprising 16mm Fyrchek plasterboard to one side, studwork and paint	$82	$70	$80	$82	$82	$85
Furring channel / Stud	$35	-	$35	$35	$35	$35
Lining	$35	-	$35	$35	$35	$35
Insulation	Excl.	-	-	-	-	-
Paint	$12	-	$10	$12	$12	$15
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Deduction of cost/m2 to allow for 13mm Fyrechek plasterboard	-$2	Deduction as outlined in the CSR Gyprock Red Book - requirement to change from -/90/90 to -/60/60				
Lining to internal core walls comprising 13mm Fyrchek plasterboard to one side, studwork and paint	$80	$68	$78	$80	$80	$83
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	1,200 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**-$24,534**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	72	12 apartments each level - over 6 levels				
Total $/Apt	**-$341**					
2.1 - Total Saving $/GFA	**-$3**					
2.2 Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A)) **2.3 Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))** **2.4 Maximum distance of travel between alternative exits (D1.5(c)(i))**						
Assumptions and Recommendations	Note.	Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Deduction of secondary core due to reduction of the Required Distance of Travel	$258,897	**$239,856**	**$258,240**	**$255,540**	**$233,404**	**$286,048**
180mm thick precast wall	$122,573	$111,104	$125,440	$125,440	$107,520	$143,360
Rate - 180mm thick precast wall		$310	$350	$350	$300	$400
RC Staircase	$78,400	$78,400	$78,400	$78,400	$78,400	$78,400
Rate - RC Staircase		$3,500	$3,500	$3,500	$3,000	$3,500
Precast concrete lid to stair core	$5,236	$4,680	$6,000	$5,250	$5,000	$5,250
Internal Doors - 6No.	$10,140	$8,400	$12,000	$9,600	$7,500	$13,200
External Door - 1No. to egress, allow 1No. to basement	$4,280	$3,000	$4,000	$4,000	$6,000	$4,400
Exit signage	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Basic lighting to stairwell	$3,500	$3,500	$3,500	$3,500	$3,500	$3,500
Raft Footings	$28,169	$27,172	$26,300	$26,750	$24,884	$35,738
Excavation incl. disposal - m3		$1,715	$5,022	$3,500	$2,100	$2,625
Concrete incl. blinding - m3		$5,880	$12,488	$9,800	$9,765	$13,475
Reinforcement - tonnes		$4,410	$8,736	$10,500	$10,719	$7,718
Formwork - m2		$1,092	incl.	$1,200	$1,320	$3,600
Treatments incl. sub-base- m2		$1,575	incl.	$1,750	$980	$4,000
Temporary shoring wall to raft footing		incl.	incl.	incl.	incl.	$4,320
E/O Slab Rates for stair footings and underpit wall.		$12,500	incl.	incl.	incl.	incl.
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	1,200 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**$258,897**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	72	12 apartments each level - over 6 levels				
Total $/Apt	**$3,596**					
2.2, 2.3, 2.4 - Total Saving $/GFA	**$31**					

Australian Building Codes Board

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ABCB - Class 3 - Average Format Benchmark Costs

