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Integrated Science & Design

Bushfire Management Plan

Sunningdale Primary School

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Executive Summary

The Department of Education (the proponent) is progressing a development application for Lot 9766 Sunningdale Road, Yanchep (herein referred to as 'the site') which provides for a future primary school (Sunningdale Primary School) (herein referred to as 'the school') to be constructed in the northern portion of the lot. The site is approximately 4 hectares (ha) in size and is located approximately 50 km north-east of the Perth Central Business District (CBD), within the City of Wanneroo. The site is bound by existing residential development to the west, north and east, and a public oval and park facilities to the south.

The site is located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2019). The identification of a site within an area declared as bushfire prone necessitates that a further assessment to determine the bushfire risk affecting the site is made (in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959)) (Standards Australia 2018) and that the proposal can demonstrate satisfactory compliance with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.3* (the Guidelines) (WAPC and DFES 2017).

A school, if located in an area subject to a Bushfire Attack Level (BAL) rating equal to or exceeding BAL-12.5, is identified as a 'vulnerable' land use based on the definitions provided in SPP 3.7 and the Guidelines. This is because it is likely to involve people who are unaware of their surroundings and who may require assistance or direction in the event of a bushfire. Policy measure 6.6 of SPP 3.7 is applicable to vulnerable land uses and has been specifically been addressed through the preparation of this Bushfire Management Plan (BMP) and a Bushfire Emergency Evacuation Plan (BEEP).

The policy intent of SPP 3.7 is to preserve life and reduce the impact of bushfire on property and infrastructure through effective risk-based land use planning. Importantly, it is required by SPP 3.7 that the determining (relevant) authority is to apply its consideration to the precautionary principle (clause 6.11 in SPP 3.7) and that it must be satisfied that the intent of the policy measures have been met, before approval is given.

This BMP has followed the requirements of SPP 3.7 to identify bushfire risk and identify the bushfire protection measures that will make the land suitable for its intended purpose. As part of this, a BAL assessment involving the classification and condition of vegetation within and near (150 m) of the site has been undertaken as a measure of the bushfire risk.

The northern portion of the site supports a mixture of 'forest' (Class A), 'shrubland' (Class C), 'scrub' (Class D) and 'grassland' vegetation (Class G). The southern portion of the site mainly supports managed 'low threat' vegetation associated with public open space; however, an area of forest vegetation has been identified in the western portion of the site. In addition, scrub and shrubland vegetation has been identified to the north of the site.

In order to resolve the potential for bushfire to affect the site, a post development scenario has been assumed, in which all classified vegetation within the footprint for the school (e.g. the northern portion of the site) has been removed or is managed in a 'low threat' standard. All classified

vegetation outside of the site is assumed to remain in its existing condition, and all existing management of vegetation will continue in the future.

The outcomes of this BMP demonstrate that as development progresses, it will be possible for an acceptable solution to be adopted for each of the applicable bushfire protection criteria outlined in the Guidelines. This includes:

- **Location**: the future school can be located in an area that will, on completion, be subject to bushfire hazard level of moderate or less.
- **Siting and Design**: the future building can be sited within the proposed development so that BAL-29 or less can be achieved based on the proposed development layout. No buildings within the site will be exposed to a BAL rating exceeding BAL-12.5.
- **Vehicular Access**: the proposed development layout provides for a connection to the existing public road network located to the west (Moorpark Avenue) and to the east (Sunningdale Road) of the site. Moorpark Avenue provides egress options to the south, whilst Sunningdale Road provides egress options to the south and east of the site.
- **Water**: the development will be provided with a permanent and reticulated water supply to support onsite firefighting requirements.

The management/mitigation measures to be implemented through the proposed development of the site as discussed in this BMP, demonstrate that the acceptable solutions within each element have been met. Accordingly, having regard to clause 6.11 of SPP 3.7, the precautionary principle has been satisfied.

Bushfire Emergency Evacuation Plan (BEEP).

Pursuant to policy measure 6.6 of SPP 3.7, and cl. 5.5.2 in the Guidelines, the design of the proposed school has incorporated the considerations for a bushfire event response, namely when to evacuate, with a preference for early evacuation, and provision of a safer place as a last resort, should safe evacuation not be available.

The BEEP has been prepared in accordance with *Australian Standard 3745-2010 Planning for emergencies in facilities* (AS 3745) (Standards Australia 2010).

The Bushfire Emergency Evacuation Plan BEEP identifies the preparation and response requirements in a bushfire event. Importantly, it identifies that early evacuation from the school is preferred. If the circumstance should arise that it is not safe to evacuate the site, the covered assembly building has been identified as a safer place, as a control building, and assembly place for evacuation. The covered assembly building and adjacent carpark are outside of the area impacted by BAL contours exceeding BAL-LOW.

Table of Contents

List of Tables

List of Plates

Figures

Appendices

Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity, Conservation and Attraction
DoW	Department of Water (now known as Department of Water and Environmental Regulation)
DFES	Department of Fire and Emergency Services
OBRM	Office of Bushfire Risk Management
SES	State Emergency Services
WAPC	Western Australian Planning Commission

Table A2: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BEEP	Bushfire Emergency Evacuation Plan
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
ESL	Emergency Services Levy
FDI	Fire Danger Index
FZ	Flame Zone
TEC	Threatened Ecological Community

Table A3: Abbreviations – Legislation

Legislation	
EP Act	*Environmental Protection Act 1986*
Guidelines	*Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC and DFES 2017)*
SPP 3.7	*State Planning Policy 3.7 Planning in Bushfire Prone Areas (WAPC 2015)*

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
AS 3959	*Australian Standard 3959-2018 Construction of buildings in bushfire prone areas (Standards Australia 2018)*
BCA	Building Code of Australia
MRS	Metropolitan Region Scheme
TPS	Town Planning Scheme

Definitions

The below terms are used between both the Bushfire Management Plan and Bushfire Emergency Evacuation Plan, with definitions of the terminology used defined below.

Control building: as defined as the 'emergency control point' on Page 22 of *Australian Standard 3745-2010 Planning for emergencies in facilities* (AS 3745) (Standards Australia 2010). This refers to the location where the Chief Warden is able to establish control, communication and coordination, and liaise with the Emergency Services.

Safer place: as defined as a 'Safer building' on Page 6 of *The Principal's Guide to Bushfire: Preparing Your School for the Bushfire Season* (Department of Education 2018). This refers to the building within the school where staff, students and visitors are to assemble in the event of a bushfire where evacuation may not be possible.

1 Introduction

1.1 Background

The Department of Education (the proponent) is progressing a development application for Lot 9766 Sunningdale Road, Yanchep (herein referred to as 'the site') which provides for a future primary school (Sunningdale Primary School) (herein referred to as 'the school') to be constructed in the northern portion of the lot. A copy of the development layout is provided in **Appendix A**. The site is approximately 4 hectares (ha) in size and is located approximately 50 km north-east of the Perth Central Business District (CBD), within the City of Wanneroo. The site is bound by existing residential development to the west, north and east, and a public oval to the south, as shown in **Figure 1**.

The site is located within a 'bushfire prone area' under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2019), as shown in **Plate 1**. The identification of a site within an area declared as bushfire prone necessitates that a further assessment of the determined bushfire risk affecting the site (in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959)) (Standards Australia 2018) and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.3* (the Guidelines) (WAPC and DFES 2017).

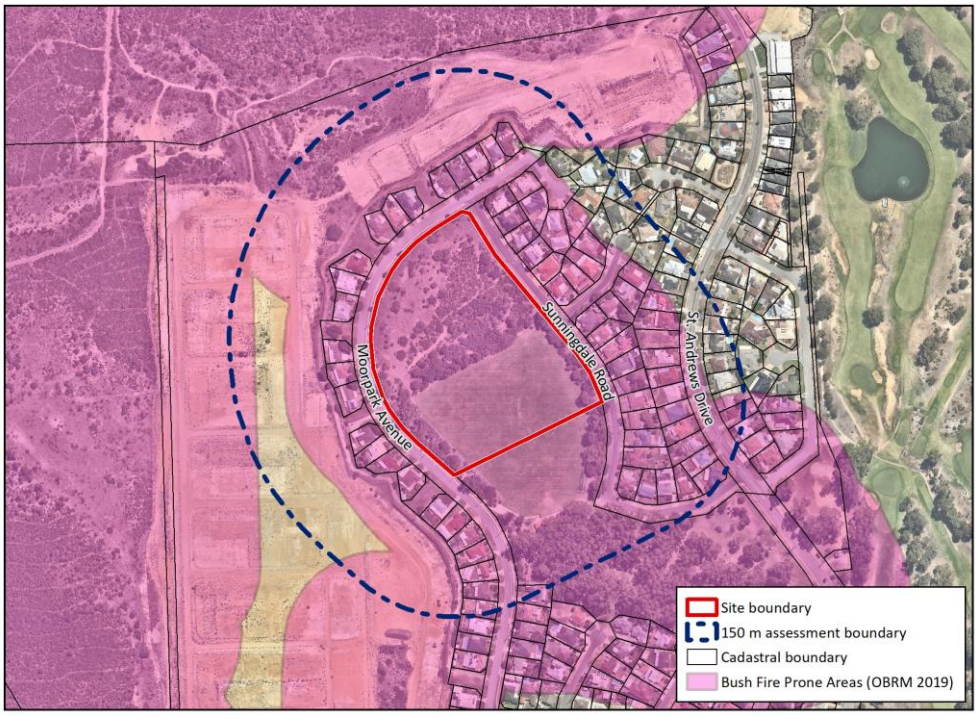

Plate 1: Areas within and surrounding the site identified as 'bushfire prone areas' (as indicated in purple) under the state-wide Map of Bushfire Prone Areas (OBRM 2019).

1.2 Aim of this report

The aim of this Bushfire Management Plan (BMP) is to assess bushfire hazards within the site and nearby areas and demonstrate that the threat posed by any identified hazards can be appropriately managed and mitigated. This BMP has been prepared to support the proposed development of the site and addresses the requirements of SPP 3.7 (WAPC 2015), the Guidelines (WAPC and DFES 2017) and AS 3959 (Standards Australia 2018). The document provides an assessment of the general bushfire management strategies to be considered as part of the future development of the primary school and includes:

- An assessment of the existing classified vegetation in the vicinity of the site (within 150 m) and consideration of bushfire hazards that will exist in the post development scenario (**Section 3**).
- Commentary on how the future development can achieve the bushfire protection criteria outlined within the Guidelines (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (see **Section 6**).

1.3 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a bushfire management plan:

- *Bush Fires Act 1954*
- *Fire and Emergency Services Act 1998*
- *Planning and Development Act 2005* and associated regulations
- *Building Act 2011* and associated regulations
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas Version 1.3* (WAPC and DFES 2017)
- *Australian Standard AS 3959 – 2018 Construction of buildings in bushfire prone areas* (Standards Australia 2018)
- *The Principal's Guide to Bushfire: Preparing Your School for the Bushfire Season* (Department of Education 2018)
- *BMW Technical Guidance: TG015 Building in Bushfire Prone Areas* (Department of Finance - Building Management and Works 2018)
- *National Construction Code 2019* (ABCB 2019)

1.4 Description of the proposed development

The northern portion of the site is proposed to be developed as Sunningdale Primary School to facilitate the intake of kindergarten to Year 6 age children from the surrounding catchment zone. Development within the site is proposed to include a range of facilities associated with the school development, including;

- administration building;
- library building;
- covered assembly area;

- landscaped gardens; and
- four teaching blocks and six transportable buildings to accommodate classrooms.

The proposed construction of the school is in accordance with the underlying 'Urban' zoning under the Metropolitan Region Scheme (MRS) for the site, see **Plate 2**, and the 'Public use' reservation under the City of Wanneroo Town Planning Scheme (TPS) No. 2.

The site is located in an established urban area, with future urban development to occur to the west and north-west of the site, including the construction of a train station. The site connects to the existing road network, with Sunningdale Road located to the east of the site, and Moorpark Avenue adjacent to the northern and western boundary of the site.

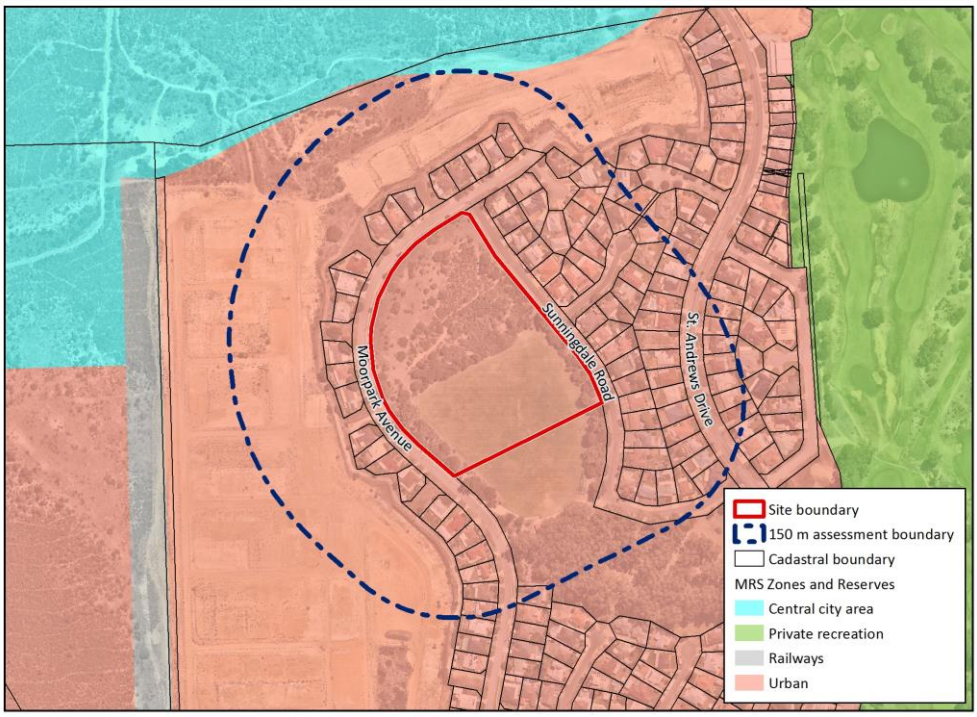

Plate 2: MRS zones and reserves within and surrounding the site.

