

BUSHFIRE PROTECTION ASSESSMENT

FOR THE PROPOSED

WAHROONGA ADVENTIST SCHOOL

ON

LOT 621 in DP 1128314

FOX VALLEY ROAD

WAHROONGA

PREPARED FOR THE

**SEVENTH DAY ADVENTIST GREATER SYDNEY
CONFERENCE**



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EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited has been commissioned by the *Seventh Day Adventist Greater Sydney Conference* to inform the planning for the construction of the proposed Wahroonga Adventist School on Lot 621 in DP 1128314 Fox Valley Road, Wahroonga.

The proposed development has been deemed to be a State Significant Development [SSD] under Schedule 1 of *State Environmental Planning Policy [State and Regional Development] 2011*.

The Wahroonga Adventist School is proposed to be erected on land located to the west of Fox Valley Road and to the north of the existing Church within the Wahroonga Estate. The School will be constructed in four stages with Stage 1 containing 'Middle School'; Stage 2 containing Junior School and Stage 3 will consist of the Playing Fields and PE Courts, located in the north-eastern corner of the R4 zoned land, adjacent to the R4/E2 Zone boundary. Stage four of the School will contain the Senior School component of the Campus.

Vehicular access to the new School is proposed from a new access road which extends off Fox Valley Road.

Whilst the land upon which it is proposed to construct the School complex is not shown to be impacted by the Ku-ring-gai Bushfire Prone Land Map, the land within Lot 621 in DP 1128314, being the lot on which the School is proposed to be erected, contains unmanaged vegetation. This vegetation is recorded on the Bushfire Prone Land Map as Category 1 Bushfire Prone Vegetation.

The NSW Department of Planning [DoP] has issued the Director General's Requirements [DGRs] for the preparation of the Environmental Assessment for the project [SSD – 5535 dated 6.9.2012].

Item 12 of the 'Key Issues' of the The Director-General's requirements for the preparation of the Environmental Assessment require demonstration compliance with the relevant provisions of *Planning for Bushfire Protection 2006* and established Asset Protection Zones.

The DGR's also require consultation with the NSW Rural Fire Service.

This report therefore examines the proposed development against the deemed to satisfy requirements of *Planning for Bushfire Protection 2006* and confirms the proposed development's compliance with the provision of Asset Protection Zones, access and water supplies for fire-fighting operations and the requisite level of construction to the building in order to address the requirements of the Building Code of Australia.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

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SECTION 1

INTRODUCTION

1.1 Aim of this Assessment.

The aim of this Bushfire Protection Assessment is to review the proposed Development Application to determine compliance with the intent of *Planning for Bushfire Protection 2006* and in particular:

- Determine compliance with the Asset Protection Zone setbacks in accordance with the Estate Master Plan;
- Review the adequacy of access requirements for fire-fighting operations;
- Review the adequacy of fire-fighting water supplies;
- Determine the bushfire construction standards to the buildings, pursuant to A.S. 3959 – 2009; and
- Review emergency management provisions.

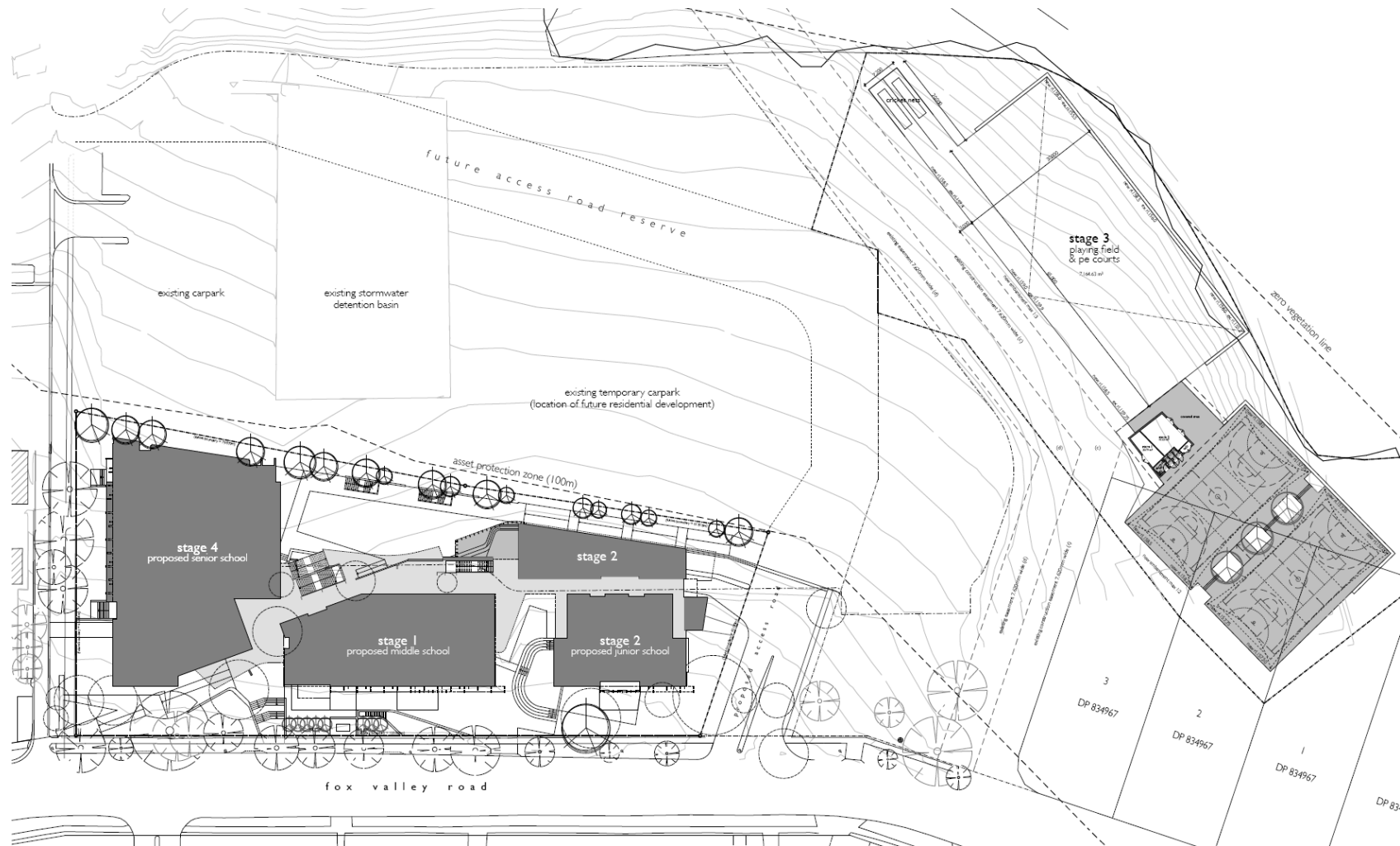
1.2 Development Proposal.