BUILDING with 6 Storeys and Basement Carpark		Sprinkler Options 1, 2 & 3			CLASS 3 - Average Format	
	DCWC Recommended	Project A	Project B	Project C	Project D	Project E
2.1 Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)						
Assumptions and Recommendations	Note.	Programme - Programme disruption and variance due to the change in material specification is considered negligable Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Lining to internal core walls comprising 16mm Fyrchek plasterboard to one side, studwork and paint	$82	$70	$80	$82	$82	$85
Furring channel / Stud	$35	-	$35	$35	$35	$35
Lining	$35	-	$35	$35	$35	$35
Insulation	Excl.	-	-	-	-	-
Paint	$12	-	$10	$12	$12	$15
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Deduction of cost/m2 to allow for 13mm Fyrechek plasterboard	-$2	Deduction as outlined in the CSR Gyprock Red Book - requirement to change from -/90/90 to -/60/60				
Lining to internal core walls comprising 13mm Fyrchek plasterboard to one side, studwork and paint	$80	$68	$78	$80	$80	$83
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	900 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	-$24,534	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	96	16 apartments each level - over 6 levels				
Total $/Apt	-$256					
2.1 - Total Saving $/GFA	-$4					
2.2 Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A)) **2.3 Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))** **2.4 Maximum distance of travel between alternative exits (D1.5(c)(i))**						
Assumptions and Recommendations	Note.	Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Deduction of secondary core due to reduction of the Required Distance of Travel	$258,897	**$239,856**	**$258,240**	**$255,540**	**$233,404**	**$286,048**
180mm thick precast wall	$122,573	$111,104	$125,440	$125,440	$107,520	$143,360
Rate - 180mm thick precast wall		$310	$350	$350	$300	$400
RC Staircase	$78,400	$78,400	$78,400	$78,400	$78,400	$78,400
Rate - RC Staircase		$3,500	$3,500	$3,500	$3,000	$3,500
Precast concrete lid to stair core	$5,236	$4,680	$6,000	$5,250	$5,000	$5,250
Internal Doors - 6No.	$10,140	$8,400	$12,000	$9,600	$7,500	$13,200
External Door - 1No. to egress, allow 1No. to basement	$4,280	$3,000	$4,000	$4,000	$6,000	$4,400
Exit signage	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Basic lighting to stairwell	$3,500	$3,500	$3,500	$3,500	$3,500	$3,500
Raft Footings	$28,169	$27,172	$26,300	$26,750	$24,884	$35,738
Excavation incl. disposal - m3		$1,715	$5,022	$3,500	$2,100	$2,625
Concrete incl. blinding - m3		$5,880	$12,488	$9,800	$9,765	$13,475
Reinforcement - tonnes		$4,410	$8,736	$10,500	$10,719	$7,718
Formwork - m2		$1,092	incl.	$1,200	$1,320	$3,600
Treatments incl. sub-base- m2		$1,575	incl.	$1,750	$980	$4,000
Temporary shoring wall to raft footing		incl.	incl.	incl.	incl.	$4,320
E/O Slab Rates for stair footings and underpit wall.		$12,500	incl.	incl.	incl.	incl.
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	900 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	$258,897	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	96	16 apartments each level - over 6 levels				
Total $/Apt	$2,697					
2.2, 2.3, 2.4 - Total Saving $/GFA	$41					

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ABCB - Class 3 - Large Format Benchmark Costs