1.5 Description of land characteristics

The natural topographic contours indicate that the site slopes to the south, ranging from 34 metres Australian Height Datum (m AHD) in the northern portion of the site to 27 m AHD in the southern portion of the site, as shown in **Figure 1**.

The northern portion of the site currently supports degraded native vegetation, which was historically cleared prior to 1977 (Landgate 2019). The southern portion of the site includes the northern half of a local oval, which is flanked by planted gardens on the east and west. Land uses surrounding the site include:

- Existing residential areas to the north, west and east of the site.
- St Andrews Park is located to the south, which includes the public oval, cricket nets and playground equipment.

2 Environmental Considerations

In accordance with the *Bushfire Management Plan – BAL Contour* template prepared by the Department of Planning, Lands and Heritage (2018), this BMP has considered whether there are any environmental values within the site or nearby that may require specific consideration through either protection, retention or revegetation. To support this, a review of publicly available databases as well as site specific information (where available) has been undertaken, with particular reference to the Shared Location Information Platform (SLIP) databases. A summary of the search results has been provided in **Table 1**.

Based on a review of publicly available aerial photography (Landgate 2019), the site was historically cleared prior to 1977, with native vegetation regrowth having established across the majority of the northern portion of the site since. Minor areas of clearing have occurred since, associated with vehicle tracks and other minor disturbances.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases)

Key environmental feature (information in brackets refers to mapping data source)	Yes/no/potentially occurring within the site	If yes/potentially, describe value that may be impacted
Conservation category wetlands and buffer (Geomorphic wetlands, Swan Coastal Plain (DBCA-019))	No	No geomorphic wetlands are mapped as occurring within the site. Additionally, a flora and vegetation survey of the site by Emerge Associates (2019b) did not identify any wetland vegetation within the site.
RAMSAR wetlands (DBCA-010)	No	No Ramsar wetlands are located within or nearby the site.
Threatened and priority flora (DBCA-036)	No	No species of threatened or priority flora are identified within the mapping as occurring within the site. Additionally, a flora survey of the site by Emerge Associates (2019b) did not identify any threatened or priority flora within the site.
Threatened and priority fauna (DBCA-037)	Potentially	No species of threatened or priority fauna are identified within the mapping as occurring within the site. Additionally, a fauna survey of the site by Emerge Associates (2019a) did not identify any threatened or priority fauna within the site. Whilst no threatened or priority fauna species were identified within the site, areas of vegetation within the site may potentially provide foraging habitat for two threatened black cockatoo species. The presence of this vegetation is being assessed separately as part of the planning process.
Threatened ecological communities (TEC) (DBCA-038)	No	A flora survey of the site by Emerge Associates (2019b) identified that the vegetation within the northern portion of the site represented the federally listed 'banksia woodlands of the Swan Coastal Plain' TEC. Based on the diagnostic criteria provided by the Department of Environment and Energy (2016), the vegetation within the site does not satisfy the patch size criteria to be considered representative of the 'banksia woodland TEC', and is therefore not representative of a TEC.
Bush Forever areas (DOP-071)	No	No Bush Forever sites are located within the site. Bush Forever Site 288 is located approximately 1.5 km to the east of the site.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases) (continued)

Key environmental feature (information in brackets refers to mapping data source)	Yes/no/potentially occurring within the site	If yes/potentially, describe value that may be impacted
Clearing regulations – Environmentally Sensitive Areas (DWER-046)	Yes	One environmentally sensitive area (ESA) has been identified as occurring across the entirety of the site. This ESA is very large and extends to the north, south-west and east of the site over approximately 37,515 ha. This ESA is likely to be associated with surrounding environmental values and not related to environmental values within the site.
Swan Bioplan Regionally Significant Natural Areas 2010 (DWER-070)	No	The site is not located in a mapped Swan Bioplan Regionally Significant Natural Area.

2.1 Native vegetation – modification and clearing

Native vegetation will be retained within the site where earthwork levels allow for the retention. Where vegetation is retained, this will be maintained to a low threat standard, with unmanaged understorey vegetation either removed or managed in accordance with Section 2.2.3.2 of AS 3959. Clearing of vegetation within the site will require a clearing permit pursuant to Part V of the *Environmental Protection Act 1986* (EP Act), which has been lodged separately to the preparation of this BMP (No. CPS 8466/1) and is currently being assessed by the Department of Water and Environmental Regulation.

All vegetation outside of the site is assumed to remain in its existing condition. No areas of native vegetation outside of the site are proposed to be modified by the proponent as part of the proposed development.

2.2 Revegetation and landscape plans

Landscaping will occur within the gardens of the proposed school. These gardens will be designed to achieve low threat vegetation in accordance with Section 2.2.3.2 of AS 3959. Ongoing management is likely to include:

- Irrigation of grass and garden beds (where required).
- Regular removal of weeds and built up dead material (such as fallen branches, leaf litter etc.)
- Low pruning of trees (branches less than 2 m from the ground are to be removed where appropriate).
- Application of ground/surface covers such as mulch or non-flammable materials as required.
- Regular mowing/slashing of grass to less than 100 mm in height.

The proponent will be responsible for the long-term maintenance of these areas.

3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered both in context to the site and potential impact upon the site.

Appendix Two of the Guidelines provides a description for undertaking contextual hazard level assessment using the vegetation classifications from AS 3959. The purpose is to identify at the strategic level the Bushfire Hazard Level (BHL) and the likely impact and intensity of a bushfire attack.

AS 3959 has been used to determine the impact on the site. Its objective is to reduce the risk of ignition and loss of a building to bushfire. It provides a consistent method for determining a radiant heat level (radiant heat flux) as a primary consideration of bushfire attack. It measures the Bushfire Attack Level as the radiant heat level (kWm^2) over a distance of 100 m.

AS 3959 also prescribes deemed to satisfy construction responses that can resist the determined radiant heat level at a given distance from the fire. It is based on six Bushfire Attack Level (BAL) ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

As the proposed development does not include any Class 1, 2, 3 or 10a buildings, higher construction requirements pursuant to AS 3959 are not applicable. Notwithstanding, any development applications that are proposed within bushfire prone areas are required to have a BMP prepared for it, as per the Guidelines.

However, in accordance with the *BMW Technical Guidance: TG015 Building in Bushfire Prone Areas* (Department of Finance - Building Management and Works 2018), all buildings in areas subject to a BAL rating of BAL-12.5 or above are required to meet the assessed BAL.

3.1 Bushfire Attack Level (BAL) assessment

In accordance with Appendix Five of the Guidelines, a method 1 BAL assessment has been undertaken to support the proposed development of the site and determine the BAL ratings likely to be applicable to future habitable buildings. This has been based on the vegetation classifications and the effective slope under the vegetation, with the result presented on the BAL contour plan.

Not all vegetation is a classified bushfire risk. Vegetation and ground surfaces that are exempt from classification as a potential hazard are identified as low threat under Section 2.2.3.2 of AS 3959. Low threat vegetation includes the following:

a. Vegetation of any type that is more than 100 m from the site.
b. Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.
c. Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other, or of other areas of vegetation being classified.
d. Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.
e. Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

f. Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and wind breaks.

3.1.1 Assessment inputs

Classifying bushfire hazards takes into account the vegetation structure within the site and surrounding area for a minimum of 100 m, in accordance with AS 3959. The assignment of the vegetation classifications is based on consideration of the fuel layers of different vegetation types. This can be broken-down into five segments as illustrated in **Plate 3** below.

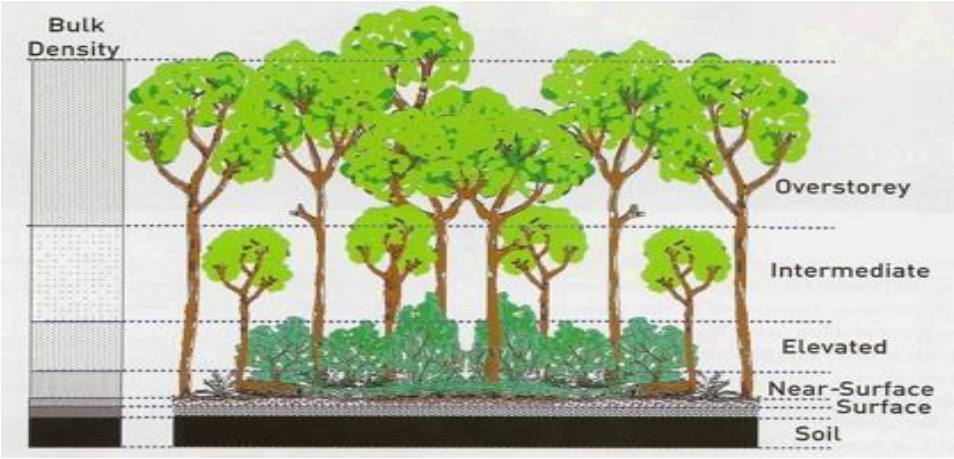

Plate 3: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

An assessment of existing vegetation within the site and surrounding 150 m as well as effective slope was undertaken on 15th March 2019 in accordance with AS 3959 and the Guidelines.

Table 2 below outlines:

- The existing AS 3959 vegetation classifications (and associated photo locations), which also are shown in **Figure 2**.
- The existing bushfire hazard level ratings, which are shown in **Figure 3**.
- The post-development AS 3959 vegetation classifications, which are shown in **Figure 4.**
- The effective slope for each area of classified vegetation present in the post-development scenario, which is shown in **Figure 5**.

Table 2: Vegetation classification, effective slope and future management

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot no.**	**AS 3959 classification, effective slope and assumptions**
1 - 2	**AS 3959 classification (Figure 2)**: Forest (Class A) **Bushfire hazard rating (Figure 3)**: Extreme Forest vegetation has been identified within the western portion of the site. Forest vegetation within the western portion of the site is characterised by planted garden beds with native species growing in the understorey providing surface, near-surface and elevated fuel layers. The overstorey canopy is characterised by planted tuarts, forming a dense canopy. Whilst this vegetation forms part of a planted garden that forms part of the broader public open space, it is unknown how regularly this vegetation is maintained due to the unmanaged state of the understorey. On this basis, this area of vegetation has been identified as forest.	 *Photo location 1: forest vegetation within the western portion of the site*  *Photo location 3: forest vegetation within the western portion of the site*  *Photo location 3: forest vegetation within the western portion of the site*  *Photo location 4: forest vegetation within the central portion of the site*	8	**AS 3959 classification (Figure 4)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Effective slope (Figure 5)**: Not applicable Forest vegetation within the northern portion of the site (Plot 1) will be removed to facilitate the construction of school buildings as part of the future development. Therefore, this vegetation has been excluded in accordance with Clause 2.2.3.2(e) of AS 3959.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
1 - 2	Continued from above.	Continued from above.	10	**AS 3959 classification (Figure 4)**: Less than 1 ha in size and not within 100 m of other classified vegetation (exclusion clause 2.2.3.2(b)) **Effective slope (Figure 5)**: Not applicable While the forest vegetation that flanks the western side of the oval (Plot 2) will remain in the post-development scenario, this vegetation is less than 1 ha in size (being 3,398 m^2) and is located more than 100 m from other areas of classified vegetation. Therefore, this vegetation has been excluded in accordance with Clause 2.2.3.2(b) of AS 3959.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
3	**AS 3959 classification (Figure 2)**: Shrubland (Class C) **Bushfire hazard rating (Figure 3)**: Moderate Shrubland vegetation has been identified in the northern portion of the site. Vegetation within the northern portion of the site is characterised by low native shrubland species including *Xanthorrhoea preissii* and other scattered native and weed species. This area of vegetation are characterised by surface, near-surface and elevated fuel layers.	 *Photo location 5: shrubland vegetation in the northern portion of the site*  *Photo location 6: shrubland vegetation in the northern portion of the site*	8	**AS 3959 classification (Figure 4)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Effective slope (Figure 5)**: Not applicable Scrub vegetation within the site will be removed to facilitate the construction of school buildings as part of the future development. Therefore, this vegetation has been excluded in accordance with Clause 2.2.3.2(e) of AS 3959.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
4 - 5	**AS 3959 classification (Figure 2)**: Scrub (Class D) **Bushfire hazard rating (Figure 3)**: Extreme Scrub vegetation has been identified in the northern portion of the site (Plot 3). This vegetation is characterised by *Leptospermum laevigatum, Banksia attenuata* and *Agonis flexuosa* over scattered native and weed species. In addition, scrub vegetation has been identified to the north of the site (Plot 4), within an area identified for future urban development that is currently unmanaged. The fuel loads within this layer are characterised by surface, near surface, elevated and intermediate fuel layers, up to a height of 5 m.	 *Photo location 7: scrub vegetation to the north of the site*  *Photo location 8: scrub vegetation to the north of the site*	5	**AS 3959 classification (Figure 2)**: Scrub (Class D) **Effective slope (Figure 5)**: Flat/upslope Scrub vegetation located to the north of the site will be retained in the short-to-medium term. It is anticipated that this vegetation will be removed in the future as part of future urban development, however as the timing for this development is unknown, this vegetation has been identified as a bushfire risk to the site.
			8	**AS 3959 classification (Figure 4)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Effective slope (Figure 5)**: Not applicable Scrub vegetation within the site (Plot 4) will be removed to facilitate the construction of school buildings as part of the future development. Therefore, this vegetation has been excluded in accordance with Clause 2.2.3.2(e) of AS 3959.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
6 - 7	**AS 3959 classification (Figure 2)**: Grassland (Class G) **Bushfire hazard rating (Figure 3)**: Moderate Grassland vegetation has been identified in the northern portion of the site (Plot 5), characterised by unmanaged grassland of weedy species. In addition, grassland vegetation has been identified to the north of the site (Plot 6), within an area identified for future urban development that is currently unmanaged. This vegetation is characterised by surface and near-surface fuel layers. There are occasional shrubs scattered through the grassland, however as the total overstorey coverage is less than 10%, this vegetation has been classified as grassland.	 *Photo location 9: grassland vegetation within the northern portion of the site*  *Photo location 10: grassland vegetation within the northern portion of the site*  *Photo location 11: grassland vegetation within the northern portion of the site*  *Photo location 12: grassland vegetation within the northern portion of the site*	7	**AS 3959 classification (Figure 4)**: Grassland (Class G) **Effective slope (Figure 5)**: Flat/upslope Grassland vegetation located to the north of the site will be retained in the short-to-medium term. It is anticipated that this vegetation will be removed in the future as part of future urban development, however as the timing for this development is unknown, this vegetation has been identified as a bushfire risk to the site.
			8	**AS 3959 classification (Figure 4)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Effective slope (Figure 5)**: Not applicable Grassland vegetation within the site (Plot 6) will be removed to facilitate the construction of school buildings as part of the future development. Therefore, this vegetation has been excluded in accordance with Clause 2.2.3.2(e) of AS 3959.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
8	**AS 3959 classification (Figure 2)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Bushfire hazard rating (Figure 3)**: Low. As required under the Guidelines, any areas within 100 m of moderate or extreme hazards have been shown as moderate, to reflect the potential increased risk. Non-vegetated areas such as existing roads, driveways, residential buildings and areas of mineral earth within and surrounding the site have been excluded in accordance with Clause 2.2.3.2(e) of AS 3959. It is noted that some of these areas may contain managed grass/garden areas, however for ease of reference has been excluded as non-vegetated on the basis that these form part of developed lots/roads.	 *Photo location 13: non-vegetated area to the west of the site (Moorpark Avenue)*  *Photo location 14: non-vegetated area to the north of the site (Moorpark Avenue)*  *Photo location 15: non-vegetated area to the north-east of the site (Moorpark Avenue)*  *Photo location 16: non-vegetated area to the north-east of the site (Moorpark Avenue)*	8	**AS 3959 classification (Figure 4)**: Non-vegetated (exclusion clause 2.2.3.2(e)) **Effective slope (Figure 5)**: Not applicable The existing maintenance regimes for all existing non-vegetated areas surrounding the site are assumed to continue in the long-term based on current land uses and management arrangements. It is noted that some of these areas may contain managed grass/garden areas, however for ease of reference has been excluded as non-vegetated on the basis that these will be part of developed lots/roads. In addition, areas within the site that have been identified as non-vegetated will remain non-vegetated when converted to public roads and/or residential land uses as part of the proposed development of the site.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
9	**AS 3959 classification (Figure 2)**: Low threat vegetation (exclusion clause 2.2.3.2(f)) **Bushfire hazard rating (Figure 3)**: Low. As required under the Guidelines, any areas within 100 m of moderate or extreme hazards have been shown as moderate, to reflect the potential increased risk. Low threat vegetation has been identified within the southern portion of the site, in addition to the south of the site. The majority of managed vegetation within the site is associated with an irrigated public oval and irrigated parkland, which includes playground equipment. Vegetation in the south-eastern portion of the site has been identified as low threat, on the basis that this vegetation is planted tuarts over a garden bed with no understorey vegetation, which undergoes maintenance including mulching and weeding.	 *Photo location 17: low threat vegetation to the south-east of the site*  *Photo location 18: low threat vegetation to the south of the site*  *Photo location 19: low threat vegetation to the south of the site*  *Photo location 20: managed grass (to a height of less than 100 mm) within a vacant lot to the west of the site*	9	**AS 3959 classification (Figure 4)**: Low threat vegetation (exclusion clause 2.2.3.2(f)) **Effective slope (Figure 5)**: Not applicable The maintenance regimes for all existing low-threat vegetation within and surrounding the site is assumed to continue in the long-term based on current land uses and management arrangements, in accordance with the requirements of the City of Wanneroo and community expectations.