The State Significant Development [SSD] proposal seeks approval to erect the SDA Wahroonga Adventist School on Lot 621 in DP 1128314, Fox Valley Road, Wahroonga.

The School will be constructed in four stages with Stage 1 containing 'Middle School'; Stage 2 containing Junior School and Stage 3 will consist of the Playing Fields and PE Courts, located in the north-eastern corner of the R4 zoned land, adjacent to the R4/E2 Zone boundary. Stage 4 will contain the Senior School of the campus

Refer to Figure 1 on Page 7 showing Site Plan of the Adventist School.

Figure 1 – Site Plan of the proposed Adventist School



1.3 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

1.3.1 Legislation.

(a) Environmental Planning and Assessment Act (EPA Act)

Environmental Planning and Assessment Act - 1979 (EPA Act)

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 1979* (EPA Act). The *Environmental Planning and Assessment Amendment [Part 3A Repeal] Act 2011* commenced on the 1st October 2011 and amends the *Environmental Planning & Assessment Act 1979*.

These amendments include the repeal of Part 3A 'major projects' and introduces a new assessment pathway under Part 4 of the Act for State Significant Development [SSD].

State Environmental Planning Policy [State and Regional Development] 2011 [SRD SEPP] was introduced on the 1st October 2011 and declares certain development to be SSD. The Minister for Planning and Infrastructure may also declare development to be SSD by an order.

SSD requires lodgment of a development application, including submission of an environmental impact statement which addresses the Director General's Requirements [DGRs].

The Director General's Requirements [DGRs] issued under SSD 5535, dated 6th September 2012, require, under Item 12 of the 'Key Issues' compliance with the relevant provisions of *Planning for Bushfire Protection 2006*.

(b) Rural Fires Act 1997

The objectives of the *Rural Fires Act* are to provide:

- The prevention, mitigation and suppression of fires;
- Coordination of bushfire fighting and prevention;
- Protection of people and property from fires; and
- Protection of the environment.

In relation to the management of bushfire fuels on public and private lands within NSW, Sections 63(1) and 63(2) require public authorities and owners / occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimize the danger of, the spread of bushfires.

1.3.2 Planning Policies.

Planning for Bushfire Protection – 2006 (Rural Fire Service).

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for rural residential and residential subdivision, “*Special Fire Protection Purpose Development*” [including Class 9 buildings] and Class 5 – 8 and 10 buildings in bushfire prone areas.

The document provides deemed-to-satisfy specifications on the provision of Asset Protection Zones to residential and “*Special Fire Protection Purpose Developments*” [including Class 9 buildings]; defendable space requirements to Class 5 – 8 & 10 developments and access/water supply provisions for developments in bushfire prone areas [School buildings are Class 9b as defined by the Building Code of Australia (BCA)].

Provision for the assessment of construction standards to buildings is provided under the BCA.

1.4 Documentation reviewed in this Assessment.

The following documents were reviewed in the preparation of this report:

- Director General Requirements issued on the 6.9.2012 – State Significant Development – SSD - 5535;
- Site Plan of proposed Adventist School complex prepared by Stanton Dahl Architects – 05.02.2013;
- Wahroonga Estate Master Plan;
- Wahroonga Estate Zoning Plan;
- Aerial Photograph of the development site and adjoining land;
- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service;
- Australian Standard AS3959 – 2009 - “*Construction of Buildings in Bushfire Prone Areas*”;

- *Rural Fires Act 1997*; and
- Ku-ring-gai Council Certified Bushfire Prone Land Map.

1.5 Site Inspection.

Graham Swain of *Australian Bushfire Protection Planners Pty Limited* inspected the site on the 19th February 2013 to assess the topography, slopes and vegetation classification within and adjoining the development site.

The inspection also examined the management of the vegetation on the adjoining properties to determine the actual extent of any vegetation within 100 metres of the development site which could lawfully be mapped as being bushfire prone vegetation.

1.6 Authority Consultation.

To address the Director Generals Requirements for the preparation of the Environmental Impact Assessment for the construction of the Adventist School a meeting with Mr. Wayne Sketchley of the Development Control Division of the NSW Rural Fire Service was held on the 19th February 2013.

This consultation resulted in there being no matters raised which would necessitate modification to the development proposal.

SECTION 2

DESCRIPTION OF DEVELOPMENT SITE

2.1 Location & Description.

The land on which it is proposed to erect the Adventist School consists of Lot 621 in DP 1128314, No. 72 Fox Valley Road, Wahroonga.

Figure 2 – Location of the development site.



The map displays the Sydney Adventist Private Hospital and its vicinity. Key features include:

- Adventist School site:** Indicated by a pink arrow pointing to a pink rectangle on Fox Valley Road.
- Sydney Adventist Private Hospital:** A large grey building complex.
- Wairoonga Adventist Primary School:** Located south of the hospital.
- Roads:** Fox Valley Road, The Comenarra Parkway, and Elizabeth Road.
- Topography:** Contour lines indicating elevation.
- Other Labels:** Various lot numbers (e.g., 128, 140, 148, 175, 183, 189, 144, 177, 53, 21, 128314, 181, 172, 1742, 185, 178, 170, 148, 138, 1962, 51, 50, 1, 2, 4, 64, 65) and addresses (e.g., 10 DP834963, 3 DP834967, 4 DP834967, 1 DP834967, 1 DP834963, 1 DP21640, 15 DP21640, 16 DP21640, 17 DP21640, 19 DP21640, 43 DP21640, 44 DP21640, 45 DP21640, 46 DP21640, 47 DP21640, 48 DP21640, 49 DP21640, 61 DP222034, 62 DP222034, 63 DP222034, 64 DP222034, 65 DP222034).

Figure 4 – Aerial Photograph showing location of the Adventist School site.



2.2 Adjoining Land Use.

The landuse to the northwest of the Adventist School site contains the temporary on-grade carpark with the future landuse being residential development.