BUILDING with 6 Storeys and Basement Carpark		Sprinkler Options 1, 2 & 3			CLASS 3 - Large Format	
	DCWC Recommended	Project A	Project B	Project C	Project D	Project E
2.1 Non-loadbearing walls around fire-isolated stairways (Spec C1.1 Table 3)						
Assumptions and Recommendations	Note.	Programme - Programme disruption and variance due to the change in material specification is considered negligable Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Lining to internal core walls comprising 16mm Fyrchek plasterboard to one side, studwork and paint	-$82	$70	$80	$82	$82	$85
Furring channel / Stud	$35	-	$35	$35	$35	$35
Lining	$35	-	$35	$35	$35	$35
Insulation	Excl.	-	-	-	-	-
Paint	$12	-	$10	$12	$12	$15
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Deduction of cost/m2 to allow for 13mm Fyrechek plasterboard	-$2	Deduction as outlined in the CSR Gyprock Red Book - requirement to change from -/90/90 to -/60/60				
Lining to internal core walls comprising 13mm Fyrchek plasterboard to one side, studwork and paint	$80	$68	$78	$80	$80	$83
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	1,200 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**$23,369**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	144	24 apartments each level - over 6 levels				
Total $/Apt	**$162**					
2.1 - Total Saving $/GFA	**$3**					
2.2 Distance of travel from SOU door to exit or choice of exits (D1.4(a)(i)(A)) **2.3 Distance of travel to single exit serving the storey at the level of egress to a road or open space (D1.4(a)(i)(B))** **2.4 Maximum distance of travel between alternative exits (D1.5(c)(i))**						
Assumptions and Recommendations	Note.	Prelims and Margins - Not accounted for in this exercise as both amounts are generated from a cost perspective External wall - Assumed 1 No. core wall to include for one No. External wall Individual project costs incl. rates have been adjusted to match the Format Area's provided by the ABCB				
Deduction of secondary core due to reduction of the Required Distance of Travel	-$258,897	**$239,856**	**$258,240**	**$255,540**	**$233,404**	**$286,048**
180mm thick precast wall	$122,573	$111,104	$125,440	$125,440	$107,520	$143,360
Rate - 180mm thick precast wall		$310	$350	$350	$300	$400
RC Staircase	$78,400	$78,400	$78,400	$78,400	$78,400	$78,400
Rate - RC Staircase		$3,500	$3,500	$3,500	$3,000	$3,500
Precast concrete lid to stair core	$5,236	$4,680	$6,000	$5,250	$5,000	$5,250
Internal Doors - 6No.	$10,140	$8,400	$12,000	$9,600	$7,500	$13,200
External Door - 1No. to egress, allow 1No. to basement	$4,280	$3,000	$4,000	$4,000	$6,000	$4,400
Exit signage	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Basic lighting to stairwell	$3,500	$3,500	$3,500	$3,500	$3,500	$3,500
Raft Footings	$28,169	$27,172	$26,300	$26,750	$24,884	$35,738
Excavation incl. disposal - m3		$1,715	$5,022	$3,500	$2,100	$2,625
Concrete incl. blinding - m3		$5,880	$12,488	$9,800	$9,765	$13,475
Reinforcement - tonnes		$4,410	$8,736	$10,500	$10,719	$7,718
Formwork - m2		$1,092	incl.	$1,200	$1,320	$3,600
Treatments incl. sub-base- m2		$1,575	incl.	$1,750	$980	$4,000
Temporary shoring wall to raft footing		incl.	incl.	incl.	incl.	$4,320
E/O Slab Rates for stair footings and underpit wall.		$12,500	incl.	incl.	incl.	incl.
Adjusted Construction Cost @ Dec 2017	Nil	Nil	Nil	Nil	Nil	Nil
Typical Floor Level GFA as provided by ABCB	1,200 m2	1 Level of Basement carpark and 6 Levels of Residential			-	-
Total Building Savings $	**-$258,897**	Typical core dimensions allowed for are 5m x 3m with FH of 3.2m, multiplied over 7 levels including basement				
No. of Apartments	144	24 apartments each level - over 6 levels				
Total $/Apt	**-$1,798**					
2.2, 2.3, 2.4 - Total Saving $/GFA	**-$31**					

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APPENDIX B - BENCHMARK PROJECTS SPECIFICATIONS AND RATES

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ABCB - Class 2 & 3 - Architectural Description of Benchmark Projects

CLASS 2: Benchmark Projects

Item No.	Description	Unit	Project A	Project B	Project C	Project D	Project E	Projects A-E Average
1.	Levels (Storeys above ground)	No.	5	5	6	6	6	-
2.	No. Apartments on Typical Level	No.	17	14	13	9	8	12 No.
3.	Building Footprint	m2	1,460	1,280	1,430	760	1,125	1,211 m2
4.	Fire Escape Stairs	No.	1 No.	1 No.	1 No.	1 No.	2 No.	1.2 No.
5.	Fire Sprinklers to Occupied levels	Yes / No	Yes	No	Yes	No	No	40%
6.	Date of Completion	Year	2016	2020	2018	2017	2017	-

CLASS 3: Benchmark Projects

Item No.	Description	Unit	Project A	Project B	Project C	Project D	Project E	Projects A-E Average
1.	Levels (Storeys above ground)	No.	6	5	5	4	6	-
2.	No. Apartments on Typical Level	No.	38	17	34	18	6	23 No.
3.	Building Footprint	m2	1,920	545	1,600	1,480	475	1,204 m2
4.	Fire Escape Stairs	No.	4 No.	2 No.	*5 No.	2 No.	1 No.	2.3 No.
5.	Fire Sprinklers to Occupied levels	Yes / No	No	No	No	No	No	0%
6.	Date of Completion	Year	2017	2017	2018	2018	2015	-

* Class 3: Project C - 5 No. external staircases, not included in Projects A-E Average calculation

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ABCB - Class 2 & 3 - Average and Large Format Benchmark Cost $/m2