Table 2: Vegetation classification, effective slope and future management (continued)

Existing conditions (see Figure 2 and Figure 3)			Post development (see Figure 4 and Figure 5)	
Plot no.	AS 3959 classification and bushfire hazard rating	Site photo/s (location points shown in Figure 2)	Plot no.	AS 3959 classification, effective slope and assumptions
9	In addition, low threat vegetation has been identified to the west and north of the site, associated with vacant lots that are maintained in accordance with the City of Wanneroo Firebreak Notice.	Continued from above.	9	Continued from above.

3.1.1.1 Post development assumptions

The BAL assessment, to determine the predicted BAL ratings applicable to the site, has assumed the following:

- **Designated FDI**: 80
- **Flame temperature**: 1090 K
- **Vegetation classification**: Scrub (Class D) and grassland (Class G) vegetation identified within the post-development scenario (see **Figure 4**).
- **Effective slope beneath classified vegetation**: Flat/upslope (see **Figure 5**)
- **Setback distances**: As per Table 2.5 in AS 3959 with the relevant distances used to inform the BAL contour plan provided in **Figure 6** and summarised in **Table 3**.

In addition to the above, the following key assumptions have informed this assessment:

- All classified vegetation within the footprint for the future school will be removed or modified to achieve low threat standard in accordance with Section 2.2.3.2 of AS 3959. This may include:
  - Clearing of vegetation.
  - Where remnant trees are retained, low-hanging branches less than 2 m from the ground are to be removed where appropriate.
  - Regular removal of weeds, dead material, fallen branches and built up leaf litter. This would be based on typical garden maintenance within schools.
  - Where grass/turf is present, this will be regularly cut so that the grass is maintained at or below 100 mm in height.
- Areas within the southern portion of the site (the public oval and managed garden), in addition to areas outside of the site that have been identified as low threat will continue to be managed and/or considered to achieve low threat (in accordance with Section 2.2.3.2 of AS 3959) based on the existing maintenance regimes, and/or as per the City of Wanneroo Firebreak Notice.
- Classified vegetation that has been identified outside of the proponent's landholdings (i.e. the site) has been assumed to remain in its current state, and will therefore remain a bushfire hazard to development within the site.

3.1.2 Assessment inputs

The BAL assessment completed for the site indicates that all future buildings within the site will be subject to a BAL rating of BAL-12.5 or less in the post-development scenario based on the indicated spatial layout for the development application (see **Appendix A**).

Table 3 provides a summary of the setback distances necessary from the identified classified vegetation to achieve the indicated BAL ratings, with the BAL Contour Plan (**Figure 6**) being a visual representation of these distances. The setback distances are based on the post-development classified vegetation (**Figure 4**), effective slope (**Figure 5**) and are taken from Table 2.5 of AS 3959.

Table 3: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment

Post development plot number (see Figure 4)	Vegetation classification (see Figure 4)	Effective slope (see Figure 5)	Distance to vegetation	BAL rating (see Figure 6)
Plot 5	Scrub (Class D)	Flat/upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 7	Grassland	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

4 Identification of Bushfire Hazard Issues

From a bushfire hazard management perspective, the key issues that are likely to require management and/or consideration as part of future development within the site include:

- Provision of appropriate separation distance from bushfire hazards surrounding the site to ensure a BAL rating of BAL-29 or less can be achieved at future built form. The administration, teaching block 1 and one transportable in the northern portion of the site are exposed to a BAL rating of BAL-12.5, with the remainder of the site subject to a BAL rating of BAL-LOW.
- Ensuring that areas of landscaped gardens within the future school site are appropriately designed and managed to achieve low threat standards, in accordance with AS 3959 and the requirements of the City of Wanneroo.
- Ensuring that existing public open space in the southern portion of the site is continued to be managed to a low threat standard, in accordance with AS 3959 and the requirements of the City of Wanneroo.

These issues are considered further in **Section 5**.

5 Assessment against the Bushfire Compliance Criteria

This BMP provides an outline of the mitigation strategies that will ensure that as subdivision and the associated development progresses within the site, an acceptable solution can be adopted for each of the bushfire protection criteria detailed within Appendix Four of the Guidelines (WAPC and DFES 2017). The bushfire protection criteria identified in the Guidelines and addressed as part of this BMP are:

- Element 1: Location of the development
- Element 2: Siting and design of the development
- Element 3: Vehicular access
- Element 4: Water supply.

As part of future development, it is likely that an 'acceptable solution' will be able to address the intent of all four bushfire protection criteria as part of future subdivision of the site. A summary of how this can be achieved and an associated compliance statement for each has been provided in **Table 4.**

Table 4: Summary of bushfire protection criteria and compliance statement

Bushfire protection criteria	Intent	Method of compliance		Proposed bushfire management strategies	Compliance statement
		Acceptable solution	Performance principle		
Element 1: Location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.	A1.1 Development location		Based on the bushfire hazard level assessment (**Figure 3**), the site is located in an area of moderate and extreme bushfire hazard level. As the classified vegetation within the site will be removed to facilitate future construction, future buildings will be located in an area of low or moderate bushfire hazard level. In addition, based on the outcomes of the BAL assessment, development (i.e. future habitable buildings) within the site will be able to achieve a BAL rating of BAL-29 or less (see **Figure 6**). Therefore, the acceptable solution can be satisfied.	Based on the outlined management measures, future development would be able to comply with and meet the intent of Element 1: Location.
		Yes.	N/A		
Element 2: Siting and design	To ensure the siting and design of development minimises the level of bushfire impact.	A2.1 Asset Protection Zone		One of the most important bushfire protection measures influencing the safety of people and property is to create an Asset Protection Zone (APZ) around buildings. The APZ is a low fuel area immediately surrounding a building, and can include non-flammable features such as irrigated landscapes, gardens, driveways, public roads and managed public open space. The post development vegetation classification (**Figure 4**) identifies bushfire hazards located to the north of the site. No other classified vegetation has been identified within or surrounding the site. Separation from the bushfire risk to the north of the site is accommodated through the presence of existing residential dwellings and a public road to the north of the site. Based on the BAL assessment and the BAL contour plan (see **Figure 6**), the future school will not be exposed to a BAL rating exceeding BAL-12.5. The majority of the school exposed to a BAL rating of BAL-LOW, with only the administration building, teaching block 1 and one transportable building in the northern portion in the site.	Based on the outlined management measures, future development would be able to comply with and meet the intent of Element 2: Siting and design.
		Yes.	N/A		

Table 4: Summary of bushfire protection criteria and compliance statement (continued)

Bushfire protection criteria	Intent	Method of compliance		Proposed bushfire management strategies	Compliance statement
		Acceptable solution	Performance principle		
Element 3: Vehicular access	To ensure vehicular access serving a subdivision/ development is available and safe during a bushfire event.	A3.1 Two access routes		The proposed development layout, provided in **Appendix A**, provides for two connections to the existing public road network, specifically Moorpark Avenue to the west of the site and Sunningdale Road to the east of the site. Moorpark Avenue provides egress options to the south of the site, whilst Sunningdale Road provides egress options to the south and east of the site, connecting to St Andrews Drive, providing further egress options. St Andrews Drive connects to Yanchep Beach Road approximately 960 m to the south of the site, provided further egress to the east and west of the site.	Based on the outlined management measures, future development would be able to comply with and meet the intent of Element 3: Vehicular access.
		Yes.	N/A		
		A3.2 Public road		No public roads will be constructed within the site as part of the proposed development. Existing public roads surrounding the site comply with the minimum standards outlined in Appendix Four of the Guidelines (WAPC and DFES 2017), including a minimum 6 m-wide trafficable surface.	
		Yes.	N/A		
		A3.3 Cul-de-sac (including dead-end-road)		No cul-de-sacs are proposed within the site.	
		N/A	N/A		
		A3.4 Battle-axe		No battle-axe lots are proposed as part of the development of the site.	
		N/A	N/A		
		A3.5 Private driveway longer than 50 m		No private driveways longer than 50 m are proposed as part of the development of the site.	
		N/A	N/A		
		A3.6 Emergency access way		Given the proposed development plan provides for egress to at least two different destinations and the no cul-de-sacs are proposed, emergency access ways are not required as part of the proposed development of the site.	
		N/A	N/A		
		A3.7 Fire service access routes (perimeter roads)		Future development within the site will be provided with appropriate vehicular access, as outlined above, and therefore fire service access routes are not required.	
		N/A	N/A		

Table 4: Summary of bushfire protection criteria and compliance statement (continued)

Bushfire protection criteria	Intent	Method of compliance		Proposed bushfire management strategies	Compliance statement
		Acceptable solution	Performance principle		
Continued from above.	Continued from above.	A3.8 Firebreak width		In accordance with the City of Wanneroo Firebreak Notice it is unlikely that future development will require a firebreak. However, the proponent will be required to ensure that vegetation is appropriately managed to a low threat standard within the site.	Continued from above.
		N/A	N/A		
Element 4: Water	To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.	A4.1 Reticulated areas		Development is located within an Emergency Services Levy (ESL) Category 3 area, which indicates that bushfire events are responded to by a network of volunteer Fire and Rescue Service brigade or a bush fire brigade with the availability of a network of career fire stations and the State Emergency Services. Fire response services require ready access to an adequate water supply during bushfire emergencies. The site will connect with a reticulated water supply and will include fire hydrants installed by the developer to meet the specifications of Water Corporation (Design Standard DS 63) (or similar standard, as agreed with the relevant water authority) and DFES. There are three existing hydrants located within 65 m of the future school. In addition to a reticulated water supply, the school will have additional water storage tanks and pumps, located behind the covered assembly area, that will ensure adequate water pressure is available in the event of a bushfire emergency.	Based on the outlined management measures, future development would be able to comply with and meet the intent of Element 4: Water.
		Yes	N/A		
		A4.2 Non-reticulated areas		Not applicable.	
		N/A	N/A		
		A4.3 Individual lots within non-reticulated areas (only for use if creating 1 additional lot and cannot be applied cumulatively)		Not applicable.	
		N/A	N/A		

5.1 Additional management strategies

5.1.1 Future approval considerations

The BAL assessment within this document is considered to be a conservative assessment of potential bushfire risk posed to future buildings within the site based on the assumptions outlined **Section 3**.

As discussed in **Section 3**, the proposed development does not include any Class 1, 2, 3 or 10a buildings, which means that future buildings are not required to be constructed to an increased building standard in accordance with AS 3959. Notwithstanding, the BAL contour plan (**Figure 6**) demonstrates that future development within the site will not be exposed to a BAL rating greater than BAL-12.5.

However, in accordance with the *BMW Technical Guidance: TG015 Building in Bushfire Prone Areas* (Department of Finance - Building Management and Works 2018), all buildings in areas subject to a BAL rating of BAL-12.5 or above are required to meet the assessed BAL.

