

# Staged fire safety strategy

## Defire (NSW) Pty Limited

ABN. 30 099 090 089

Telephone 02 9211 4333

Facsimile 02 9211 4366

Suite 3, Level 4, 83-97 Kippax Street, Surry Hills, NSW 2010

PO BOX 2046, Strawberry Hills, NSW 2012



Stakeholders		Email
Benjamin Hughes Brown	NSW Fire Brigades	<a href="mailto:Benjamin.HughesBrown@fire.nsw.gov.au">Benjamin.HughesBrown@fire.nsw.gov.au</a>
Richard Spiteri	NSW Fire Brigades	<a href="mailto:Richard.spiteri@fire.nsw.gov.au">Richard.spiteri@fire.nsw.gov.au</a>
Guiseppe Graziano	Steve Watson and Partners	<a href="mailto:Ggraziano@swpartners.com.au">Ggraziano@swpartners.com.au</a>
Luke Denny	Steve Watson and Partners	<a href="mailto:Ldenny@swpartners.com.au">Ldenny@swpartners.com.au</a>
Steve Mouldsdale	Bovis Lend Lease	<a href="mailto:Steve.Mouldsdale@lendlease.com.au">Steve.Mouldsdale@lendlease.com.au</a>
Catherine Carlos	Defire	<a href="mailto:Catherine@defire.com.au">Catherine@defire.com.au</a>
Jason Jeffress	Defire	<a href="mailto:Jason@defire.com.au">Jason@defire.com.au</a>
Johan Axelsson	Defire	<a href="mailto:johan@defire.com.au">johan@defire.com.au</a>
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## 1. Purpose

The purpose of this report is to present a high level fire safety strategy regarding the staging of the project in relations to fire safety during construction, proposed fire safety systems and fire brigade related items. This in order to determine an appropriate and common strategy between all relevant stakeholders at the early stages of project.

Defire has been engaged by AMP Capital Investors (AMPCI) to prepare this report to accompany a Concept Plan Application under Part 3A of the Environmental Planning and Assessment Act 1979 for the proposed redevelopment of the Marrickville Metro Shopping Centre. The development is being considered under part 3A of the Environmental Planning and Assessment Act 1979 as it satisfies the criteria described in Schedule 1 of the Major Projects State Environmental Planning Policy (Major Projects SEPP).

## 2. Site context

Marrickville Metro Shopping Centre is located at 34 Victoria Road, Marrickville. The existing shopping centre fronts Victoria Road to the north, Murray Street to the east and Smidmore Street to the south

and is adjoined by single storey residential dwellings to the west. The shopping centre is predominantly a single level retail building and comprises major tenants being Kmart, Woolworths and Aldi as well as a range of speciality stores. Carparking is located at roof top level with existing vehicle ramp access via Smidmore Street and Murray Street.

The land at 13-55 Edinburgh Road is located to the south of Smidmore Street and is bounded by Edinburgh Road and Murray Street. This site is currently used as a warehouse with associated ground level carparking.

The shopping centre is located within an established residential and industrial precinct surrounded by small lot residential housing to the north and west, and predominantly industrial land comprising larger allotments and larger building scales to the south and east.



Figure 1 Location plan

AMPCI owns Marrickville Metro Shopping Centre and the land to the immediate south at 13-55 Edinburgh Road, Marrickville.

### 3. Proposed works

AMPCI proposes to upgrade and expand Marrickville Metro Shopping Centre to accommodate additional retail floor space, improved facilities and services, as well as enhance convenience and accessibility for the community.

The proposal has three key elements:

- Redevelopment of the existing industrial land south of Smidmore Street (13-55 Edinburgh Road) to create a two level retail addition to the shopping centre with carparking above.

- The closure of Smidmore Street between Edinburgh Road and Murray Street in order to create a new pedestrian plaza including a two storey retail link and carparking access.
- An extension of retail floor area at first floor level above the existing shopping centre building with further additional roof top parking above.

The additional retail floor area will primarily accommodate a discount department store, supermarket, mini major and specialty retail space. The development will incorporate additional carparking as well as improved vehicle access and loading facilities.