CLASS 2: Benchmark Projects

SOURCE	DCWC Benchmarking, Dec 2017		Rawlinsons 2017, 35th Edition				AIQS The Building Economist, Dec 2017			
Location	Melbourne	Sydney	Melbourne		Sydney		Melbourne		Sydney	
Standard	Average / High	Average / High	Average	High	Average	High	Average	High	Average	High
Low	$ 2,326	$ 2,720	$ 2,235	$ 2,790	$ 2,235	$ 2,775	$ 2,193	$ 2,608	$ 2,213	$ 2,633
High	$ 2,644	$ 3,460	$ 2,410	$ 3,010	$ 2,410	$ 2,995				
Average	$ 2,485	$ 3,090	$ 2,611		$ 2,604		$ 2,401		$ 2,423	
Cost $/m2	$2,787 / m2		$2,608 / m2				$2,412 / m2			
Class 2 - Cost $/m2	$2,602 / m2									

CLASS 3: Benchmark Projects

SOURCE	DCWC Benchmarking, Dec 2017		Rawlinsons 2017, 35th Edition				AIQS The Building Economist, Dec 2017			
Location	Melbourne	Sydney	Melbourne		Sydney		Melbourne		Sydney	
Standard	Average / High	Average / High	Average	High	Average	High	Average	High	Average	High
Low	$ 3,294	$ 2,980	$ 3,325	$ 3,410	$ 3,875	$ 3,955	$ 2,727	$ 3,220	$ 3,007	$ 4,009
High	$ 3,524	$ 3,770	$ 3,585	$ 3,675	$ 4,175	$ 4,265				
Average	$ 3,409	$ 3,375	$ 3,499		$ 4,068		$ 2,974		$ 3,508	
Cost $/m2	$3,392 / m2		$3,783 / m2				$3,241 / m2			
Class 3 - Cost $/m2	$3,472 / m2									

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APPENDIX C -
FIRE SPRINKLER RATES

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ABCB - Class 2 - Avg. Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 2 building of 6 storeys				
	Option 1: AS 2118.1:1999 Sprinkler System				
	Sprinkler Heads	570	no	75	42,994
	Sprinkler Pipework	1,467	m	29	43,212
	Sprinkler Pipework Fittings	2,574	no	44	112,692
	Sprinkler Pipework Supports	735	no	24	17,517
	Sprinkler Valves	46	no	423	19,452
	Sprinkler Accessories	1	item	11,102	11,102
	Preliminaries & Supervision	1	item	18,523	18,523
	Maintenance	12	months	510	6,119
	Total Cost	5,400	m2	**50**	**271,612**
	Assumptions & Clarifications				
	An average floor area of 900m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	48 Two (2) Bedroom Sole Occupancy Units (SOU) (8 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum				
	"Viking" Fire Protection Products List Price Book June 2016 (Current)				

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ABCB - Class 2 - Avg. Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	"Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

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ABCB - Class 2 - Large Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large horizontal spread Class 2 building of 6 storeys				
	Option 1: AS 2118.1:1999 Sprinkler System				
	Sprinkler Heads	762	no	75	57,232
	Sprinkler Pipework	2,112	m	29	60,496
	Sprinkler Pipework Fittings	3,632	no	43	154,716
	Sprinkler Pipework Supports	1,006	no	25	25,514
	Sprinkler Valves	46	no	423	19,452
	Sprinkler Accessories	1	item	10,669	10,669
	Preliminaries & Supervision	1	item	24,606	24,606
	Maintenance	12	months	535	6,415
	Total Cost	7,200	m2	**50**	**359,099**
	Assumptions & Clarifications				
	A large horizontal spread Class 2 building of 6 storeys with basement carpark & designed & constructed underthe current NCC deemed-to-satisfy (DTS) requirements.				
	72 Two (2) Bedroom Sole Occupancy Units (SOU) (12 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	External Sprinklers, Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum				
	"Viking" Fire Protection Products List Price Book June 2016 (Current)				

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ABCB - Class 2 - Large Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	"Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

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ABCB - Class 2 - Avg. Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 2 building of 6 storeys				
	Option 2: FPAA101D Sprinkler System - Domestic Water Supply				
	Sprinkler Heads	504	no	77	38,787
	Sprinkler Pipework	1,454	m	18	26,273
	Sprinkler Pipework Fittings	2,286	no	20	46,824
	Sprinkler Pipework Supports	752	no	18	13,364
	Sprinkler Valves	108	no	34	3,723
	Sprinkler Accessories	1	item	416	416
	Preliminaries & Supervision	1	item	6,469	6,469
	Maintenance & Warranty	1	PA	1,438	1,438
	Total Cost	5,400	m2	**25**	**137,295**
	Assumptions & Clarifications				
	Average Floor Area of 900m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	48 Two (2) Bedroom Sole Occupancy Units (SOU) (8 SOU per floor);				
	Domestic Plumbing Pipework Materials				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	CPVC Pipework Systems				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				