5.1.2 Landscape management

5.1.2.1 Within the site

As part of the future primary school, several landscaped gardens will be constructed. These gardens will be maintained to a low threat standard, including:

- Where remnant trees are retained, branches less than 2 m from the ground are to be removed where appropriate.
- Regular removal of weeds, dead material, fallen branches and built up leaf litter. This would be based on typical garden maintenance within schools.
- Where grass/turf is present, this will be regularly cut so that the grass is maintained at or below 100 mm in height.

The proponent will undertake the management of these areas of vegetation in the long-term.

Existing public open space within the southern portion of the site will continue to be managed to a low threat standard in accordance with the measures outlined above. The responsibility for the management of this vegetation in the future will be determined as part of further discussions with the City of Wanneroo and the proponent, however the existing management regime (e.g. irrigation, management of vegetation) will continue in the long-term.

5.1.2.2 Surrounding the site

Within City of Wanneroo managed areas

Management of vegetation within St. Andrews Park to the south of the site is assumed to continue in the future. This management is assumed to be to a low threat standard, including the management of all turf to a height of below 100 mm, as per AS 3959.

In addition, the road reserves surrounding the site will continue to be maintained to a low threat standard, in accordance with the existing management approaches.

Within private landholdings

The private landholdings surrounding the site are assumed to be managed by the applicable landowners in accordance with the City of Wanneroo Firebreak Notice in perpetuity. All other vegetation will remain in its existing condition for the foreseeable future.

5.1.3 City of Wanneroo Firebreak Notice

As outlined previously, the City of Wanneroo releases a firebreak notice annually (or as required) to provide a framework for bushfire management within the City. The City of Wanneroo is able to enforce this order in accordance with Section 33 of the *Bush Fires Act 1954* and landowners will need to ensure compliance with this notice as published or in accordance with directions provided by the City of Wanneroo. This is likely to include (but is not limited to):

- Particular standards for firebreaks, including location of the firebreak and horizontal and vertical clearances.
- Maintenance of appropriate asset protection zones around buildings and fixed assets within a landholding.
- Maintenance of smaller lots so that are free of flammable materials.

The City of Wanneroo Firebreak Notice should be referred to for further detail.

5.1.4 Vulnerable or high-risk land uses

The proposed development within the site is considered to be a 'vulnerable' land use in accordance with the definitions provided in SPP 3.7 and the Guidelines, given it will accommodate groups of young children (who have a reduced physical and mental ability to respond in a bushfire event). Policy measure 6.6 of SPP 3.7 requires any proposal relating to a vulnerable land use within an area exposed to a BAL rating equal to or exceeding BAL-12.5 to be supported by a Bushfire Emergency Evacuation Plan (BEEP) at the development application stage of the planning process.

Accordingly, **Appendix B** of this BMP includes a BEEP that has been prepared for the site. There is limited guidance in Western Australia on the preparation of a BEEP, and so this plan has followed the Western Australia Department of Education *The Principal's Guide to Bushfire: Preparing Your School for the Bushfire Season* (Department of Education 2018) and the New South Wales Rural Fire Service *Guide to developing a Bush Fire Emergency Plan Management and Evacuation Plan* (NSW Rural Fire Service 2014) to determine whether evacuation and/or onsite refuge presents the safest option in the event of an emergency. Furthermore, the plan has also followed the *Guidelines for Planning in Bushfire Prone Areas* (WAPC and DFES 2017) and the *Australian Standard 3745-2010 Planning for Emergency Facilities* (AS 3745-2010) (Standards Australia 2010).

Key features of an emergency evacuation process to achieve occupant life safety include:

- Provision of a safer place either within the facility, or nearby;
- Establishing clear decision-making responsibility and authority within the facility;
- Establishing a reliable and consistent communication method;
- Establishing alert triggers;
- Establishing a procedure to determine whether evacuation or shelter is required; and

- The provision of amenities supporting shelter. Amenities include drinking water and toilets, with drinking water provided from water fountains located within the covered assembly area, and toilets and water fountains are located within 15 m of the covered assembly building, within teaching block 4, to the immediate north of the covered assembly area.

The BEEP provided in **Appendix B** considers the above and incorporates the requirements listed under section 5.5.2 of the Guidelines. The key assumptions underpinning the emergency evacuation process within the school include:

- The children (students) will be hosted within the school by teachers or guardians.
- Visitors will not be familiar with bushfire or bushfire procedures within the school and will require guidance.
- That the teachers or guardians can see and smell smoke and can see a fire.
- That the teachers or guardians can read and understand the English language.

Avoiding operation of the school during the season that bushfires are a threat is not considered to be practical, and during the bushfire season (November – April) a bushfire can occur at any time but the climatic conditions and the bushfire fuels present will determine its intensity and danger. The school must therefore have a plan to respond to a bushfire event during the bushfire season.

Evacuation in the event of a bushfire emergency is the preferred option. However, it may not always be possible or appropriate to evacuate offsite, so instead shelter onsite may be a required as a last resort. The assessment undertaken as part of this BMP has identified the covered assembly building (see **Appendix B**) as an onsite safer place. The covered assembly building has been classified as BAL-LOW (less than 2 kW/m^2). Whilst an open structure, it provides an assembly area for staging the evacuation and protection from radiant heat and falling embers.

In addition, when given advance warning that a 'catastrophic' fire danger rating has been forecast for a given day, the school may be directed to close, with the Principal to be informed by the Department of Education, with the deadline for the closure to be made by 4.30 pm the day prior to closure.

Accordingly, within the BEEP, the choices identified for operation are:

- Evacuate off site if safe to do so.
- Take refuge in the nominated safer building.
- Pre-emptive closure when the school is within an area subject to a 'catastrophic' fire danger rating.

In the event of assembly under the covered assembly building, it is important that it is prepared to accommodate staff, students and visitors for an extended during whilst waiting to evacuate. The BEEP includes operational measure to improve a safer building's resistance to bushfire, which include:

- Maintaining the construction standards and separation of potentially flammable objects or materials to match the determined BAL/APZ distance provided. Any works, additions, modifications or the placement of flammable objects near the building can undermine its adequacy and reliability as a safer place. *For a school building, which is a Class 9b building under the Building Code of Australia (BCA), construction in accordance with AS 3959 is not required*

given the fire resistance requirements for these buildings under the BCA exceeds AS 3959. Notwithstanding, in accordance with the BMW Technical Guidance: TG015 Building in Bushfire Prone Areas (Department of Finance - Building Management and Works 2018), all buildings in areas subject to a BAL rating of BAL-12.5 or above are required to meet the assessed BAL.

- Ensuring that covered assembly building (the safer place) has sufficient space/capacity to accommodate all person's students, staff and visitors, as the School's numbers increase. This may not be necessary in the future when the adjacent land is developed, and bushfire risk is removed but also needs to be reviewed with the growth in student numbers.
- Identifying seasonal maintenance works to be undertaken within the school grounds to minimise fuel load in and around buildings*.
- Identifying daily preparations during fire season, such as checking bushfire warnings and observing weather conditions.

The covered assembly building (the safer place) have been determined to be exposed to a radiant heat flux of less than 10 kWm^2. The building has access to amenities that would provide for the comfort and safety of students, staff and visitors. This includes water fountains within the covered assembly building, and toilets and water fountains within Teaching Block 4 to the immediate north of the school.

In addition to being identified as a safer place, the covered assembly building will be the control building, from where operations during an emergency can be coordinated from. To facilitate the use of the building as a control building, it will need to have a list of key contacts available at all times, in addition to ensuring that at least one member of staff has a satellite phone during an emergency.

5.1.5 Public education and preparedness

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. The DFES publication '*Prepare. Act. Survive.'* (DFES 2014) provides excellent advice on preparing for and surviving the bushfire season. Other downloadable brochures are available from http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx

In the case of a bushfire in the area, advice would be provided to the school by DFES, Department of Biodiversity Conservation and Attractions (DBCA) and/or the City of Wanneroo on any specific recommendations with regard to responding to the bushfire, including evacuation if required, which should then be considered in the context of the procedures outlined within the BEEP.

6 Responsibilities for Implementation and Management of Bushfire Measures

Table 5 outlines the future responsibilities of the proponent, the City of Wanneroo and the Water Corporation associated with implementing this BMP as part of the proposed development of the site. The proponent and the City of Wanneroo (dependent on further negotiations for shared public open space facilities in the southern portion of the site) will be responsible for maintaining a reduced level of risk from bushfire within the site, and will be responsible for undertaking, complying and implementing measures to protect their own assets (and people under their care) from the threat and risk of bushfire.

Table 5: Responsibilities for the implementation of this BMP

Management action	Timing
Proponent	
Construct the new school in accordance with the proposed development layout, provided in **Appendix A**.	As part of development.
Ensure that where the school is to be constructed is to be cleared of vegetation or, where vegetation is retained it is maintained to a low threat standard (in accordance with Section 2.2.3.2 of AS 3959). Management should include: • Clearing of vegetation. • Where remnant trees are retained, low-hanging branches less than 2 m from the ground are to be removed where appropriate. • Regular removal of weeds, dead material, fallen branches and built up leaf litter. This would be based on typical garden maintenance within schools. • Where grass/turf is present, this will be regularly cut so that the grass is maintained at or below 100 mm in height.	As part of development, and ongoing where applicable
Implement the Bushfire Emergency Evacuation Plan (provided in **Appendix B**) and maintain its currency.	Ongoing.
Establish the covered assembly area as the nominated safer place and control building and provide the building with the facilities identified in the Bushfire Emergency Evacuation Plan.	Ongoing.
Ensure that adequate safer place capacity is maintained at all times, and identify when additional buildings may be required as the number of students in attendance at the school increases.	Ongoing.
Monitor emergency safer place capacity requirements, considering the Bushfire Emergency Evacuation Plan assumption of the development of the surrounding area.	Ongoing.
Maintain firefighting equipment through the school.	Ongoing.
City of Wanneroo	
Maintain public road reserves under their management to appropriate standards, where required/applicable.	Ongoing, as required.
Develop and maintain district bushfire firefighting services and facilities.	Ongoing, as required.
Administer the *Bush Fires Act 1954* and monitor landowner compliance.	Ongoing, as required.
Promote education and awareness of bushfire prevention and preparation measures through the community.	Ongoing, as required.

7 Applicant Declaration

7.1 Accreditation

This BMP has been prepared by Emerge Associates who have been providing bushfire risk management advice for more than six years, undertaking detailed bushfire assessments (and associated approvals) to support the land use development industry.

Anthony Rowe is a Fire Protection Association of Australia (FPAA) Level 3 Bushfire Planning and Design (BPAD) accredited practitioner (BPAD no. 36690) with over nine years' experience and is supported by a number of team members who have undertaken BPAD Level 1 and Level 2 training and are in the processing of gaining formal accreditation.

7.2 Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:

Name: Anthony Rowe

Company: Emerge Associates

Date: 19 July 2019

BPAD Accreditation: Level 3 BPAD no. 36690

8 References

8.1 General references

The references listed below have been considered as part of preparing this document.

Australian Building Codes Board (ABCB) 2019, *National Construction Code*, Canberra.

Department of Education 2018, *The Principals's Guide to Bushfire: Preparing Your School for the Bushfire Season*.

Department of Finance - Building Management and Works 2018, *BMW Technical Guidance: TG015 Building in Bushfire Prone Areas*

Department of Fire and Emergency Services (DFES) 2014, *Prepare. Act. Survive.*, Perth. August 2014.

Department of Environment and Energy (DoEE) 2016, *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*, Canberra.

Emerge Associates 2019a, *Level 1 Fauna and Targeted Black Cockatoo Assessment - Lot 9766 Sunningdale Road, Yanchep*, EP19-021(01)--002, revision 1.

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Gould, J., McCaw, W., Cheney, N., Ellis, P. and Matthews, S. 2007, *Field Guide: Fuel Assessment and Fire Behaviour Prediction in Dry Eucalypt Forest*, CSIRO and Department of Environment and Conservation, Perth, Western Australia.

NSW Rural Fire Service 2014, *Development Planning - A guide to developing a Bush Fire Emergency Management and Evacuation Plan*.

Standards Australia 2010, *Australian Standard 3745-2010 Planning for emergencies in facilities (AS 3745-2010)*, SAI Global Limited, Sydney.

Standards Australia 2018, *AS 3959-2018 Construction of buildings in bushfire-prone areas*, Sydney.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Perth.

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.3*, Western Australia. December 2017.

8.2 Online references

Department of Water 2008, *LIDAR derived 1 m elevation contours* dataset, Government of Western Australia.