The proposal will create a new urban plaza in Smidmore Street and will be complimentary to an enhanced public space fronting Victoria Road. The proposal will include works to the public domain in order to improve the pedestrian, cycling and public transport connections to and from the site and enhance pedestrian and patron safety.

## 4. Staging details

Owing to the scale of the project and the need to undertake the development whilst maintaining a safe and functional retail centre, it is proposed that construction will occur over at least two discrete stages.

Stage 1 will involve the redevelopment of the industrial site at 13-55 Edinburgh Road to accommodate the new two level retail centre including car parking above. This work will also incorporate the creation of the pedestrian plaza and retail extension across Smidmore Street linking the two retail buildings and the refurbishment of the existing shopping centre building fronting the northern side of Smidmore Street.

Stage 2 will involve the first floor level retail extension over the existing shopping centre building with the proposed additional carparking at roof top level.

## 5. Alternative solutions

The design of the proposed redevelopment will not comply with the DTS provisions of the Building Code of Australia (BCA). We intend to use a performance-based fire safety engineering approach to achieve compliance with the performance requirements of the BCA.

The key areas of departures from the DTS provisions identified to date are identified in Table 1.

Item	Description of alternative solution	DTS provision	Performance requirement	Comment
1.	FRL of building elements will generally be reduced and will not achieve compliance with Table 3 of Specification C1.1.	Clause C1.1	CP1 and CP2	Applicable for both Stage 1 and 2.
2.	Stage 1 will be built as Type B construction in lieu of Type A.	Clause C1.1	CP1 and CP2	Applicable for both Stage 1 and 2.
3.	Separation by fire walls between new and existing portions will include horizontal and vertical elements. Separation will include a drencher protected roller shutter.	Clause C2.7	CP2 and CP3	Applicable for Stage 1 only
4.	Perimeter vehicular access to all sides will not be provided.	Clauses C2.3 and C2.4	CP9	Applicable for both Stage 1 and 2.
5.	The maximum travel distance to a nearest exit are proposed to be extended to: <ul style="list-style-type: none"> <li>60m within major tenancies (&gt;1000m<sup>2</sup>)</li> <li>60m within mall areas</li> <li>80m within the carpark portions.</li> </ul> Note: Travel distances to a point of choice are proposed to be DTS compliant – ie not more than 20m.	Clause D1.4	DP4 and EP2.2	Applicable for both Stage 1 and 2.
6.	The maximum travel distance between alternative exits are proposed to be extended to: <ul style="list-style-type: none"> <li>100m within the retail portions</li> <li>75m within mall areas</li> <li>120m within the carpark portions.</li> </ul>	Clause D1.5	DP4 and EP2.2	Applicable for both Stage 1 and 2.
7.	Travel via required non fire-isolated stairs will exceed 80m.	Clause D1.9	DP5 and EP2.2	Applicable for both Stage 1 and 2.
8.	Smoke hazard management including: <ul style="list-style-type: none"> <li>Performance based smoke exhaust rates</li> <li>Performance based smoke reservoirs</li> <li>Smoke exhaust is not to be provided in the back of house area.</li> </ul>	Table E2.2a	EP2.2	Applicable for both Stage 1 and 2.

**Table 1 Identified alternative solutions**

It is Defire's professional opinion that it is possible to develop alternative solutions for the issues identified to demonstrate compliance with the relevant performance requirements of the BCA without major changes to the proposed design.

The alternative solutions for the building will be developed as part of the ongoing design and development process and documented in a format suitable for submission to the relevant approval authorities. It is noted that additional alternative solutions may be identified during the ongoing design development process in consultation with the design team.

## 6. Proposed strategy

### 6.1. General – Stage 1

1. It is proposed to treat the new shopping centre development as a standalone building. The design of the new shopping centre must comply with the current DTS provisions unless specifically addressed in an alternative solution. A separate fire safety schedule must be prepared for the new building as part of stage 1.
2. The existing shopping centre is understood to comply with the applicable building standards at the time of construction. As the proposed alterations and additions – ie the refurbishment of the southern front side facing Smidmore Street – are only of a minor nature it is not likely to require full compliance with the current DTS provisions of the BCA. This is on the basis that:
  - all new works will generally comply with the current DTS provisions of the BCA or be addressed on a performance basis in an alternative solution report.
  - any new works must not decrease the level of fire safety in the existing building, in particular the evacuation provisions and risk of fire spread.