ABCB - Class 2 - Avg. Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016 "Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

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ABCB - Class 2 - Large Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large Floor Area - Class 2 building of 6 storeys				
	Option 2: FPAA101D Sprinkler System - Domestic Water Supply				
	Sprinkler Heads	744	no	77	57,274
	Sprinkler Pipework	2,124	m	18	37,933
	Sprinkler Pipework Fittings	3,390	no	20	69,224
	Sprinkler Pipework Supports	1,056	no	18	18,500
	Sprinkler Valves	156	no	33	5,139
	Sprinkler Accessories	1	item	416	416
	Preliminaries & Supervision	1	item	9,424	9,424
	Maintenance & Warranty	1	PA	1,793	1,793
	Total Cost	7,200	m2	**28**	**199,703**
	Assumptions & Clarifications				
	A large horizontal spread Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	72 Two (2) Bedroom Sole Occupancy Units (SOU) (12 SOU per floor);				
	Domestic Plumbing Pipework Materials				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	CPVC Pipework Systems				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				

ABCB - Class 2 - Large Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016 "Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

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ABCB - Class 2 - Avg. Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 2 building of 6 storeys				
	Option 3: FPAA101H Sprinkler System - Hydrant Water Supply				
	Sprinkler Heads	504	no	77	38,787
	Sprinkler Pipework	1,428	m	29	41,067
	Sprinkler Pipework Fittings	2,439	no	43	104,178
	Sprinkler Pipework Supports	715	no	23	16,323
	Sprinkler Valves	42	no	414	17,369
	Sprinkler Accessories	1	item	8,838	8,838
	Preliminaries & Supervision	1	item	11,328	11,328
	Maintenance & Warranty	12	months	255	3,060
	Total Cost	5,400	m2	**45**	**240,949**
	Assumptions & Clarifications				
	Average Floor Area of 900m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	48 Two (2) Bedroom Sole-Occupancy Units (SOU) (8 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				

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ABCB - Class 2 - Avg. Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum				
	"Viking" Fire Protection Products List Price Book June 2016 (Current)				
	"Klinefire Pty Ltd" Generic Price List Effective December 2017				
	USD Price List Converted to AUD Rate Dec 2017				
	Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019				
	Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current)				
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ABCB - Class 2 - Large Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large horizontal spread Class 2 building of 6 storeys				
	Option 3: FPAA101H Sprinkler System - Hydrant Water Supply				
	Sprinkler Heads	744	no	77	57,274
	Sprinkler Pipework	2,072	m	28	58,290
	Sprinkler Pipework Fittings	3,554	no	42	148,050
	Sprinkler Pipework Supports	1,037	no	22	23,329
	Sprinkler Valves	42	no	414	17,369
	Sprinkler Accessories	1	item	9,756	9,756
	Preliminaries & Supervision	1	item	15,703	15,703
	Maintenance & Warranty	12	months	267	3,207
	Total Cost	7,200	m2	**46**	**332,978**
	Assumptions & Clarifications				
	A large horizontal spread Class 2 building of 6 storeys with basement carpark & designed & constructed underthe current NCC deemed-to-satisfy (DTS) requirements.				
	72 Two (2) Bedroom Sole-Occupancy Units (SOU) (12 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				

ABCB - Class 2 - Large Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

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ABCB - Class 2 - Avg. Floor Areas : Fire Rating

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 2 building of 6 storeys				
	Fire Rating Penetrations				
	Fire Rated Plumbing Penetrations	324	no	16	5,122
	Fire Rated Floor Waste Penetrations	96	no	12	1,194
	Fire Rated Conduit Penetrations	120	no	18	2,141
	Preliminaries & Supervision	1	item	846	846
	Maintenance & Warranty	1	item	985	985
	Total Cost	5,400	m2	**2**	**10,289**
	Assumptions & Clarifications				
	An average floor area of 900m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	48 Two (2) Bedroom Sole Occupancy Units (SOU) (8 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement & Infrastructure				
	Rate References:				
	"Middys" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.A95592				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	Labour Hourly Rates based on Electrical Trades Employees Union (ETU) Electrical Industry Awards & Rates as per the published ETU Enterprise Agreement 2016-2019				
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Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 2 -Large Floor Areas : Fire Rating