Landgate 2019, *Map Viewer*, viewed May 2019, https://www0.landgate.wa.gov.au/maps-and-imagery/interactive-maps/map-viewer

Office of Bushfire Risk Management (OBRM) 2019, Map of Bush Fire Prone Areas, viewed May 2019, https://maps.slip.wa.gov.au/landgate/bushfireprone/

Figures

Figure 1: **Site Location and Topographic Contours**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number: EP19-021(05)--F32
Drawn: SCM
Date: 09/07/2019
Checked: AJR
Approved: AJR
Date: 09/07/2019

N

0 50 100
Metres

Scale: 1:5,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

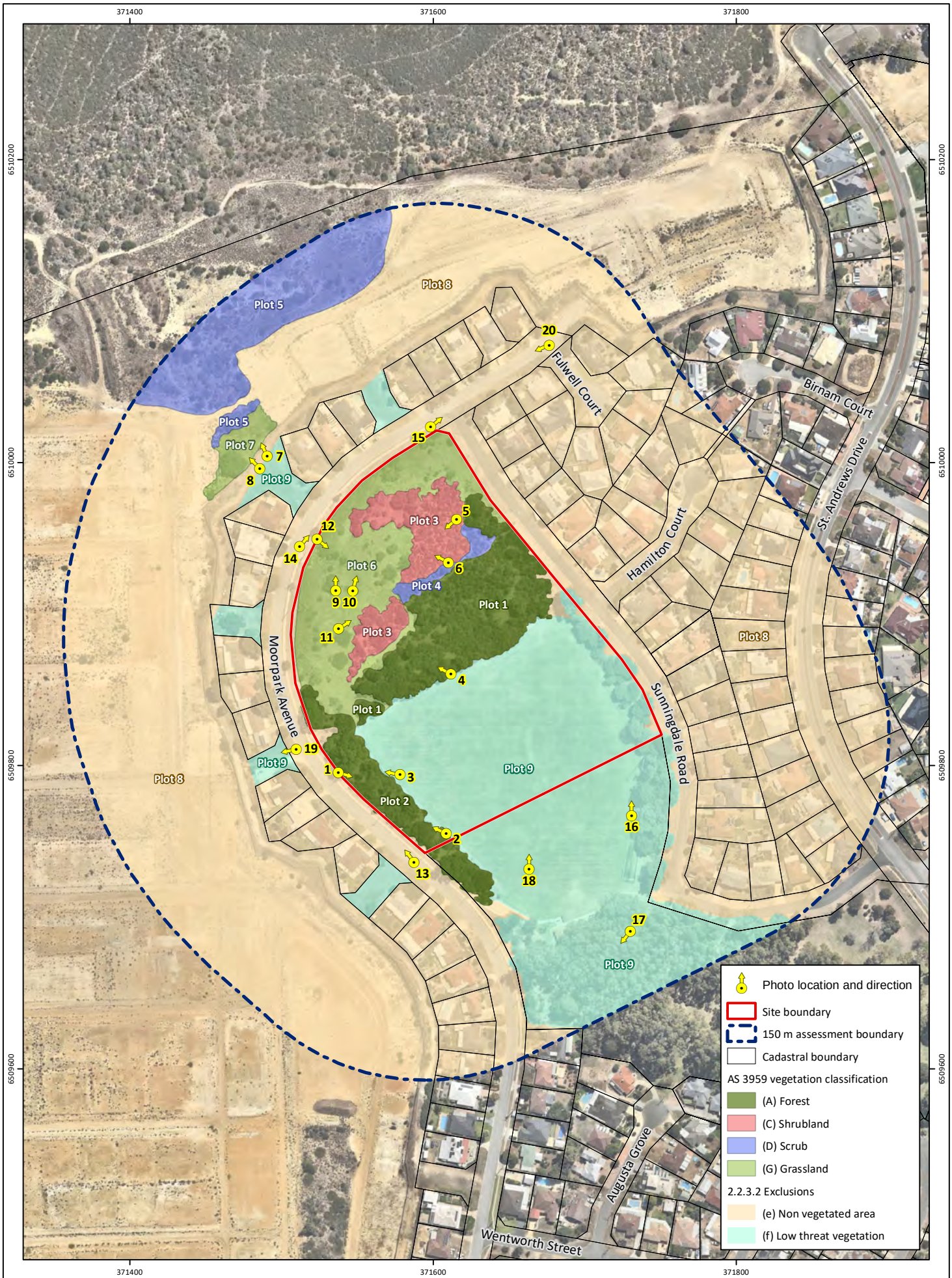

Figure 2: **Existing Site Conditions - AS 3959 Vegetation Classification**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number: EP19-021(05)--F33
Drawn: SCM
Date: 09/07/2019
Checked: AJR
Approved: AJR
Date: 09/07/2019

N

0 50 100
Metres
Scale: 1:3,250@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

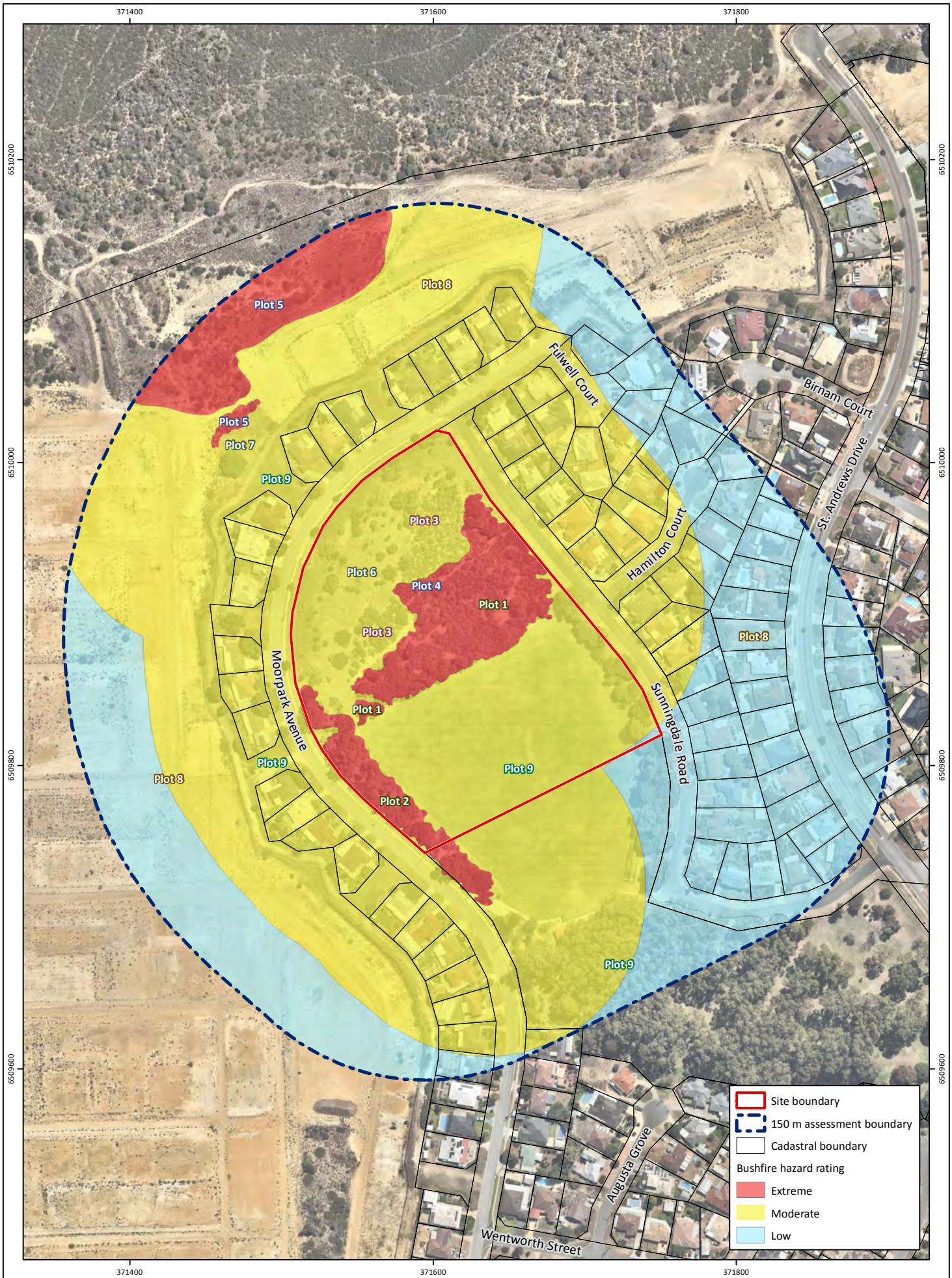

Figure 3: **Existing Site Conditions - Bushfire Hazard Level**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number: EP19-021(05)--F34

Drawn:	SCM
Date:	09/07/2019
Checked:	AJR
Approved:	AJR
Date:	09/07/2019

N

0 50 100
Metres

Scale: 1:3,250@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

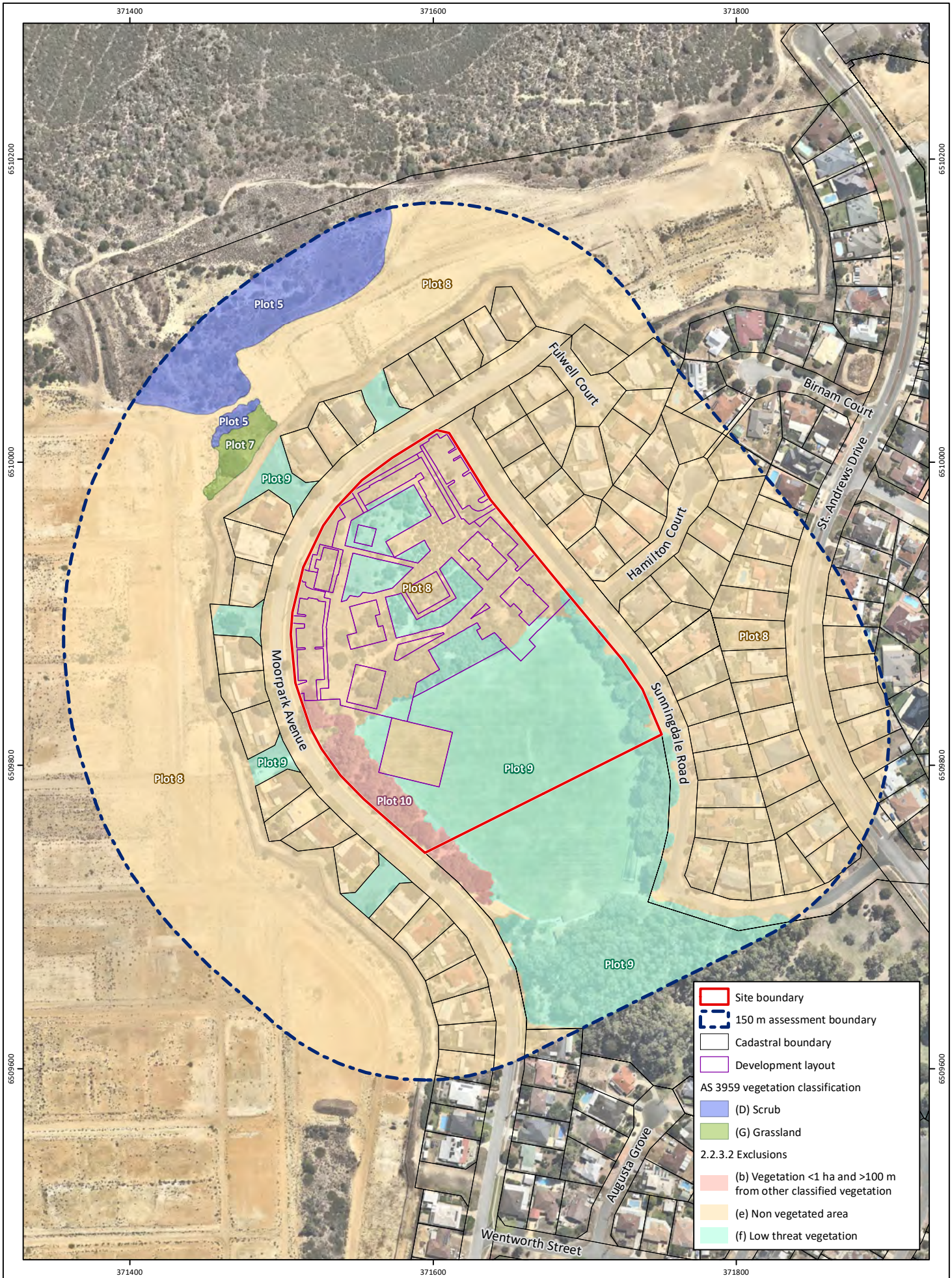

Figure 4: **Post Development Conditions - AS 3959 Vegetation Classification**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number: EP19-021(05)--F35
Drawn: SCM
Date: 09/07/2019
Checked: AJR
Approved: AJR
Date: 09/07/2019

N

0 50 100
Metres
Scale: 1:3,250@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

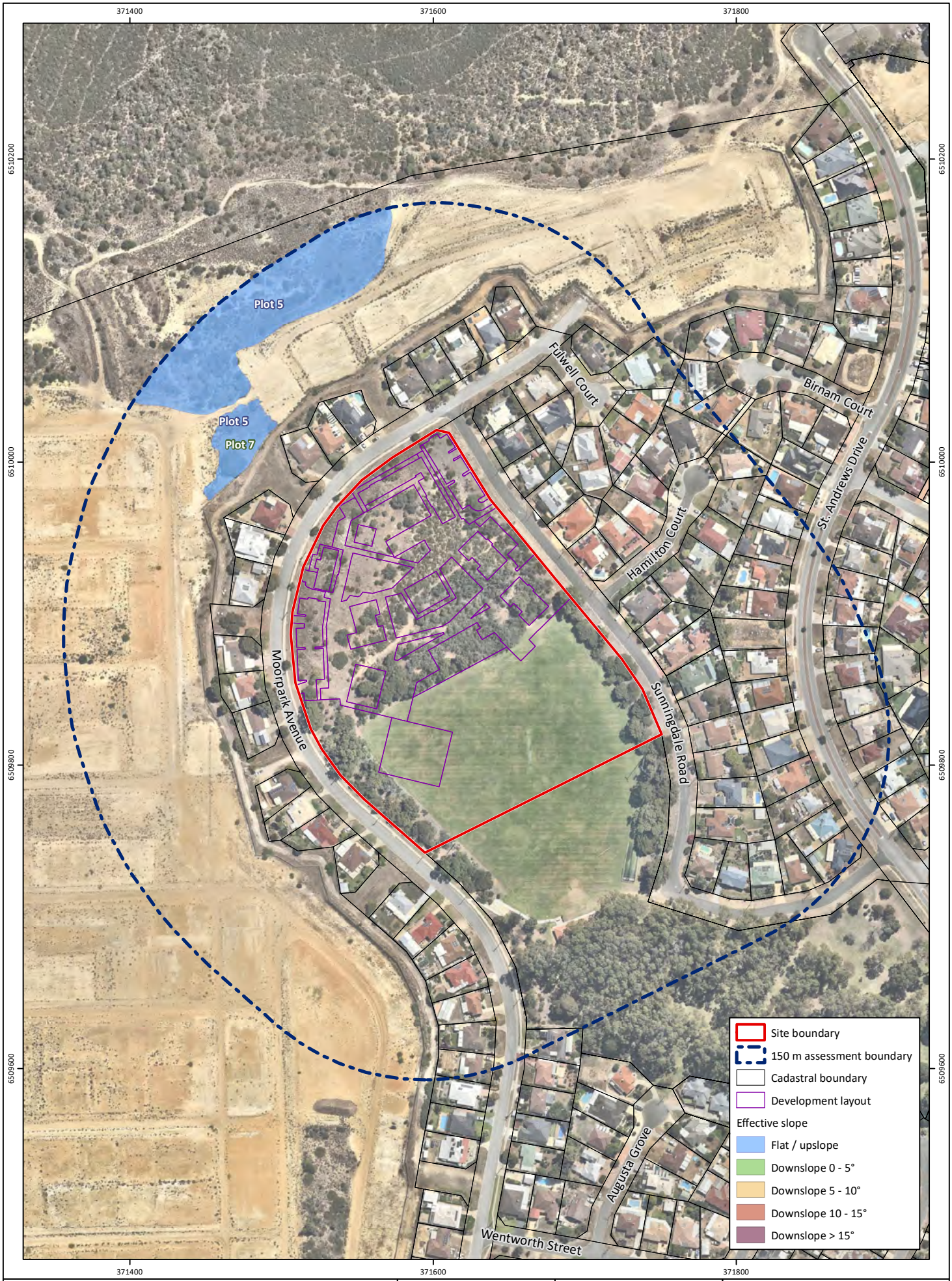

Figure 5: **Post Development Conditions - Effective Slope**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number:
EP19-021(05)--F36