The land to the northeast contains residential development whilst to the southeast the land contains the Administrative Offices and Media Centre. The Adventist Church occupies the land to the southwest of the proposed Adventist School. [Refer to Figure 4 – Aerial Photograph above].

2.3 Topography.

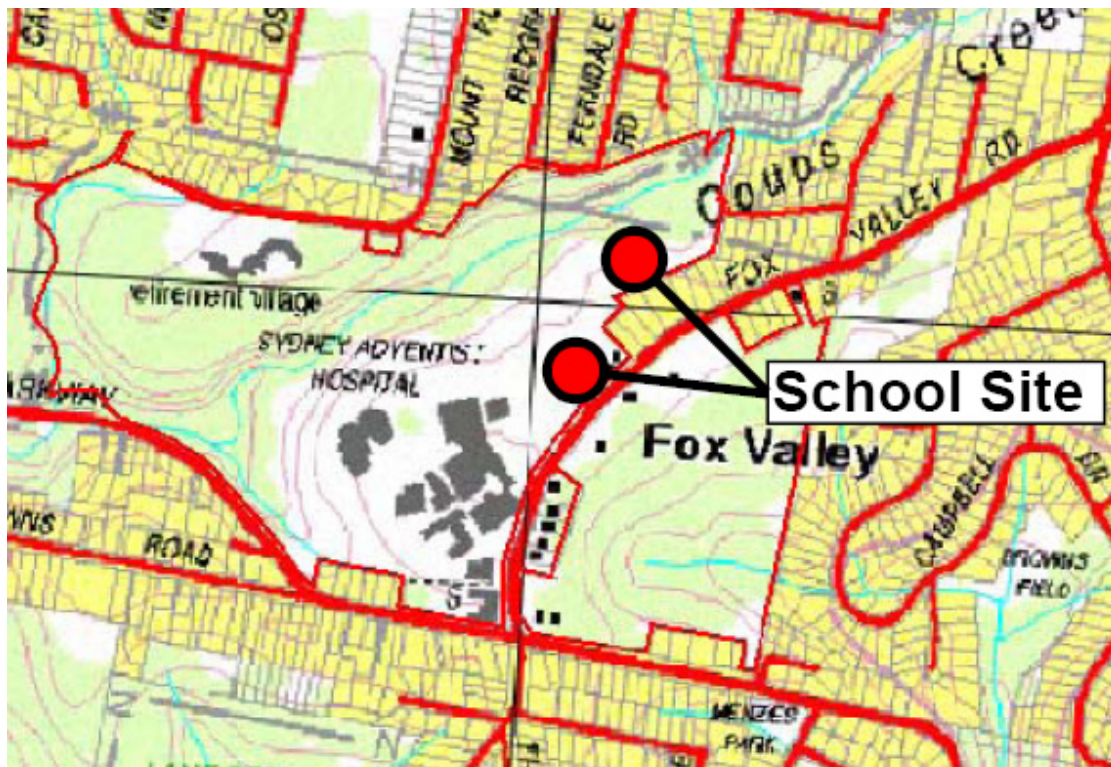
Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100m from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour to the site.

The development site and surrounding development is located on the apex of a broad ridgeline which rises gently to the north and falls to the east, west and south.

The landform within 100 metres to the northwest of the Adventist School site falls to the northwest across the existing temporary carpark developed land at less than 5 degrees towards the Coups Creek corridor. The landform within the Coups Creek corridor increases in gradient to 10 – 15 degrees.

The landform to the southeast of Fox Valley Road also falls across the existing developed land at less than 5 degrees, increasing to 10 degrees downslope across the E2 zoned land at the rear of the Administration Building.

Figure 5 – Topographic Plan showing contours of the land.



2.4 Vegetation.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006*, which classifies vegetation types into the following groups:

- (a) *Forests [wet & dry sclerophyll forests];*
- (b) *Woodlands;*
- (c) *Plantations – being pine plantations not native plantations;*
- (d) *Forested Wetlands;*
- (e) *Tall Heaths;*
- (f) *Freshwater Heaths;*
- (g) *Short Heaths;*
- (h) *Alpine Complex;*
- (i) *Semi – arid Woodlands;*
- (j) *Arid Woodlands; and*
- (k) *Rainforests.*

2.4.1 Vegetation within the Development Site.

The development site contains landscaped gardens.

2.4.2 Vegetation within 140 metres of the Development Site.

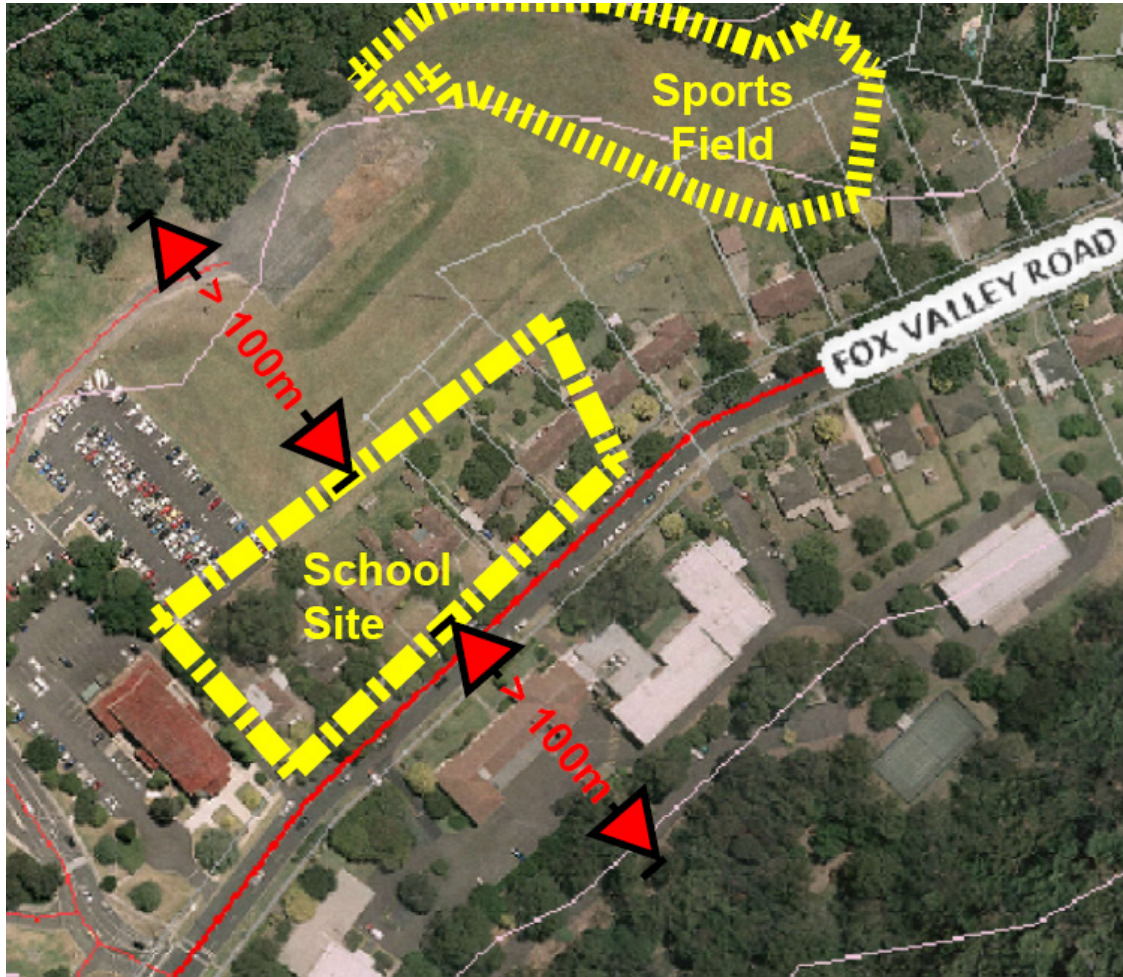
The closest bushfire prone vegetation is located more than 100 metres to the northwest of the School site, within the E2 zoned land located in the Coups Creek corridor.