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large Floor Area - Class 2 building of 6 storeys				
	Fire Rating Penetrations				
	Fire Rated Plumbing Penetrations	468	no	16	7,399
	Fire Rated Floor Waste Penetrations	144	no	12	1,791
	Fire Rated Conduit Penetrations	168	no	18	2,997
	Preliminaries & Supervision	1	item	1,219	1,219
	Maintenance	1	item	1,182	1,182
	Total Cost	7,200	m2	**2**	**14,589**
	Assumptions & Clarifications				
	An average floor area of 1200m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	72 Two (2) Bedroom Sole Occupancy Units (SOU) (12 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement & Infrastructure				
	Rate References:				
	"Middys" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.A95592				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	Labour Hourly Rates based on Electrical Trades Employees Union (ETU) Electrical Industry Awards & Rates as per the published ETU Enterprise Agreement 2016-2019				
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Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Avg. Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 3 building of 6 storeys				
	Option 1: AS 2118.1:1999 Sprinkler System				
	Sprinkler Heads	558	no	74	41,493
	Sprinkler Pipework	1,264	m	31	38,905
	Sprinkler Pipework Fittings	2,767	no	45	124,502
	Sprinkler Pipework Supports	607	no	27	16,211
	Sprinkler Valves	46	no	423	19,452
	Sprinkler Accessories	1	item	10,131	10,131
	Preliminaries & Supervision	1	item	18,802	18,802
	Maintenance & Warranty	12	months	535	6,415
	Total Cost	5,400	m2	**51**	**275,911**
	Assumptions & Clarifications				
	Average Floor Area of 900m2 Class 3 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	96 One (1) Bedroom Sole Occupancy Units (SOU) (16 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Balconies				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	External Sprinklers, Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				

ABCB - Class 3 - Avg. Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Large Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large horizontal spread Class 3 building of 6 storeys				
	Option 1: AS 2118.1:1999 Sprinkler System				
	Sprinkler Heads	822	no	74	61,140
	Sprinkler Pipework	1,808	m	30	54,052
	Sprinkler Pipework Fittings	4,005	no	44	175,087
	Sprinkler Pipework Supports	864	no	26	22,509
	Sprinkler Valves	46	no	423	19,452
	Sprinkler Accessories	1	item	10,601	10,601
	Preliminaries & Supervision	1	item	25,713	25,713
	Maintenance & Warranty	12	months	559	6,710
	Total Cost	7,200	m2	**52**	**375,264**
	Assumptions & Clarifications				
	Large horizontal spread Class 3 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	144 One (1) Bedroom Sole Occupancy Units (SOU) (24 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	External Sprinklers, Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum				

ABCB - Class 3 - Large Floor Areas : AS2118

Code	Description	Quantity	Unit	Rate	Total
	"Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Avg. Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 3 building of 6 storeys				
	Option 2: FPAA101D Sprinkler System - Domestic Water Supply				
	Sprinkler Heads	456	no	77	34,924
	Sprinkler Pipework	1,415	m	18	25,244
	Sprinkler Pipework Fittings	3,101	no	22	67,079
	Sprinkler Pipework Supports	721	no	18	12,720
	Sprinkler Valves	108	no	34	3,723
	Sprinkler Accessories	1	item	539	539
	Preliminaries & Supervision	1	item	7,211	7,211
	Maintenance & Warranty	1	item	1,766	1,766
	Total Cost	5,400	m2	**28**	**153,206**
	Assumptions & Clarifications				
	Average Floor Area of 900m2 Class 3 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	96 One (1) Bedroom Sole Occupancy Units (SOU) (16 SOU per floor);				
	Domestic Plumbing Pipework Materials				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Balconies				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	CPVC Pipework Systems				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				