Drawn:	SCM
Date:	09/07/2019
Checked:	AJR
Approved:	AJR
Date:	09/07/2019

N

0 50 100
Metres

Scale: 1:3,250@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

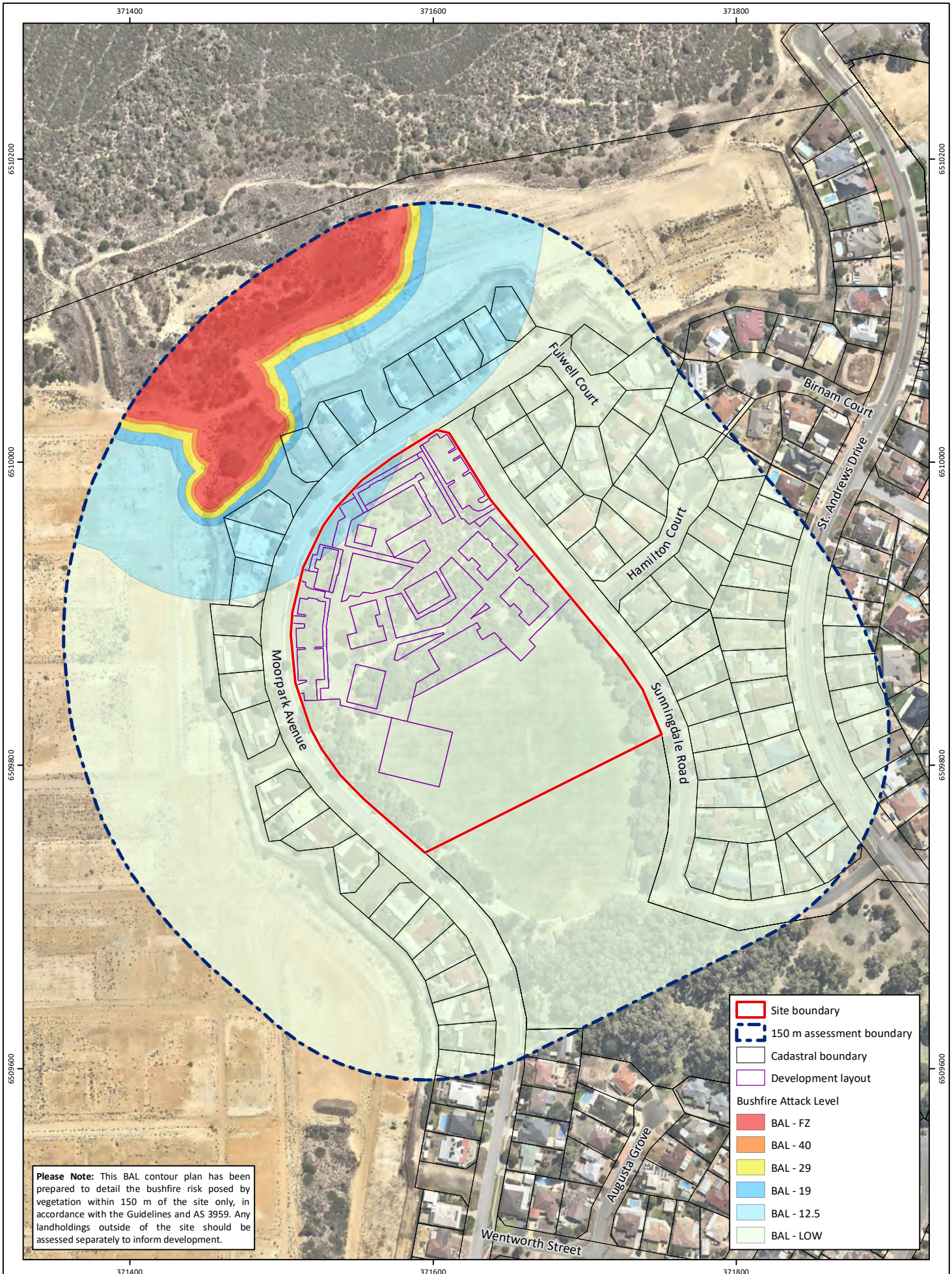

Figure 6: **Bushfire Attack Level Contour Plan**

Project: Bushfire Management Plan
Sunningdale Primary School
Client: Department of Education

Plan Number:
EP19-021(05)--F37

Drawn:	SCM
Date:	09/07/2019
Checked:	AJR
Approved:	AJR
Date:	09/07/2019

N

0 50 100
Metres

Scale: 1:3,250@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

Appendix A

Development Application Layout (EIW Architects 2019)

PLOT DATE: 9/07/2019 12:40:54 PM FILE PATH: S:\Synergy\Projects\18\1820 Sunningdale PS\Drawings\Current Revit\01 Project\1820-SDPS_A_SITE_DD_Rev.P1-190625.rvt

TRANSP TRANSPORTABLE BUILDING ZONE

TBM X: 315 1146 Z: 35447

CARPARK 1 33 BAYS

CARPARK 2 35 BAYS

TB1 RL34500

TB2 RL32500

TB3 RL30500

TB4 RL32500

ADMIN RL34200

LIBRARY RL32200

COV ASSM RL30250

HARD CTS RL27500 (FENCED)

MOORPARK AVENUE

SUNNINGDALE ROAD

KISS AND RIDE

FOOTPATH

FENCE

GATE

ACCESS GATE

TRANSP

TRANSP SHEDS

BIKE RACK 2

LANDSCAPE AREA

PLAY SPACE

SAND PIT 1

SAND PIT 2

TERRACED SEATING

GATES

EXIST. TREES

EXIST. BUS SHELTER

PROTECTED TREE

HYDRANT BOOSTER

DFES HARDSTANDING

PUMPS

RAMP

TANKS

BINS ENCLOSURE

WATER METER & BACKFLOW ENCLOSURE

TRANSFORMER & SMSB

LETTERBOX

LP

CODE SIZE FOOTBALL OVAL 135m L x 110m W

CODE SIZE SOCCER FIELD 105m L x 68m W

EXISTING SPORT FIELDS

EXIST. CRICKET PITCH

EXISTING CRICKET NETS

LOT 9766

NORTH

0 5 10 15 20 25 m

SCALE 1:500 AT ORIGINAL SIZE

ISSUE	DATE	DESCRIPTION
P2	08/07/2019	INDICATE EXTERNAL CAR BAYS AND FOOTPATHS
P1	25/06/2019	ISSUED TO CONSULTANTS

PRELIMINARY P2

building ideas

340 Hay Street Subiaco Western Australia 6008
T +61 8 9381 4844 E ewarch@ewarch.com.au
W www.ewarch.com.au ABN 88 1260 054 672

ew architects

PROJECT:

SUNNINGDALE PRIMARY SCHOOL

35 Sunningdale Road, Yanchep

SITE PLAN

SITE PLAN

DRAWN:	DESIGNED:	CHECKED:	DRAWING No:
TG	TG	TDA	SK1.01
JOB DATE:	SCALE:	JOB NUMBER:	
01/2/2019	1 : 500	1820	

SHEET REFERENCE: 1820 - SK1.01

DO NOT AMEND MANUALLY THIS IS A REVIT DRAWING

Appendix B

Bushfire Emergency Evacuation Plan

emerge ASSOCIATES
Integrated Science & Design

Bushfire Emergency Evacuation Plan

Sunningdale Primary School

Project No: EP19-021(06)

Prepared for Department of Education
July 2019

Document Control

Doc name:	Bushfire Emergency Evacuation Plan Sunningdale Primary School				
Doc no.:	**EP19-021(06)-011**				
Version	**Date**	**Author**		**Reviewer**	
1	July 2019	Sean Moylan	SCM	Anthony Rowe	AJR
	Submitted for client review.				
A	July 2019	Sean Moylan	SCM	Anthony Rowe	AJR
	BEEP updated as per client comments. Submitted for client review.				

Accreditation

This Bushfire Emergency Evacuation Plan has been prepared by Anthony Rowe, an accredited Level 3 Bushfire Planning and Design (BPAD) practitioner (accreditation number: BPAD 36690) under the Fire Protection Association of Australia's (FPAA) Western Australian accreditation scheme.

Table of Contents

Appendices

Appendix A

List of Emergency Control Personnel

Appendix B

Emergency contacts

Appendix C

Review of Emergency Plan

Appendix D

Details of fire warning levels

Appendix E

Evacuation procedures

Appendix F

Shelter onsite procedures

Appendix G

Bushfire Emergency Evacuation Plan

Appendix H

Seasonal Checklist

Appendix I

Preparation Checklist

1 Introduction

The Department of Education is proposing to construct a new primary school within the northern portion of Lot 9766 Sunningdale Road, Yanchep (herein referred to as 'the school'). The school is located approximately 50 km north-east of the Perth Central Business District (CBD), within the City of Wanneroo. The site is bound by existing residential development to the west, north and east, and a public oval and park facilities to the south.

Primary school students are unlikely to be able to respond independently to a bushfire emergency and require the development of an effective and comprehensive plan for evacuation.

This document seeks to mitigate and manage the risk associated with a bushfire emergency threatening the school. It has been prepared to satisfy the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and has been prepared in accordance with *Australian Standard 3745-2010 Planning for emergencies in facilities (AS 3745)* (Standards Australia 2010).

This document details the components, personnel functions and implementation of evacuation procedures.

2 Outline of the Bushfire Emergency Evacuation Plan

2.1 Purpose of the Bushfire Emergency Evacuation Plan

The purpose of this Bushfire Emergency Evacuation Plan (BEEP) is to provide guidance and direction to all students, staff and visitors by providing:

- Information, advice and means to prepare for a bushfire emergency; and
- Actions to be taken in the event of a bushfire emergency.

It is relevant to note the school will have a broader Emergency Response Plan, which identifies the various hazards applicable to the operation of the school, including but not limited to, fire (internal), explosion, smoke, bomb threats, armed threat/robbery, missing persons, earthquakes, flood / severe storm / cyclone, motor vehicle accident, hazardous material spill, civil disorder, and bushfire etc.

To address the requirements of SPP 3.7 (WAPC 2015), a separate BEEP (this document) has been prepared to specifically consider bushfire in the context of the risk identified within the Bushfire Management Plan (Emerge Associates 2019) for the school, and be used to augment the school's Emergency Response Plan.

This BEEP describes the process to be followed in the event of an emergency situation caused by an imminent threat from bushfire only, with other emergency procedures to be established as part of the school's operations. It should be regarded as a 'living document' with guidelines that can be adapted to changing circumstances.

The BEEP is intended to be used by the school to:

- Outline key emergency features relevant for a bushfire event, see **Section 3**.
- Define the functions, roles and responsibilities of staff in a bushfire emergency, see **Section 4**.
- Establish ongoing education and training as part of the overall strategy, see **Section 5**.
- Provide procedures to evacuate student, staff and visitors in the event of a bushfire, or take shelter in a 'safer place' see **Section 6**.

Critical to an effective evacuation is appropriate planning. This includes identifying staff functions, resources needed, arrangements and documentation. Importantly an established plan needs to be practiced.

Control and coordination are critical to effective evacuation of all stages in the evacuation process. This is especially the case where fire impact is imminent and immediate evacuation is required, as there may not be time for emergency agencies to assist in an evacuation. In this context, the responsibility to affect the safe evacuation and direction, need to be assigned and understood by management and staff.

Other roles and responsibilities, such as traffic management and student and visitor control need to be assigned and understood by management and staff.

The BEEP specifically addresses the personal safety and survival of people present at the time of bushfire emergency and is not concerned with the protection of property.

2.2 Policies, guidelines and standards informing the Bushfire Emergency Evacuation Plan

This BEEP is based on guidance provided in the following:

- Australian Standard 3745-2010, Planning for Emergencies in Facilities (Standards Australia 2010)
- Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC and DFES 2017)

2.3 Distribution of the Bushfire Emergency Evacuation Plan

The BEEP is an internal document, to be used by school staff to guide evacuation procedures, with an up-to-date copy of the document to be maintained within the administration building and to be provided to all staff.

All permanent staff at the school will be briefed on the emergency response protocols and procedures, with an up-to-date copy of the Bushfire Emergency Evacuation Plan (provided in **Appendix G**), is to be displayed at appropriate locations across the school.

3 Emergency Features Relevant to the Bushfire Emergency Evacuation Plan

3.1 Firefighting equipment

The school will have onsite firefighting equipment that will be available for emergency personnel, including:

- Fire extinguishers.
- Fire hose reels.

Additional equipment that may be required in the case of a bushfire emergency may include:

- Evacuation maps and diagrams.
- Goggles.
- Smoke inhalation masks.
- Walkie talkies/handheld radios (VHF).
- Satellite phones.

All equipment should be maintained annually (as a minimum) in accordance with equipment specifications and the relevant standards, including (but not limited to) *Australian Standard 1851 – 2005 Maintenance of Fire Protection Equipment* (Standards Australia 2012). Any large-scale bushfire events should be reported to emergency services who will coordinate the overall response, while school personnel coordinate the safe internal response (i.e. evacuation) as needed.

3.2 Vehicular access

The school can be accessed by two roads currently, Moorpark Avenue to the west and north and Sunningdale Road to the east. Two carpark areas will be located within the school parallel to the existing road network, with carpark 1 accessed via Sunningdale Road and carpark 2 accessed via Moorpark Avenue.

Students will likely arrive at the school through a variety of means, including walking, cycling, public transport and private vehicles.

There will not be sufficient private vehicles within the school to facilitate an evacuation of all students.

Supplementary vehicle support, such as buses, will be required for evacuation and the arrangements for supplementary vehicle support are to be determined before the commencement of each bushfire season. These arrangements constitute the Transport Plan.