### 6.2. General – Stage 2

3. The proposed works during stage 2 will result in significant additions and a change in use of the existing building. As such the new portions must comply with the current DTS provisions of the BCA unless specifically addressed in an alternative solution and the existing portions must undergo a fire safety upgrade.
4. It is proposed to incorporate alternative solutions into the design of stage 2. Once stage 2 is complete the alternative solution report prepared is intended to supersede the original report prepared for stage 1.

### 6.3. Fire compartmentation and separation – Stage 1

5. During construction of stage 1 a one hour fire separation must be provided separating the occupied from the non-occupied areas.
6. Once stage 1 is finished the new portions of stage 1 must be separated from the existing centre on ground floor by a combination of:
  - A fire wall designed in accordance with clause C2.7 of the BCA. The wall is to extend to the underside of the floor slab above.
  - A drencher protected automatically closing roller shutter.

### 6.4. Fire compartmentation and separation – Stage 2

7. During construction of stage 2 a one hour fire separation must be provided on level 1 separating the occupied from the non-occupied areas.
8. Once stage 2 is finished a smoke separation is proposed between the two portions on L1 – most likely via a smoke baffle.

### 6.5. Provision of escape – Stage 1

9. The provision for escape within the new building is to be in accordance with part D1 of the BCA unless otherwise noted within the alternative solution report to be prepared. It is intended to

provide independent mall egress to Smidmore Plaza on the new side of the proposed fire separation.

10. The provision for escape within the existing building is not to be decreased and specifically exit widths must not be reduced. It is the intent to provide independent compliant egress for the refurbished portions facing Smidmore Street. It is furthermore the intent to provide independent mall egress to Smidmore Plaza on the existing side of the proposed fire separation. The aggregate width of these exits must not be less than the current exit width provided for the centre.
11. It is proposed to provide egress via the bridge link on level 1 onto the existing carpark.

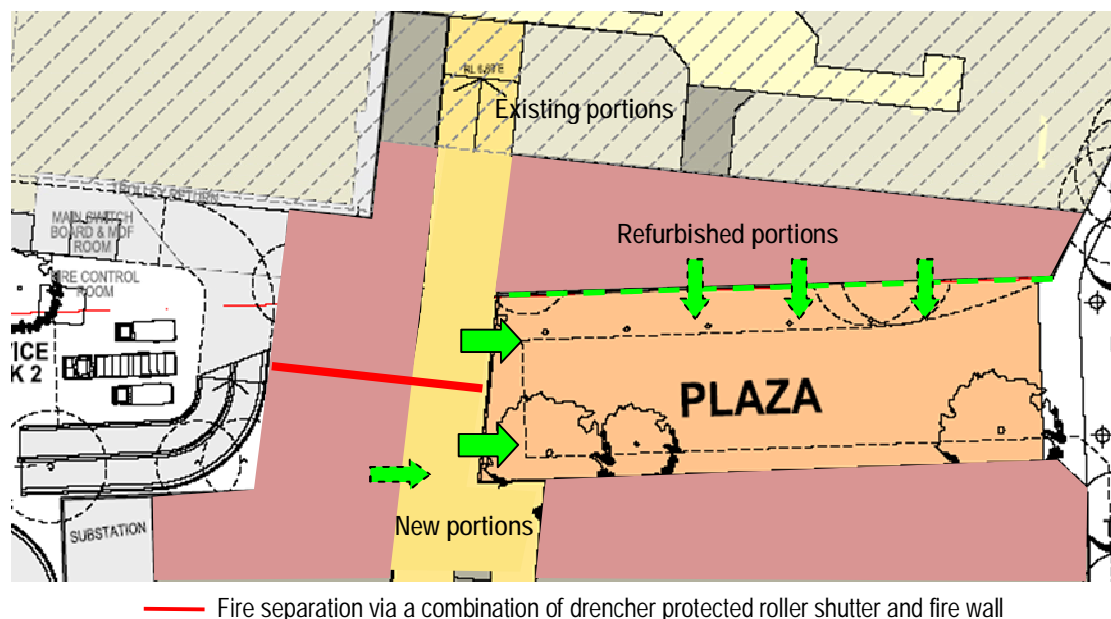


Figure 2 Proposed fire separation and egress provisions – Ground Floor

## 6.6. Provision of escape – Stage 2

12. The provision for escape within the existing building is no to be decreased and specifically exit widths must not be reduced. During construction of stage 2 consideration must be taken to provide temporary exits from L1 of stage 1 – ie not reducing the existing egress width. Once stage 2 is finished it is the intent to allow egress between the two portions.