ABCB - Class 3 - Avg. Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277 "Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016 "Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Large Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large horizontal spread Class 3 building of 6 storeys				
	Option 2: FPAA101D Sprinkler System - Domestic Water Supply				
	Sprinkler Heads	672	no	77	51,480
	Sprinkler Pipework	2,066	m	18	36,402
	Sprinkler Pipework Fittings	4,830	no	21	99,605
	Sprinkler Pipework Supports	1,042	no	18	18,267
	Sprinkler Valves	156	no	33	5,139
	Sprinkler Accessories	1	item	636	636
	Preliminaries & Supervision	1	item	10,576	10,576
	Maintenance & Warranty	1	item	1,930	1,930
	Total Cost	7,200	m2	**31**	**224,036**
	Assumptions & Clarifications				
	A large horizontal spread Class 3 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	144 One (1) Bedroom Sole Occupancy Units (SOU) (24 SOU per floor);				
	Domestic Plumbing Pipework Materials				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Balconies				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	CPVC Pipework Systems				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				

ABCB - Class 3 - Large Floor Areas : FPAA101D

Code	Description	Quantity	Unit	Rate	Total
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277 "Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016 "Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Avg. Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 3 building of 6 storeys				
	Option 3: FPAA101H Sprinkler System - Hydrant Water Supply				
	Sprinkler Heads	456	no	77	34,924
	Sprinkler Pipework	1,225	m	30	36,759
	Sprinkler Pipework Fittings	2,407	no	45	107,353
	Sprinkler Pipework Supports	614	no	25	15,542
	Sprinkler Valves	42	no	414	17,369
	Sprinkler Accessories	1	item	9,529	9,529
	Preliminaries & Supervision	1	item	11,074	11,074
	Maintenance	12	months	267	3,207
	Total Cost	5,400	m2	**44**	**235,757**
	Assumptions & Clarifications				
	Average Floor Area of 900m2 Class 3 building of 6 storeys with basement carpark & designed & constructed underthe current NCC deemed-to-satisfy (DTS) requirements.				
	96 One (1) Bedroom Sole Occupancy Units (SOU) (16 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Balconies				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				

ABCB - Class 3 - Avg. Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Large Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large horizontal spread Class 3 building of 6 storeys				
	Option 3: FPAA101H Sprinkler System - Hydrant Water Supply				
	Sprinkler Heads	672	no	77	51,480
	Sprinkler Pipework	1,718	m	29	49,773
	Sprinkler Pipework Fittings	3,507	no	44	152,854
	Sprinkler Pipework Supports	885	no	23	20,479
	Sprinkler Valves	42	no	414	17,369
	Sprinkler Accessories	1	item	9,809	9,809
	Preliminaries & Supervision	1	item	15,088	15,088
	Maintenance & Warranty	12	months	280	3,355
	Total Cost	7,200	m2	**44**	**320,206**
	Assumptions & Clarifications				
	A large horizontal spread Class 3 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	144 One (1) Bedroom Sole Occupancy Units (SOU) (24 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) Fire Hydrant, Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Water Authority Fees, Tappings & Charges (Included in Base Building) Site Specific				
	Drenchers & Wall-Wetting Systems (POA) Site Specific				
	Concealed Space Sprinklers				
	Sprinkler Riser (n/a)				
	Performance Based Design				
	Rate References:				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	"Reliable Automatic Sprinkler Co." AUS Dollar International Price Book Effective 1 July 2016				

ABCB - Class 3 - Large Floor Areas : FPAA101H

Code	Description	Quantity	Unit	Rate	Total
	"Tyco Fire Protection Products" List Price Book 2016 Effective Date 6/19/2017 With 8/14/2017 Addendum "Viking" Fire Protection Products List Price Book June 2016 (Current) "Klinefire Pty Ltd" Generic Price List Effective December 2017 USD Price List Converted to AUD Rate Dec 2017 Labour Hourly Rates based on Plumbing & Pipe Trades Employees Union (PPTEU) Plumbing & Fire Industry Awards & Rates as per the published CEPU- Plumbing Division (Vic) Enterprise Agreement 2016-2019 Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current) "Rawlinsons" Australian Construction Handbook 2017 Edition 35				

Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 - Avg. Floor Areas : Fire Rating