Category 1 Bushfire Prone Vegetation also occupies the E2 zoned land to the southeast of the Administration Building, opposite the Adventist School site.

The 100 metre wide Buffer Zone to the unmanaged Category 1 Bushfire Prone Vegetation impacts on the site of the proposed Adventist School.

Refer to Figure 6 – Aerial Photograph showing separation to unmanaged vegetation, below.

Figure 6 – Aerial Photograph showing separation distances to unmanaged vegetation/zone boundary.



2.6 Significant Environmental Features within the Development Site.

The land within the development site does not contain significant environmental features such as SEPP 14 Wetlands, SEPP 44 Koala Habitat, SEPP 26 Littoral Rainforests; land slip areas or National Parks Estate; areas of geological interest; steep lands [>18 degrees] or riparian corridors.

2.7 Known Threatened Species, population or ecological community within the Development Site.

There are no known threatened species, population or ecological community within the development site.

2.8 Details and location of Aboriginal relics or Aboriginal place.

There are no sites of Aboriginal heritage significance within the proposed development site.

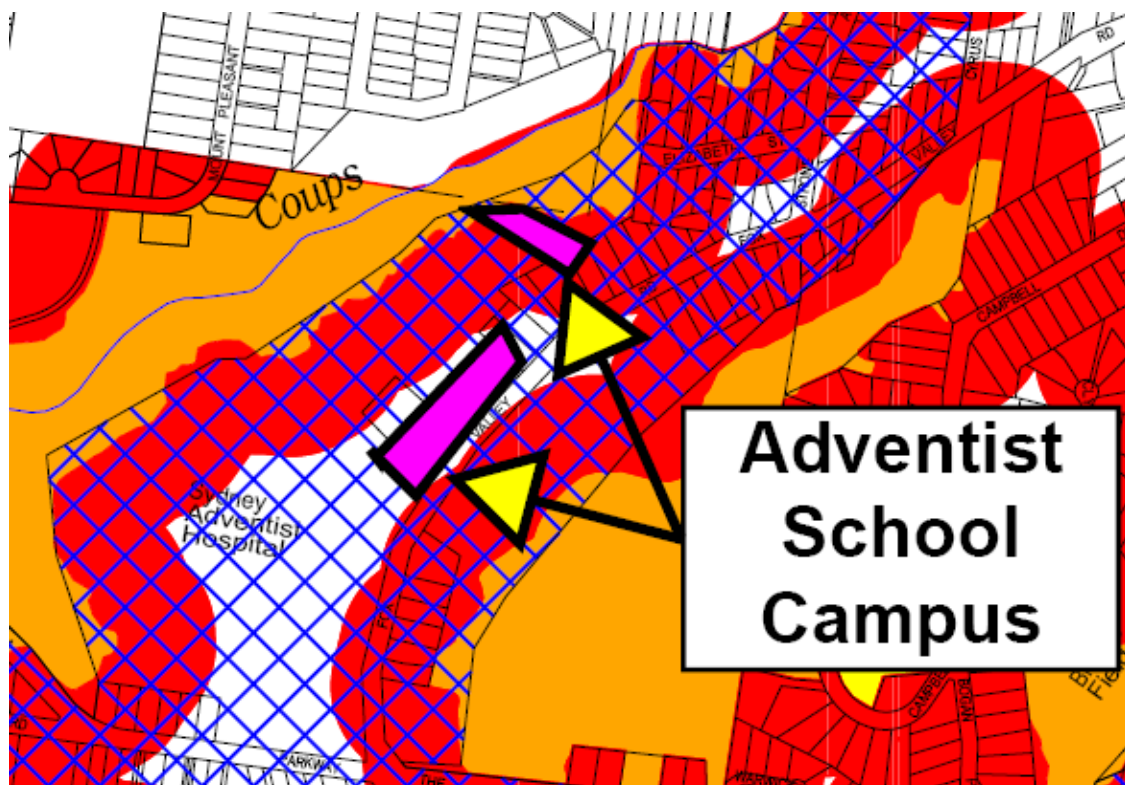
SECTION 3

PRECINCT LEVEL ASSESSMENT

4.1 Introduction.

Figure 7 below is an extract from the Ku-ring-gai Bushfire Prone Land Map showing the extent of the Category 1 Bushfire Prone Vegetation and Buffer Zone on land which adjoins the SPD development site.

Figure 7 – Extract of the Ku-ring-gai Bushfire Prone Land Map showing the location of the proposed SPD building and the location of the bushfire prone vegetation and buffer zone.