## 6.7. Fire hydrants and hose reels – Stage 1 and 2

13. A new separate fire hydrant system must be installed throughout the new building in accordance with the requirements of clause E1.3 of the BCA and AS 2419.1-2005. The hydrant system must be provided with a ring main in accordance with AS 2419.1-2005.
14. There is an existing hydrant booster near Victoria Rd constructed under ordinance 70. The intent is to construct a new hydrant booster at Edinburgh Rd. This will be used to service stage 1 initially and will allow for the stage 2 inclusions. It has been discussed with the NSW Fire Brigades that two separate hydrant systems are adequate as part of stage 1 but when stage 2 comes into place the whole building must be served by one compliant system. It was further requested by the NSW Fire Brigades that the existing booster is provided with a new block plan which includes stage 1.



15. A fire hose reel system must be installed throughout the new building in accordance with the requirements of clause E1.4 of the BCA and AS 2441-2005. The NSW Fire Brigades advised that a combined slim line fire hose reel and fire hydrant design was not acceptable due to rubber hose and clearance issues. It was noted that this could not form part of an alternative solution. A slim line fire hose reel system as an individual system may be considered as adequate.

## 6.8. Fire suppression – Stage 1 and 2

16. A new separate sprinkler system in accordance with the requirements of specification E1.5 of the BCA and AS 2118.1-1999 must be provided throughout the new building.
17. There is an existing sprinkler valve room off Murray Street. The intent is to construct a new sprinkler valve room on Smidmore St adjacent to the fire control centre. This will be used to service stage 1 initially and will allow for the stage 2 inclusions.

There is currently no need for additional water supplies and sprinkler booster or pump as part of stage 1. When stage 2 comes on line sprinkler tanks at the intersection of Victoria and Murray Street will be constructed to serve stage 2. The NSW Fire Brigades noted that the location is adequate however noted that new sprinkler booster must be provided with both inlets and outlets so water could be fed directly from this location. The applicable standard is AS 2118.1-2006 in lieu of AS 2118.1-1999 which does not have this requirement.

## 6.9. Fire control centre – Stage 1 and 2

18. There is an existing fire control centre on Murray St. As part of stage 1 a new fire control centre in accordance with specification E1.8 of the BCA is to be provided on Smidmore St. This FCC will be provided for stage 1 and will allow for the stage 2 inclusion – ie when stage 2 is finalised the control functions of the existing centre will be moved to the new centre and the existing will be redundant.

The NSW Fire Brigades noted that additional access into the new main entry at the Plaza must be provided so access is easily provided from the new fire control centre.