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Average Floor Area - Class 3 building of 6 storeys				
	Fire Rating Penetrations				
	Fire Rated Plumbing Penetrations	324	no	16	5,122
	Fire Floor Waste Penetrations	96	no	12	1,194
	Fire Rated Conduit Penetrations	216	no	18	3,853
	Preliminaries & Supervision	1	item	1,017	1,017
	Maintenance & Warranty	1	item	1,379	1,379
	Total Cost	5,400	m2	**2**	**12,566**
	Assumptions & Clarifications				
	An average floor area of 900m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	96 One (1) Bedroom Sole Occupancy Units (SOU) (16 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement & Infrastructure				
	Rate References:				
	"Middys" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.A95592				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	Labour Hourly Rates based on Electrical Trades Employees Union (ETU) Electrical Industry Awards & Rates as per the published ETU Enterprise Agreement 2016-2019				
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Australian Building Codes Board

DONALD CANT WATTS CORKE

ABCB - Class 3 -Large Floor Areas : Fire Rating

Code	Description	Quantity	Unit	Rate	Total
	M17207 - Australian Building Codes Board (ABCB)				
	Large Floor Area - Class 3 building of 6 storeys				
	Fire Rating Penetrations				
	Fire Rated Plumbing Penetrations	468	no	16	7,399
	Fire Floor Waste Penetrations	144	no	12	1,791
	Fire Rated Conduit Penetrations	248	no	18	4,424
	Preliminaries & Supervision	1	item	1,361	1,361
	Maintenance & Warranty	1	item	1,773	1,773
	Total Cost	7,200	m2	**2**	**16,749**
	Assumptions & Clarifications				
	An average floor area of 1200m2 Class 2 building of 6 storeys with basement carpark & designed & constructed under the current NCC deemed-to-satisfy (DTS) requirements.				
	144 One (1) Bedroom Sole Occupancy Units (SOU) (24 SOU per floor);				
	Exclusions:				
	GST				
	Site Specific Contingency & Escalation				
	Base Building Services (DTS) including Basement Sprinkler Systems & Infrastructure				
	Fire Pump-sets & Tanks Site Specific Price on Application (POA) Site Specific				
	Performance Based Design				
	Rate References:				
	"Middys" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.A95592				
	"Reece" Commercial Market Price Donald Cant Watts Corke (VIC) Pty Ltd Trade Account No.3019277				
	Labour Hourly Rates based on Electrical Trades Employees Union (ETU) Electrical Industry Awards & Rates as per the published ETU Enterprise Agreement 2016-2019				
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APPENDIX D - HOURLY RATES

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ABCB Fire Price Book - Hourly Rates

Code	Description	Quantity	Unit	Rate	Total
	Plumbing & Fire Industry Awards Trade				
	Minimum Hourly Rate Calculation				
	Basic wage	36	hr	46.21	1,663.56
	Travel allowance	5	days	46.21	231.05
	Fares (start and finish on job own transport)	5	days	22.36	111.80
	Site Allowance	36	hr	4.25	153.00
	Redundancy per pay week	1	wk	101.55	101.55
	Income protection	1	wk	35.00	35.00
	Col-invest (% of weekly wage, travel, leave loading, average site allowance)	1	wk	49.25	49.25
	Superannuation	1	wk	195.24	195.24
	Annual Leave Loading	1	wk	27.01	27.01
	Training Levy	1	wk	66.90	66.90
	Payroll Tax	1	wk	116.96	116.96
	Workcover	1	wk	149.61	149.61
	Total Cost of Employee Per Week	1	wk	2,900.93	2,900.93
	Annual Cost	48	wks	2,900.93	139,244.64
	Productive Weeks	46	wks	3,027.06	139,244.64
	Labour Cost Per Hour	36	hr	84.08	3,027.06
	Overhead Recovery	20	%	16.82	336.34
	Profit	10	%	8.41	84.08
	Charge Out Rate	**1**	**hr**		**82**
	References:				
	Plumbing and Pipe Trades Employees Union (PPTEU) Plumbing and Fire Industry Awards & Rates as per the published CEPU - Plumbing Division (Vic) Enterprise Agreement 2016 – 2019				
	Australian Government - Fair Work Ombudsman - Pay Guide - Plumbing & Fire Sprinklers Award 2010 (MA000036) Published 21 July 2017 (Current)				

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