Legend: Orange – Category 1 Bushfire Prone Vegetation; Yellow – Category 2 Bushfire Prone Vegetation; Red – 30 & 100m wide Buffer Zone to the Category 1 & 2 Bushfire Prone Vegetation

The inspection of the development site confirmed that the proposed Adventist School Stage 1, 2 and Stage 4 buildings are not located within a Bushfire Prone Area. The Stage 3 [Playing Field] Store Building is located in the buffer zone to the Category 1 Bushfire Prone Vegetation located within Coups Creek.

SECTION 5

BUSH FIRE PROTECTION ASSESSMENT

5.1 Introduction.

The Director General of the Department of Planning [DoP] issued DGRs for the preparation of the Environmental Impact Assessment for the construction of the Adventist School [SSD 5535 dated 6th September 2012].

The DGRs require that the development demonstrate compliance with the requirements of *Planning for Bushfire Protection 2006*, including:

The following sections of this report examine these requirements specifically for the Adventist School complex.

5.2 Compliance with the requirements of *Planning for Bushfire Protection 2006*:

The objectives of *Planning for Bushfire Protection 2006* are:

- (i) Afford occupants of any building adequate protection from exposure to a bushfire;
- (ii) Provide for a defensible space to be located around buildings;
- (iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- (iv) Ensure that safe operational access and egress for emergency service personnel and residents is available;
- (v) Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zones; and
- (vi) Ensure that utility services are adequate to meet the needs of fire-fighters and others assisting in bushfire fighting.

The document identifies six core bushfire protection requirements. These are:

- (1) Provision of Asset Protection Zones / Defendable Spaces in accordance with the specific landuse, the predominant bushfire prone vegetation type within 140 metres of the development and the topography of the land containing the bushfire prone vegetation;
- (2) Access for fire-fighting operations;

- (3) Water Supplies for fire-fighting operations;
- (4) Construction standards of buildings located within 100 metres of the bushfire hazard interface, dependant on specification landuse, the predominant bushfire prone vegetation type within 140 metres of the development and the topography of the land containing the bushfire prone vegetation;
- (5) Emergency Planning;
- (6) Landscape Management – in particular the management of the Asset Protection Zones / Defendable Spaces and residual bushfire prone vegetation.

The document also identifies types of development and provides deemed-to-satisfy fire protection measures for residential development [Class 1, 2 & 3 buildings]; “*Special Fire Protection Purpose Developments*” [Hospitals, Nursing Homes / Retirement Villages / Schools / Colleges / Childcare Centres & Tourist Accommodation]; Industrial / Commercial Development and residential and Special Fire Protection Purpose “infill” development.

The protection of Class 5 – 10 buildings is considered under Section 4.3.6(f) of *Planning for Bushfire Protection 2006*, with general fire safety construction standards required under the provisions of the Building Code of Australia taken as acceptable solutions to construction of this type of building, however, the aim and objectives of *Planning for Bushfire Protection 2006* apply in relation to the provision of fire fighting access and water supplies, emergency planning and landscape / vegetation management.

5.2.1 Provision of Asset Protection Zones / Defendable Spaces:

Appendix 2 of *Planning for Bushfire Protection 2006* provides a methodology to determine the Asset Protection Zones for development located within, or within 100 metres of bushfire prone vegetation. This methodology includes the following matters to be assessed for each landuse within the Estate:

- (a) *Determine vegetation formations as follows:*
 - Identify all vegetation in all directions from the development for a distance of 140 metres;
 - Consult Table A2.1 to determine the predominant vegetation type; and
 - Select the predominant vegetation formation as described in Table A2.1.
- (b) *Determine the effective slope of the land under the predominant vegetation Class.*

- (c) *Determine the appropriate fire [weather] area in Table A2.2.*
- (d) *Consult Table A2.4 for residential development and Table A2.5 for Special Fire Protection Purpose developments and determine the appropriate setback [Asset Protection Zone / Defendable Space] for the assessed land use, vegetation formation and slope range.*

The Wahroonga Estate Master Plan identified the Asset Protection Zone setback distance for core and non-core Hospital and other landuses – including the establishment of a new Adventist School located in the north-eastern corner of the site, west of Fox Valley Road.

The pre-requisite for the location of the Adventist School, being determined to be a '*Special Fire Protection Purpose Development*', was that a 100 metre wide Asset Protection Zone be provided between the school buildings and the bushfire prone vegetation located within the Coups Creek corridor and in the E2 zoned land to the southeast of the Administration Buildings – refer to Figure 8 below showing the approved Landuse Zoning Map.

A review of the Adventist School plans prepared by Stanton Dahl Architects confirms that the pre-requisite of the School buildings within Stages 1, 2 and Stage 4 being located more than 100 metres from the E2 zone boundary and therefore 100 metres from the bushfire prone vegetation, has been met.

The Stage 3 – Playing Fields Store building is not a '*core*' *special fire protection purpose building* and is located to provide a minimum 30 metre wide defendable space to the adjacent bushfire prone vegetation in the Coups Creek corridor. This separation meets the requirements of the Rural Fire Service that Class 10 buildings shall be located outside the flame zone length – refer to Figure 9 showing the Asset Protection Zone/Defendable Space setbacks.

Figure 8 - Approved Landuse Zoning Map.