3.3 Condition of grounds and buildings

The school shall be maintained in a low threat state (AS3959-2009, cl. 2.2.3.2(e) and 2.2.3.2(f)) and flammable objects should not be placed in proximity to any school buildings that may increase their risk of ignition.

The school buildings and grounds should be inspected prior to the commencement of the bushfire season (by 1 October each year). A seasonal check list is attached **Appendix H**.

In addition to the seasonal assessment, on the mornings of predicted Extreme or Catastrophic Fire Danger Rating (FDR) days, the school grounds should be inspected, to ensure there are no flammable materials against or in proximity to the buildings. A checklist for inspections during the fire season is attached in **Appendix I**.

4 Roles and Responsibilities

4.1 Emergency Planning Committee

The school is to establish an **Emergency Planning Committee** ('the Committee') and should be comprised of the school Emergency Response Team, and school board members.

The Committee is responsible for overseeing the preparation of the school buildings and grounds for the approaching bushfire season, including attendance to any maintenance required to minimise the risk of damage from bushfire attack (**Appendix H**).

The Committee is responsible for reviewing the BEEP and broader Emergency Response Plan, overseeing the undertaking of education and training, evaluating the outcomes of drills and responses (when applicable), and ensuring appropriate resources are provided to maintain equipment. This includes ensuring that school mobile phones are registered on the Emergency Alert system.

The Committee is responsible for ensuring the safer places are prepared in accordance with *The Principal's Guide to Bushfire: Preparing Your School for the Bushfire Season* (Department of Education 2018). There is one nominated safer place for shelter on the site (the covered assembly building), and this should be assigned as a responsibility to and for management during an emergency – usually assigned to the Principle and Deputy Principle.

The Committee will assign roles and responsibilities to staff.

4.2 Emergency Response Team

The school is to establish an **Emergency Response Team**, who are designated school personnel who have been trained and certified to undertake/provide specific tasks in the event of an emergency, including the operation of firefighting equipment.

The school Emergency Response Team shall comprise of the following positions:

- Chief Warden (which is generally the school Principal).
- Deputy Chief Warden (which is generally the Deputy Principal).
- Area Warden.
- First Aid Personnel.
- Traffic Warden.
- Communications Officer.

4.3 Roles of Evacuation Managers

In planning for the event of a bushfire emergency, the following roles should be assigned, with the Chief Warden usually filled by the school Principal.

4.3.1 Chief Warden

The Chief Warden is responsible for:

- Evaluation the needs for evacuation.
- Initiating evacuation.
- Coordinating and supervising the evacuation to the safer place (covered assembly building).
- Supervising the emergency response from the covered assembly building as the control building.
- As required, advising authorities that an evacuation is underway – including DFES and the City of Wanneroo fire and emergency services manager.
- Documenting the circumstances of the emergency, processes and outcome.
- Checking on Extreme and Catastrophic FDR days that flammable materials are not located against or close to buildings, including litter, grass and leaves, and rubbish bins.
- Checking on Extreme and Catastrophic FDR days that firefighting equipment is ready and that the safer place has the required equipment for communication, safety (including first aid equipment) and comfort.

4.3.2 Deputy Chief Warden

The Deputy Chief Warden is responsible for:

- Taking direction from and carrying out tasks allocated by the Chief Warden.
- Checking all buildings/facilities.
- Ensuring all students, staff and visitors have been alerted and evacuation or shelter has been initiated to the covered assembly building.
- Maintaining communication with, and updating the Chief Warden with situation reports.
- Providing situational information.
- Contributing to debriefing.

4.3.3 Area Wardens

Area Wardens are responsible for:

- Taking direction from and carrying out tasks allocated by the Chief Warden.
- Checking all buildings/facilities.
- Ensuring all students, staff and visitors have been alerted and evacuation or shelter has been initiated.
- Maintaining communication with, and updating the Chief Warden with situation reports.
- Providing situational information.
- Contributing to debriefing.

All permanent staff are to be trained in the role of Area Warden.

4.3.4 First Aid Personnel

First Aid Personnel, under the direction of the Chief Warden or Area Warden are responsible for:

- Evaluating the extent of any injuries.
- Administer first aid (only where safe to do so).
- Assess if injured personnel can be evacuated safely.

4.3.5 Traffic Warden

The Traffic Warden is responsible for:

- Together with the Chief Warden, arrange for the coordination and supply of additional transport, buses and pick up from the covered assembly building.
- Ensuring an orderly evacuation onto Moorpark Avenue if the decision is made to evacuate the school.
- Managing the access and placement of Area Wardens to co-ordinate vehicles to safely leave the school during a bushfire event.
- Coordinating traffic flows on the school grounds during a bushfire evacuation.

4.3.6 Communications Officer

The Communications Officer is responsible for:

- Taking direction from and carrying out tasks allocated by the Chief Warden.
- Maintaining communication with, and updating the Chief Warden with situation reports.
- Providing situational updates to parents and guardians.

4.3.7 Emergency Response Team Identification

The control of a bushfire emergency is greatly assisted by key personnel being quickly identified by students, staff, visitors and emergency services. **Table 1** below outlines the tabards and/or helmets to be worn by the Emergency Response Team to enable them to be identified.

Table 1: Summary of Emergency Response Team identification

Wearers Title	Identification colour
Chief Warden	White helmet
Deputy Chief Warden	White helmet
Area Warden	Red helmet
First Aid Personnel	Green Helmet or green arm band

5 Preparation and Actions

The actions outlined below relate specifically to bushfire evacuation and should be managed in the context of the broader Emergency Response Plan for the school.

5.1 Training requirements

All Wardens, staff and other responsible personnel working at the school should attend a bushfire evacuation session with a qualified Bushfire Risk Consultant to be informed of and trained in relation to:

- All information contained in this document.
- Individual roles and responsibilities.
- Access and egress routes.
- Assembly point locations.
- Written evacuation procedures applicable to the process.
- Communication equipment.

All those who have received bushfire training should formally acknowledge that they have read and understood the emergency evacuation procedures, understand their role and responsibilities, and whether any questions relating to the evacuation procedure were adequately answered.

5.2 Exercise drills

Evacuation to the safer building (the covered assembly building) shall be practiced annually.

Staff briefing shall occur prior to each such drill and a debriefing should follow any drill or bushfire event to discuss any issues regarding the implementation of the plan.

5.3 Maintenance of equipment

The communications systems and water supply infrastructure will be regularly checked, tested and serviced according to school servicing schedules, and in accordance with *Australian Standard 1851-2012 Routine service of fire protection systems and equipment* (AS 1851) (Standards Australia 2012).

5.3.1 Evacuation plan review

This plan should be treated as a 'living document' and reviewed and revised (if required) prior to each bushfire season (which is from October to May of each year).

In addition to this annual review, a review of the plan and response of the school personnel, students and visitors should be undertaken following any bushfire in the area and or after an evacuation.

6 Evacuation Plan

6.1 Communication

The school Emergency Response Team will communicate during a bushfire event using two-way handheld radios/walkie talkies.

Contact with emergency authorities will be maintained through cellular/mobile telephone. All school mobile phones need to be registered with the State Governments State Alert System. The Chief Warden should have access to a satellite phone in the event that a bushfire disrupts cellular reception.

Visitors will be informed of a bushfire event that may impact the school and any action required via a loud speaker system and/or via Area Wardens moving through the school and communicating face to face.

6.2 Evacuation Process

The Chief Warden is responsible for deciding whether an evacuation is necessary and should take the following into consideration when determining if and when to evacuate:

- The advice from Emergency Services, including public warnings.
- The severity of a bushfire incident, proximity of the bushfire and predicted fire spread (i.e. smoke, embers and radiant heat).
- The safety of evacuation routes.

The process that should be followed involves:

- Daily recording of Fire Danger Rating and weather conditions, during the bush fire season.
- Monitoring to establish the extent of bushfire danger (Fire Danger Ratings) and to identify bushfires in the area.
- Determining whether the bushfire is a potential threat.
- When it is determined that a bushfire is a threat to the school, an alarm is to sound and children should be moved calmly to the covered assembly building.
- Deciding to evacuate or shelter in place (protective action).
- Implementing the protective action decision to evacuate or shelter in place.

The process to monitor for and implement evacuation due to bushfire is outlined below.

6.2.1 Monitoring for bushfires

Receiving a warning of an approaching fire is enhanced by actively monitoring communications over the internet (i.e. EmergencyWA) and ABC radio and observing the environment surrounding the school.

It is common for the first indication that a bushfire is burning nearby to observe smoke in the surroundings.

Fire Danger Ratings provide advice on the level of bushfire threat on any given day and are based on the forecast daily fire danger indices (which include consideration of forecast wind speed, temperature, humidity and fuel conditions). There are seven FDRs ('low', 'moderate', 'high', 'very high', 'severe', 'extreme' or 'catastrophic', which provide an indication of how difficult a bushfire will be for authorities to extinguish and on what days bushfires are going to pose the greatest threat to property and lives.

The forecasted FDR can be accessed online through the Department of Fire and Emergency Services or Bureau of Meteorology websites.

On days when the FDR is 'high' or above, bushfires can be unpredictable and uncontrollable, and these days trigger basic preparation and monitoring procedures.

Monitoring involves accessing websites (i.e. those of DFES and the Department of Biodiversity Conservation and Attractions), and listening to the emergency services broadcaster 720 ABC radio at regular intervals throughout the day.

In addition to FDRs, where a bushfire occurs, the Department of Fire and Emergency Services have three levels of warnings that escalate to reflect the increasing risk to life from a bushfire and the decreasing amount of time people have until the bushfire arrives. The three warning levels are:

- Advice;
- Watch and Act; and
- Emergency.

In the event that an Advice Warning is received at the school for an approaching bushfire, staff and visitors should be notified of the potential need to evacuate or shelter, through the sounding of an alarm.

If a Watch and Act Warning is received, it is recommended that consideration be given to evacuation on advice of emergency services. Wardens should check the grounds to ensure the entry and exit lanes to the school are clear and that potentially flammable objects are moved away from buildings or stored.

If an Emergency Warning is received evacuation should be undertaken if advised by DFES that it is safe to do so, over the next 90 minutes, and following the safe route identified by DFES.

If evacuation is not safe then shelter is to be taken in the covered assembly building.

An 'all clear' message means the danger has passed and the fire is under control. Although, it is possible that it still may not be safe to return to the school and/or evacuate the school, the Emergency Services will advise the Chief Warden when it is safe to do so

The Chief Warden, when advised it is safe to do so will direct the Communications Officer to advise parents of student the collection arrangement and for the school bus transport to resume.

Importantly, early detection of a bushfire's location provides everyone with the best opportunity to evacuate early. Warning of a bushfire may be provided by emergency authorities, but this is not guaranteed.

6.2.2 Evacuation triggers

The key to a safe evacuation is leaving early, this means long before the school or evacuation roads come under bushfire attack.

Within the school, the following are triggers for evacuation:

- Receipt of an official warning to evacuate from the emergency authorities. Monitoring of the EmergencyWA web page (https://www.emergency.wa.gov.au/) at regular intervals must occur (outlined in Section 6.3.1).
- When it is judged by the Chief Warden, or delegate, that a bushfire has the potential to impact the school.

Advice may be provided by emergency authorities to self-evacuate which greatly assists because it confirms the safety of evacuation routes and makes the process relatively straight forward. The Emergency Alert Telephone warning system is used during an emergency to send messages to registered landline and mobile phones within a defined area where lives and homes are deemed to be under direct and imminent threat from a bushfire. These warnings should trigger an evacuation if they are received in a timely manner. These official warnings however must be assessed against the local conditions before evacuation is undertaken.

6.2.3 Implementation of evacuation

Early evacuation is the safest response in a bushfire event. Late evacuation is a dangerous response. The following procedures shall be implemented:

- Determine the route to be used for evacuation. Note, all students, staff and visitors are to evacuate to the public road, unless specifically ordered by the Chief Warden or by the emergency authority (i.e. firefighters/police) to do otherwise.
- Advise emergency authorities of the decision to evacuate and the proposed route.
- Notify Area Wardens and staff that a bushfire evacuation is underway.
- Students, staff and visitors to be informed and organised for evacuation by responsible Area Wardens.
- Nominated Area Wardens are to ensure the school is completely evacuated before the site is secured.
- Evacuate away from the threat to a safer place (designated by the emergency authorities or local government).

6.2.4 Phasing of evacuation

To facilitate orderly evacuation of the school, the departure of students and staff should be phased if necessary, depending upon the number of people present on site and the resources available. This can be achieved by:

- Evacuating the most vulnerable students first such as the disabled or likely to have breathing difficulty, followed by age group.
- Pre-arranged arrangements with bus companies.
- Using private vehicles to evacuate the school.

Evacuating People with Disabilities

For the purposes of these evacuation procedures, people are considered to be disabled if they are unable to evacuate the school or a building without assistance, or if their time to exit the school or building would be much greater than the average student.

The Chief Warden should make arrangements for another person to be assigned to assist the disabled person in an emergency. This assigned person will assist the disabled person to the designated emergency assembly area.

6.2.5 Evacuation vehicles

Responsibility in this area rests with the Traffic Warden. It is intended that evacuation will be through the use of buses. Staff vehicles may be used to assist the evacuation of priority students. Ambulances may be required to assist any student with special needs/disabilities.

The school must be aware if there is sufficient vehicle capacity (i.e. arrangements with bus companies) every day during the bushfire season (between November and April each year) to be able to evacuate every person from the school at all times.

7 Safer Place – Covered Assembly Building

An alternative to evacuation is to shelter onsite (within the school). This would occur if the risk associated with evacuation is greater than sheltering in place.

The trigger to shelter onsite is an assessment by the Chief Warden or emergency authorities that evacuation would be unsafe due to the proximity of the bushfire and/or the unavailability of safe evacuation routes.

Whilst the northern portion of the school is identified within an area that is exposed to a BAL rating exceeding BAL-LOW, the carpark and covered assembly building are not exposed to a BAL rating exceeding BAL-LOW, and accordingly has been identified as the safer place in the case of a bushfire emergency.

In addition, the covered assembly building represents the control building, and will house the first aid equipment and facilities for staff trained to fight small fires. This equipment will include (but is not limited to) goggles and smoke masks, in addition to extinguishers. Additional equipment required to ensure the covered assembly building can function as the control building includes ensuring that a a list of key contacts is available at all times, in addition to ensuring that at least one member of staff has a mobile phone during an emergency.