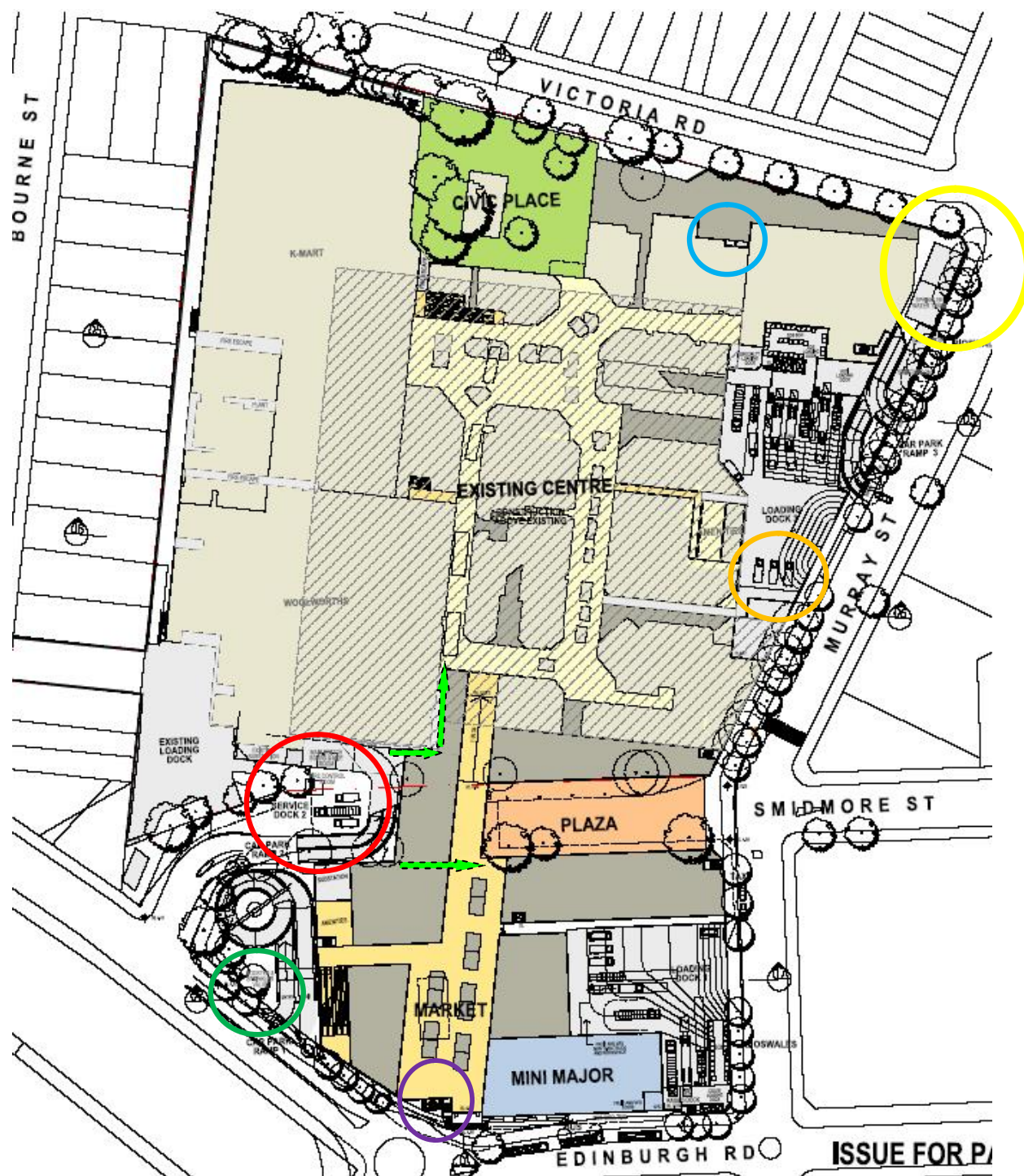


Figure 3 Location of major existing and proposed fire safety systems

- Sprinkler tank & booster valves – Stage 2 only
- Existing fire control centre and sprinkler valve room
- Proposed fire control centre / FIP
- Existing booster valves
- New hydrant/sprinkler booster valves
- Proposed repeater panel
- Potential access to main entrance from FCC




## 7. Conclusion

Should any of the stakeholders have any comments or inclusions for the proposed fire safety strategy please respond in writing to Defire as soon as practically possible.

Please contact Johan Axelsson of Defire on 02 9211 4333 if you have any questions regarding this information.

Regards,

A handwritten signature in black ink, appearing to read 'Johan Axelsson', with a stylized, cursive script.

Johan Axelsson  
Fire Safety Engineer  
Defire

## Drawings and information

Drawing title	Dwg no	Date	Drawn
Proposed ground floor plan	EA006	May 2010	Bovis Lend Lease (LY)
Proposed level 1 plan	EA007	May 2010	Bovis Lend Lease (LY)
Proposed rooftop carpark (level 2)	EA008	May 2010	Bovis Lend Lease (LY)
Proposed rooftop carpark (level 2a)	EA009	May 2010	Bovis Lend Lease (LY)

Other information	Ref no	Date	Prepared by
BCA assessment report for development application – concept stage	2010/0116 R2.2	May 2010	Steve Watson & Partners