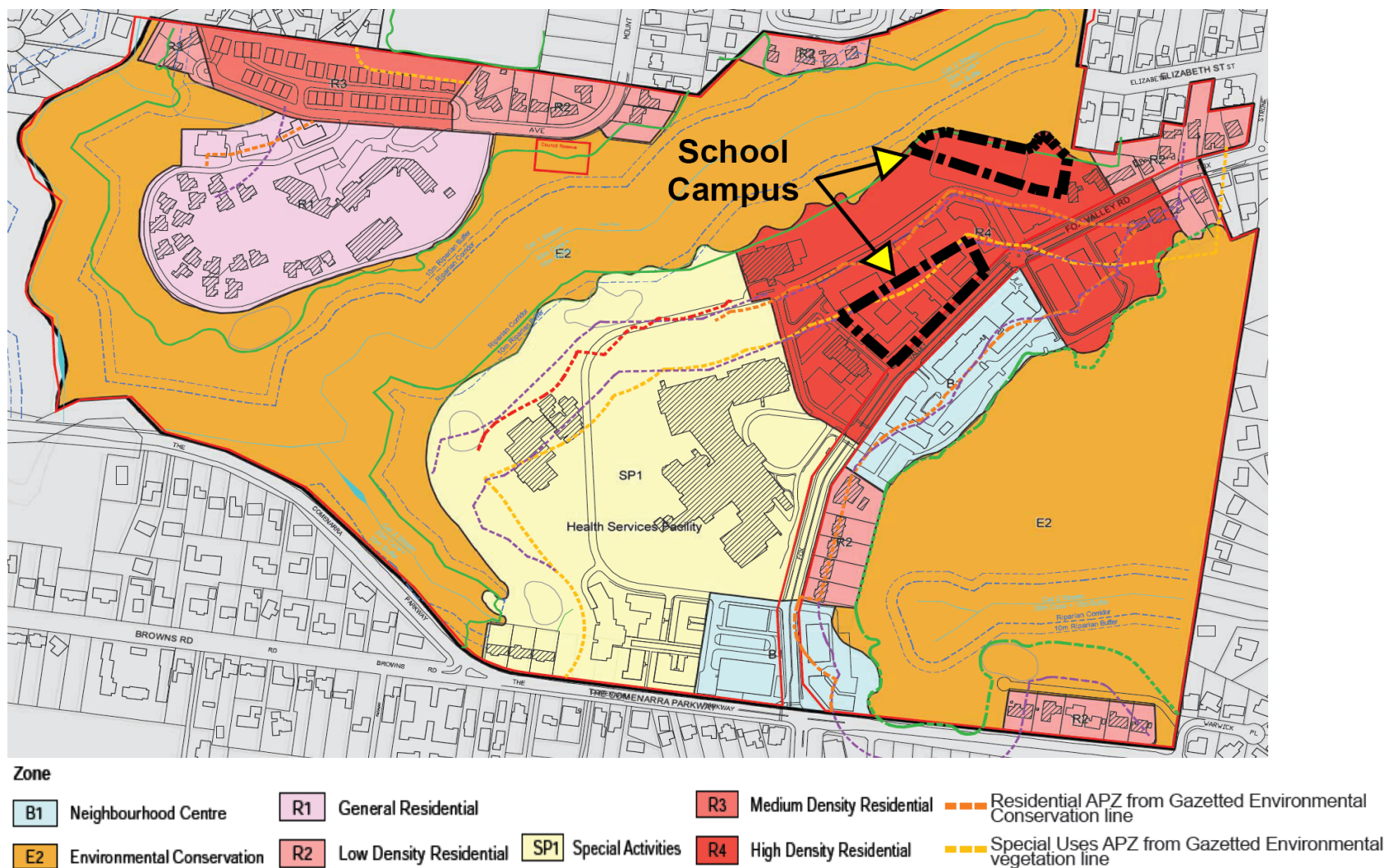
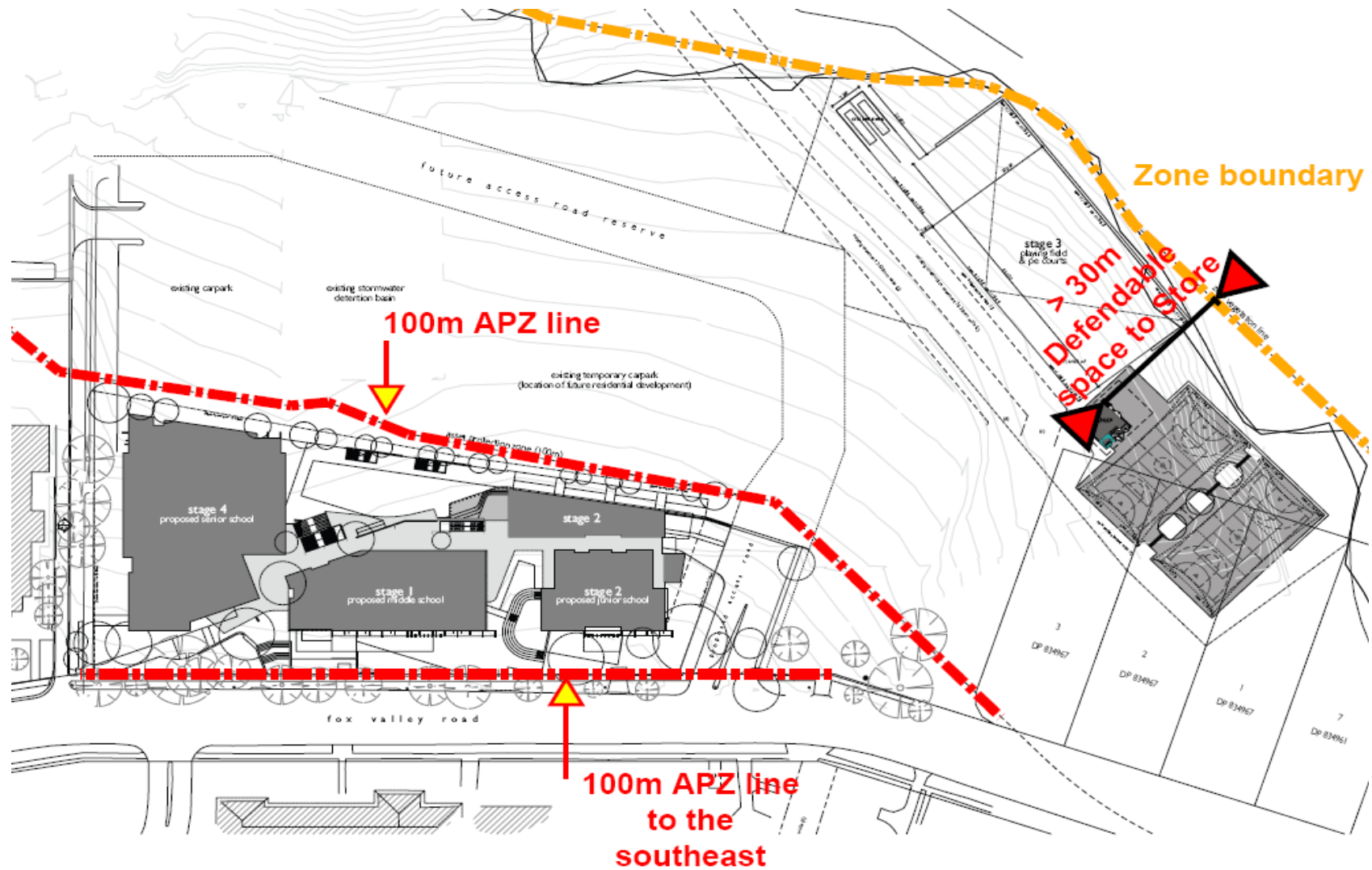


Figure 9 – Site Plan of proposed Adventist Schooling showing setbacks to bushfire prone vegetation.