If a decision to shelter onsite is taken, students, staff and visitors will shelter in the covered assembly building, and distributed as shown in Bushfire Emergency Evacuation Plan provided in **Appendix G**.

For sheltering onsite, the following will be undertaken:

- Advise emergency authorities of the decision to shelter onsite.
- Notify all staff of the decision to shelter onsite.
- Sound the alarm and calmly move students, staff and visitors from teaching blocks and transportable buildings, the administration building and the library to the covered assembly building.
- Nominated Area Wardens to ensure that all students, staff and visitors have moved to the covered assembly building.

The school and buildings may be subject to ember attack that may last for many hours. Embers may cause fires on-site that threaten lives. The Chief Warden and Deputy Chief Wardens must therefore be prepared when sheltering with students, staff and visitors to keep calm and methodically look for embers or small fires and extinguish using fire-fighting equipment provided at the school.

After the fire front has passed, the Chief Warden and Deputy Warden should:

- Inspect the safer place and extinguish small fires using firefighting equipment provided at the school (where safe to do so).
- Inspect the remainder of the school and extinguish small fires using firefighting equipment provided at the school (where safe to do so).
- Monitor school grounds for small fires for 24 hours after the fire.

8 References

8.1 General references

Department of Education 2018, The Principals's Guide to Bushfire: Preparing Your School for the Bushfire Season.

Emerge Associates 2019, Bushfire Management Plan - Sunningdale Primary School, EP19-021(05)--010 SCM, Version 1.

Standards Australia 2010, Australian Standard 3745-2010 Planning for emergencies in facilities (AS 3745-2010), SAI Global Limited, Sydney.

Standards Australia 2012, Australian Standard 1851-2012 Routine service of fire protection systems and equipment (AS 1851-2012), SAI Global Limited, Sydney.

Western Australian Planning Commission (WAPC) 2015, State Planning Policy 3.7 Planning in Bushfire Prone Areas, Perth.

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, Guidelines for Planning in Bushfire Prone Areas Version 1.3, Western Australia. December 2017.

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Appendix A

List of Emergency Control Personnel

Appendix A: List of Emergency Control Personnel

Function	Name
Chief Warden	
Deputy Chief Warden	
Area Warden	
First Aid Personnel	
Traffic Warden	
Communications Officer	

Appendix B

Emergency contacts

Appendix B: Emergency Contacts

General Emergency	
Police	
Department of Fire and Emergency Services (DFES)	
Water	
Gas	
Electricity	

Appendix C

Review of Emergency Plan

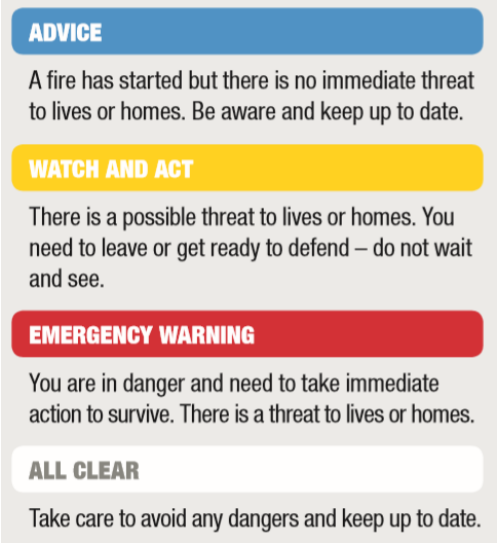
Appendix C: Review of Emergency Plan

Date	Plan reviewed	Modification requested	Action procedures practiced	Responsible person	
		Yes/no	Yes/no	Name	Signature

Appendix D

Details of fire warning levels

Appendix D: Fire warning levels



monitor website or information:
DFES on 13 DFES (13 33 37)
DFRES at www.dfes.wa.gov.au
Emergency WA website:

Evacuate

Shelter

Appendix E

Evacuation procedures

Appendix E: Evacuation procedures

To facilitate orderly evacuation of the school, the departure of students, staff and visitors, should be phased if necessary, depending upon the number of occupants at the school and the resources available. This can be achieved by:

- Evacuating the most vulnerable people first.
- Teachers being responsible for their students.
- Using private staff vehicles if required to transport vulnerable people from the school.

Implement the following procedures:

- Sound the audible alarm.
- Assemble all students and personnel at the covered assembly area.
- Put transport plan into action.
- Determine the route to be used for evacuation.
- Advise emergency authorities of the decision to evacuate and proposed route;
- Notify staff that a bushfire evacuation is underway
- Students, staff and visitors to be informed and organised for evacuation by Area Wardens;
- Nominated Area Wardens are to ensure the school is completely evacuated before the site is secured.
- Evacuate away from the threat - to a place not in a bushfire prone area.

IMPORTANT: If conditions change during an evacuation and the safety of the evacuation roads cannot be guaranteed, return to the school and shelter in the covered assembly building.

Appendix F

Shelter onsite procedures

Appendix F: Shelter onsite procedures

F1.1 Details to be provided to emergency services

The following information should be provided to the emergency authorities if sheltering on site is required whilst waiting for evacuation.

1. **Nature of the emergency:**
   - Immediacy – Can the bushfire be seen/ distance from school?
   - Evidence of ember attack?
   - Evidence of spot fires?

2. **Details of individuals sheltering:**
   - Number of people
   - Condition/state
   - Special needs i.e. disabilities, medical conditions

3. **Location:**
   - Address of school (35 Sunningdale Road, Yanchep)
   - Nearest cross roads (Moorpark Avenue and Sunningdale Road)
   - Exact location of safer place shelter (as shown in **Appendix G**)
   - Entry point to school – carparks are located off Moorpark Avenue (closest access to the safer place) and Sunningdale Road.

F1.2 Sheltering onsite procedures

The trigger to shelter onsite is an assessment by the Chief Warden or advice that transport is not available or it is not safer to leave.

The following process will be undertaken:

- Sound audible alarm.
- Assemble all students and personnel at the covered assembly building.
- Advise emergency authorities of the decision to take shelter in place and provide all information as detailed in **Section F1.1**.
- Notify Wardens of the decision to shelter in place.
- Initiate procedures to have Wardens notify and move students, staff and visitors to the safer place (covered assembly building).
- Nominated Wardens are to ensure that all students, staff and visitors have moved to the safer place (covered assembly building).
- Keep alert for any embers that could start fires in buildings or the garden areas at the school and alert authorities if any local fire cannot be extinguished.
- Stay sheltering in the safer place (covered assembly building) until advised by DFES or Police that fire is no longer a threat “all clear” or until evacuated off-site coordinated by Emergency Services.

Date	

Emergency control organisation

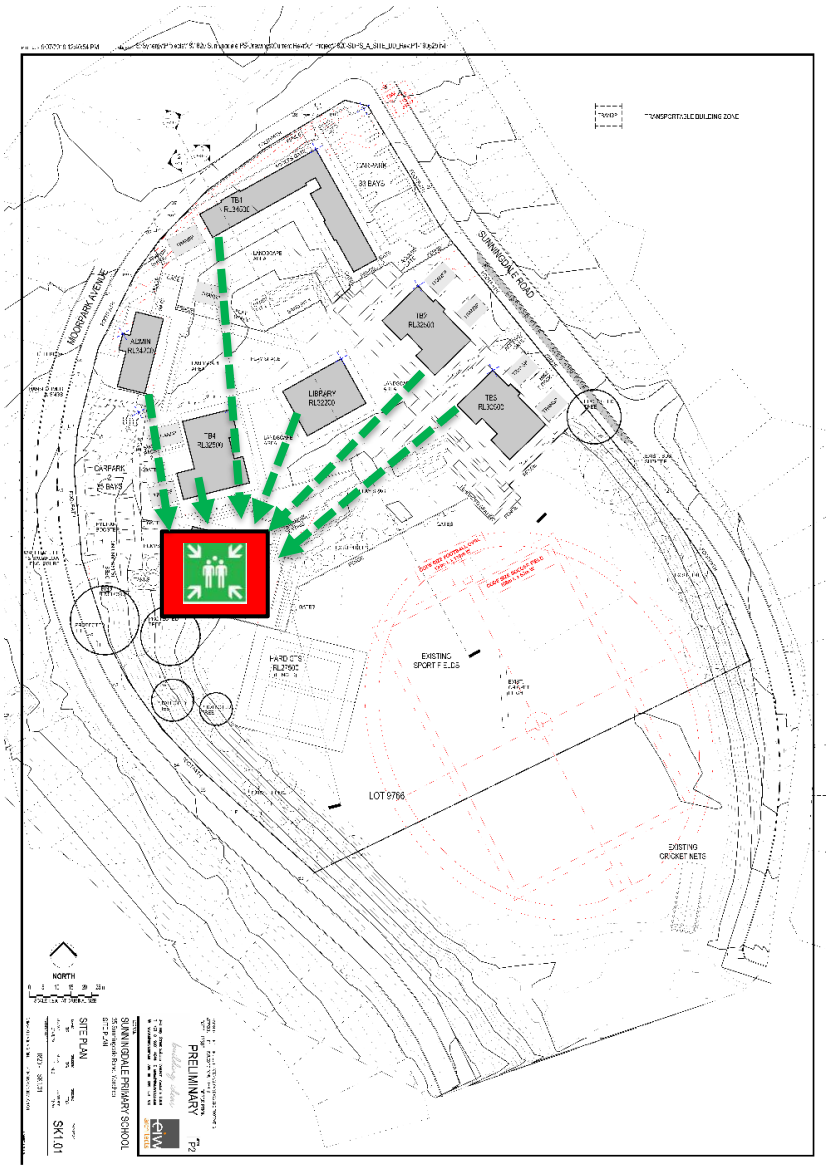
Chief Warden	
Deputy Warden	
Wardens	

No.	Childs Name	Special needs	Transport	Phone number	Present	Collected
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Appendix G

Bushfire Emergency Evacuation Plan

BUSHFIRE EMERGENCY EVACUATION PLAN



	Name
Chief Warden	
Deputy Chief Warden	
Area Warden	
First Aid Personnel	
Communications Officer	
Traffic Warden	

SUNNINGDALE PRIMARY SCHOOL

35 SUNNINGDALE ROAD, YANCHEP

ON ADVICE OF A BUSHFIRE THREAT

Turn off evaporative air conditioners. Close roof vents and doors.

Assess situation and assign a member of staff to monitor website or information line (if DFES on 13 DFES (13 33 37) or www.dfes.wa.gov.au and Emergency WA website: www.emergency.wa.gov.au).

Check availability of vehicles to evacuate students if required.

Check class rolls to confirm absentees and visitor register currently in the school.

Prepare:

- mobile telephones charged;
- emergency contacts list for parents, staff, other agencies;
- evacuation kit; and
- confirm readiness of Safer Building Location.

EMERGENCY WARNING or YOU NOTICE A BUSHFIRE

Seek instructions from the Emergency Services Incident Controller (managing the fire DFES).

Is it safe to evacuate – follow direction and evacuate

if not safe to evacuate - take shelter.

TAKE SHELTER

Shelter and Control Covered Assembly Building

- Move students, staff and visitors, to the Shelter.
- Prepare shelter - close windows and blinds.
- Check class roll and visitor register.
- Advise the Emergency Services Incident Controller on the location of students, staff and visitors.
- Monitor conditions in the building, keep calm, block smoke ingress, keep hydrated.
- Seek instructions from the Emergency Services Incident Controller (DFES) – All clear.
- Arrange collection of students from school.

Appendix H

Seasonal Checklist

SEASONAL CHECKLIST	COMPLIES (Y/N)
• Prune all vegetation in accordance with the Standards for Asset Protection Zones (*Schedule 1 Guidelines for planning in bushfire prone areas V1.3).* ○ TREES: No tall trees >5 m (trunk)s are to be within six (6) metres of a building and branches are not to overhang a building or be within three (3) metres. ○ SHRUBS: No shrubs or trees up to 3 m are to be within three (3) metres of a building. ○ GRASSES: No grasses within the school should exceed 100 mm and vegetation less than 0.5 m high is to be no closer than 2 m from the building.	
• Ensure all roof and building junctions are clear of litter.	
• Check all roofs presents no gaps greater than 2 mm. By external inspection or observation of daylight in the roof cavity. Screen any gaps (steel mesh 2 mm aperture) or fill with mineral wool or non-flammable sealant.	
• Ensure all building surfaces present no gaps greater than 2 mm, including deck boards.	
• Ensure all window and door screens are steel mesh 2 mm aperture and unbroken.	
• All buildings are free of flammable materials, none located within 3 m.	
• All objects attached to the buildings are non-combustible or easily removable, and the removing mechanism is in working order.	
• The hoses supplied for firefighting are protected from radiant heat (non-flammable fire reel cover) and are in working order.	
• Fire Extinguisher charge levels are in working order and the instructions on use is attached.	
• Smoke detectors are in working order.	
• The Evacuation Diagram is clearly displayed on immediately next to all external doors.	
• Emergency Contacts details are current, and identified on the Evacuation Diagram.	
• Ensure induction details for personnel during the bushfire season are up to date.	
Date of inspection	

Appendix I

Preparation Checklist

PREPARATION CHECKLIST – BUSHFIRE SEASON	COMPLIES (Y/N)
• Ensure the Principal is thoroughly familiar with the Bushfire Emergency Evacuation Plan.	
• Ensure students, staff, relief staff and parents/carers have been made aware of the Bushfire Emergency Evacuation Plan.	
• Ensure parents are aware of the school's procedures during a bushfire.	
• Ensure supplementary transport arrangements have been established for assistance during a bushfire event.	
• Ensure the Bushfire Emergency Evacuation Plan is reviewed prior to the bushfire season.	
• Ensure the Principal and Communications Officer are liaising with the relevant authorities, including (but not limited to) the Department of Fire and Emergency Services, the Department of Biodiversity, Conservation and Attractions, WA Police, local volunteer fire brigade, local government representative.	
• Ensure the above authorities are aware of the safer place (covered assembly building) location.	
• Ensure evacuation drills are practiced prior to the start of the bushfire season and at least once per term during the bushfire season.	
• Check the Department of Fire and Emergency Services website for any alerts.	
Date of inspection	