5.2.2 Access for Fire-Fighting Operations.

The existing Public Road access to the Hospital and School Precinct is from Fox Valley Road.

Fox Valley Road is a two-way arterial road which connects the Pacific Highway with The Comenarra Parkway. Fox Valley Road is constructed to the deemed-to-satisfy public road specifications as defined by Section 4.1.3(1) of *Planning for Bushfire Protection 2006*.

Fox Valley Road currently accommodates parking along both sides of the road however the re-development of the Hospital Precinct [and the Estate] will provide off-street carparking which will enable Fox Valley Road to be extended to four traffic lanes with an improved intersection at The Comenarra Parkway. These new traffic arrangements will improve emergency access to the Hospital [and neighbouring areas] and improve evacuation routes for residents living in the area to the south of The Comenarra Parkway.

The Wahroonga Estate redevelopment proposal includes the retention of the current internal road network plus the construction of a new 'perimeter' access road, extending off Fox Valley Road into the Adventist School with a future extension linking with the perimeter road network within the Hospital precinct, therefore improving fire-fighting access to the facilities within the Estate.

The new 'perimeter' road shall be constructed to the deemed-to-satisfy standards of Section 4.1.3(1) of *Planning for Bushfire Protection 2006*, including the following specifications:

- Have a minimum formed width of 8.0 metres, kerb to kerb;
- Traffic management devices are constructed to facilitate access by emergency services vehicles;
- Have a cross fall not exceeding 3 degrees;
- The minimum inner radius to corners shall be 6.0 metres and the distance between the inner and outer curves is six metres;
- There shall be a minimum vertical clearance of four [4.0] metres above the finished road surface;
- The construction of road surfaces shall be capable of carrying a fully laden firefighting appliance of approximately 15 tonnes [in areas with reticulated water supply].

5.2.3 Water Supplies for Fire-Fighting Operations:

The existing facilities within the Hospital Precinct are serviced from a water main located on Fox Valley Road.

The proposed construction of the Adventist School will require connection to the existing mains supply with internal hydrants and fire hose reels installed in accordance with the provisions of A.S. 2419.1 – 2005 to address the structural fire-fighting provisions of the Building Code of Australia.

Hydrant locations within road carriageways shall be delineated by blue markers placed on the hydrant side of the centre line of the road pavement.

5.2.4 Construction Standards of Buildings:

Part 2.3.4 of the Building Code of Australia [BCA] states that Class 1 buildings that are constructed in a *designated bushfire prone area* must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes. Part G5.1 of the BCA states that a Class 2 or 3 building constructed in a *designated bushfire prone area* is to provide a resistance to bushfires in order to reduce the danger to life and minimize the risk of the loss of the building.

Australian Standard A.S. 3959 - 2009 is the enabling standard that addresses the performance requirements of both Parts 2.3.4 and Part G5.1 of the Building Code of Australia. The proposed Adventist School buildings are defined as Class 9 buildings pursuant to the Building Code of Australia and therefore fall outside the requirements of Part 2.3.4 and Part G5.1 of the Code.

However, Section 4.2.7 of *Planning for Bushfire Protection 2006* requires that for a new school located within a bushfire prone area, the maximum level of radiant heat on any part of the exterior of the building/s shall not exceed 10kW/m².

The proposed Adventist School buildings are located more than 100 metres from the unmanaged vegetation within the Coups Creek riparian zone/E2 Environmental Protection Zone to the north and northwest and 100 metres from the unmanaged vegetation within the E2 Environmental Protection Zone to the southeast of the Administration Buildings, located opposite the School campus.

This separation width reduces the radiant heat rating on the exposed elevations of the School buildings to less than 10kW/m² – therefore complying with the maximum levels of radiant heat permitted for a ‘*Special Fire Protection Purpose Development*’ under Section 4.2.7 of *Planning for Bushfire Protection 2006*.

The proposed School buildings shall however be constructed to comply with BAL 12.5, pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’ in order to provide protection against ember attack. In addition, smoke filters shall be fitted to the air-conditioning system.

The non ‘*Special Fire Protection Purpose Development*’ – being the Store Shed [defined as a Class 10a building pursuant to the Building Code of Australia] within the Stage 3 Playing Field, component of the School complex shall be constructed to comply with BAL 29 standards, pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’.

5.2.5 Emergency Planning.

In the Bushfire Report prepared for the Estate Concept Plan it was recommended that, upon approval of the Estate Concept Plan, an Emergency Liaison Committee be established by the Australian Conference Association [ACA]. The purpose of the committee shall be to co-ordinate the preparation of the various Estate Evacuation Plans, including the Hospital Evacuation Plan, implement evacuation drills and reviews of the individual Evacuation Plans.

It was also recommended that the Chair Person of the Committee shall also attend the Local Emergency Management Committee meetings and bring to those meetings and the Emergency Service Combat Agencies/support Welfare Agencies the emergency planning protocols and issues related to the various land uses within the Estate.

The Committee/Chair Person shall also be responsible for implementing annual inspections of the facilities on the Estate by the Emergency Service Combat Agencies.

There shall be prepared an Evacuation Plan for the Adventist School, incorporating protocols for defined emergencies including bushfire occurrences.

The Evacuation Plan shall be prepared in accordance with Australian Standard A.S. 3745-2002 “*Emergency Control Organisation and Procedures for dwellings, structures and workplaces*” and the Rural Fire Service’s “*Bushfire Evacuation Plan Guideline*” and will remain in draft format until completed by the School Management Committee.

5.2.6 Landscape Management - in particular the management of the Asset Protection Zones / Defendable Spaces.

The intention of landscape management is to prevent flame contact with a structure, reduce radiant heat to below the ignition thresholds for various elements of a building, to minimize the potential for wind driven embers to cause ignition and to reduce the effects of smoke on students / staff / visitors and fire-fighters.

Careful attention shall be given to species selection of landscaping, their location relative to their flammability, avoidance of continuity of vegetation [separation horizontally and vertically] and ongoing maintenance to remove flammable fuels.

Methods of bushfire hazard management include mowing of lawns and manual removal of combustible material, particularly within the landscaped areas and within the pockets of vegetation which adjoin the E2 zoned Environmental Protection Zone.

This vegetation shall be managed as an Outer Asset Protection Zone.

The existing maintenance protocols for the gardens and open lawn areas within the Estate provides managed areas which comply with the prescriptions of an Inner Asset Protection Zone as defined by Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Service's '*Standards for Asset Protection Zones*'.

These maintenance protocols shall incorporate those areas of the precinct which have been identified as providing the Asset Protection Zones / defendable spaces to the proposed Adventist School Precinct.

Ground covers shall be used in preference to mulch and the combustible ground litter shall be managed to a maximum dry fuel weight of 8 tonnes / hectare. This management shall be undertaken in accordance with the protocols of the Estate Fire Management Plan.

SECTION 6

BUSHFIRE MANAGEMENT STRATEGIES

Strategies to address the aim and objectives of *Planning for Bushfire Protection 2006* are as follows:

Strategy 1 – Landscape Management:

The design and maintenance of the landscaped gardens to the Adventist School complex shall comply with the prescriptions of an Inner Protection Area [IPA] pursuant to the specifications of Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Services document '*Specifications for Asset Protection Zones*'.

Strategy 2 – Water Supplies for Firefighting Operations:

The existing Sydney Water reticulated service shall be extended to the development with hydrants installed in accordance with A.S. 2419.1 – 2005.

Strategy 3 – Evacuation Planning:

There shall be prepared an Evacuation Plan which incorporates protocols for defined emergencies, including bushfire occurrences.

The Evacuation Plan shall be prepared in accordance with Australian Standard A.S. 3745-2002 "*Emergency Control Organisation and Procedures for dwellings, structures and workplaces*" and the Rural Fire Service's "*Bushfire Evacuation Plan Guideline*" and will remain in draft format until completed by the management committee.

Strategy 4 – Construction Standards to Buildings:

The proposed School buildings shall be constructed to comply with BAL 12.5, pursuant to A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*' in order to provide protection against ember attack. In addition, smoke filters shall be fitted to the air-conditioning system.

The non '*Special Fire Protection Purpose Development*' – being the Store Shed within the Stage 3 Playing Field component of the School complex shall be constructed to comply with BAL 29 standards, pursuant to A.S. 3959 – 2009 – '*Construction of Buildings in Bushfire Prone Areas*'.

SECTION 7

CONCLUSION

An approval is being sought from the Department of Planning [DoP] under State Significant Development Application No. 5535 for the construction of the Wahroonga Adventist School on Lot 621 in DP 1128314, No. 72 Fox Valley Road, Wahroonga.

The Director General's Requirements [DGRs] issued under SSD – 5535 on the 6th September 2012 for the preparation of the Environmental Impact Assessment requires that the application demonstrate compliance with the relevant provisions of *Planning for Bushfire Protection 2006* and established Asset Protection Zones.

Consultation has also occurred, as required by the DGRs, with Mr. Wayne Sketchley, Development Control Officer of the NSW Rural Fire Service to obtain advice on the adequacy of the bushfire protection measures applied to the proposed development.

This report has reviewed the proposed Wahroonga Adventist School development against the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006* and has found that the School precinct is located beyond the established Asset Protection Zone widths for a 'Special Fire Protection Purpose Development' as defined by the Wahroonga Estate Concept Master Plan.

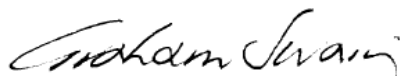
The report also examines the requirements for the provision of access and water supplies for fire-fighting operations and construction standards to the School buildings which may be impacted by radiant heat and burning embers.

Emergency management has also been examined and concludes that the fire safety measures incorporated into the proposed development provides a safe location from which it will not be necessary to relocate students, staff and visitors, during a bushfire event in the bushland vegetation which will be retained within the Estate.

Table 3 summarises the extent to which the proposed development conforms to the deemed-to-satisfy specifications of *Planning for Bushfire Protection 2006*.

Table 3. Compliance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*.

Bushfire Protection Measure	Compliance with deemed-to-satisfy provisions of <i>Planning for Bushfire Protection 2006</i>.
Asset Protection Zone/Defendable Space setbacks	YES – Location of the School buildings provide Asset Protection Zone widths of more than 100m to bushfire prone vegetation. The Defendable Space to the Store building [Playing Fields] exceeds the minimum 'flame zone' setback width required by the NSW Rural Fire Service.
The siting and adequacy of water supplies for fire fighting	YES – Hydrant supply to be installed in accordance with AS 2419.1 – 2005.
Design of Public Roads	YES – Proposed internal access roads within the Wahroonga Estate comply with the specifications of Section 4.1.3(1) of <i>Planning for Bushfire Protection 2006</i> and provide satisfactory emergency access for fire-fighting appliances.
Design of Fire Trail network	No Fire network required.
Adequacy of emergency response access and egress	YES – Existing and proposed road network provides safe, two-way access/egress for emergency service vehicles.
Adequacy of bushfire maintenance plans and fire emergency procedures	A Fire Management Plan and bushfire emergency procedures are not required for the development due to the low bushfire risk and the location of the Asset Protection Zones contained wholly within the site.
Building construction standards	BAL 12.5 Bushfire construction standards recommended to the School buildings – BAL 29 construction standards recommended to the Store Building [Stage 3 – Playing Fields].
Adequacy of sprinkler systems and other fire protection measures to be incorporated into the development	Bushfire Sprinkler Systems not applicable. BCA fire protection measures to be implemented including hydrant supply and hydrant booster system.
Emergency Management	Evacuation Plan to be prepared incorporating protocols for defined emergencies, including bushfire occurrences.



Graham Swain,
Managing Director,
Australian Bushfire Protection Planners Pty Limited.

REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection* 2006;
- *Environmental Planning & Assessment Act* – 1979;
- *Rural Fires Act* – 1997;
- *Rural Fires and Environmental Assessment Legislation Amendment Act* 2002;
- *Rural Fires Regulation* 2008;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping* 2006;
- *Threatened Species Conservation Act* 1995;
- *Native Vegetation Act*;
- *Bushfire Environmental Assessment Code* 2006;
- Building Code of Australia;
- Australian Standard A.S 3959-2009 “*Construction of Buildings in Bushfire Prone Areas*”;
- *Ku-ring-gai Bushfire Prone Land Map*.