



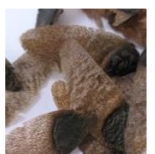
Natural Area
CONSULTING MANAGEMENT SERVICES

Parcel Property

Bushfire Management Plan Lot 20 Sixty Eight Road, Baldivis

22 November 2017

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Disclaimer

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- Parcel Property
- City of Rockingham
- Purchasers of Lots.

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Document Control

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V2	05 May 2016	Update to reflect new bushfire guidelines	SB	LS	Version 2
V3	26 May 2016	Incorporate DFES comments	SB	LS	Version 3
V4	02 November 2016	Incorporate CoR comments	SB	LS	Version 4
V5	24 November 2016	Incorporate CoR comments	SB	LS	Version 5
V6	15 December 2016	Incorporate CoR comments	SB	LS	Version 6
V7	22 November 2017	Entity name, updated to current guidelines	SB	LS	Version 7

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1.0 Background Information

Parcel Property commissioned Natural Area Holdings Pty Ltd, trading as Natural Area Consulting Management Services (Natural Area) to prepare a Bushfire Management Plan (BMP) for Lot 20 Sixty Eight Road in Baldivis to support the planning approvals process for Lot 20 Sixty Eight Road, Baldivis, within the City of Rockingham. The broad aim of the assessment process associated with preparation of the plan was to identify potential bush fire risks to future properties and their management when the site is developed.

Lot 20 is located in an area that is zoned urban, with its development dependent on subdivision works being carried out in Lot 19 to the west, Lot 21 to the east and Lot 740 to the north to ensure nominated bushfire management strategies can be achieved, particularly relating to the nominating of BAL-ratings. This Plan complements the approved fire management plan for Lots 569 and 1263 Baldivis Road and Lot 21 Sixty Eight Road, which are also owned by Parcel Property and currently being developed. Lot 20 will be developed in a single stage once development within Lots 569 and 1263 Baldivis Road and Lot 21 Sixty Eight Road are completed. Lots 19 and 740 are owned by different Developers.

This document updates the approved Bushfire Management Plan prepared by Natural Area dated 15 December 2016, which included input from the City of Rockingham and the Department of Fire and Emergency Services.

1.1 Location

The site is located approximately 45 km south of the Perth Central Business District and covers approximately 8.3 ha. The area is bounded by Sixty-Eight Road to the south, and private property to the north, east and west (Figure 1), with development planned in all locations. Lot 20 is currently vegetated. Offsite vegetation is present in the northern portion of Lot 19 Sixty Eight Road the west, along with the road verges and properties fronting the south side of Sixty Eight Road. Vegetation in Lot 21 to the east has been cleared to facilitate development in that location and vegetation within Lot 740 is grassland for approximately 100 m between the boundary of Lot 20 and the woodland.

1.2 Aims and Objectives

The aim of the Bushfire Management Plan (BMP) is to outline the fire management methods and requirements that will be implemented within the proposed subdivision. Accordingly, broad aims include:

- reduce the occurrence of and minimise the impact of fire to the life and property of future residents and the environment
- allow easy access of fire-fighters if a fire does occur
- protect the landscape within the site as far as is possible
- document fire prevention requirements of the area to which it relates.

The objectives of this Bushfire Management Plan are to:

- define land use areas and values within the subdivision, with the entire subdivision being developed as urban residential Lots with the exception of the school site in the southern portion of the Lot
- define and rank fire hazard areas according to the vegetation type and fire fuels present

- outline the roles and responsibilities of individuals and organisations in relation to fire management within the subdivision
- document fire management strategies for the subdivision, taking into consideration:
 - vegetation to be retained in the public open space area
 - the need for building construction standards where vegetated areas interface with the urban development
 - identify access for fire-fighting operations and daily maintenance in an around vegetated areas and stages of development
- define an assessment procedure that will evaluate the effectiveness and impact of existing and proposed fire prevention activities and strategies
- document the performance criteria and acceptable solutions adopted for the site.

1.3 Document Preparation


Sue Brand, an accredited Level 2 BPAD practitioner with the Fire Protection Association Australia.

Activities involved with the plan preparation process included:

- assessing the vegetation type and class present within and adjacent to the proposed development site using descriptions provided in *AS 3959 – 2009 Construction of Buildings in Bushfire Prone Areas*
- assigning hazard ratings based on the vegetation types present on and offsite
- determining BAL ratings and suggesting management strategies that could be implemented based on current and projected site considerations
- preparing the management plan.

1.4 Compliance Statement

This Bushfire Management Plan has been prepared in accordance with the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning, Department of Fire and Emergency Services and Western Australian Planning Commission, 2015).



Signed:

Date: 07 November 2017

Accreditation Number: 36638

Expiry Date: 30 April 2018



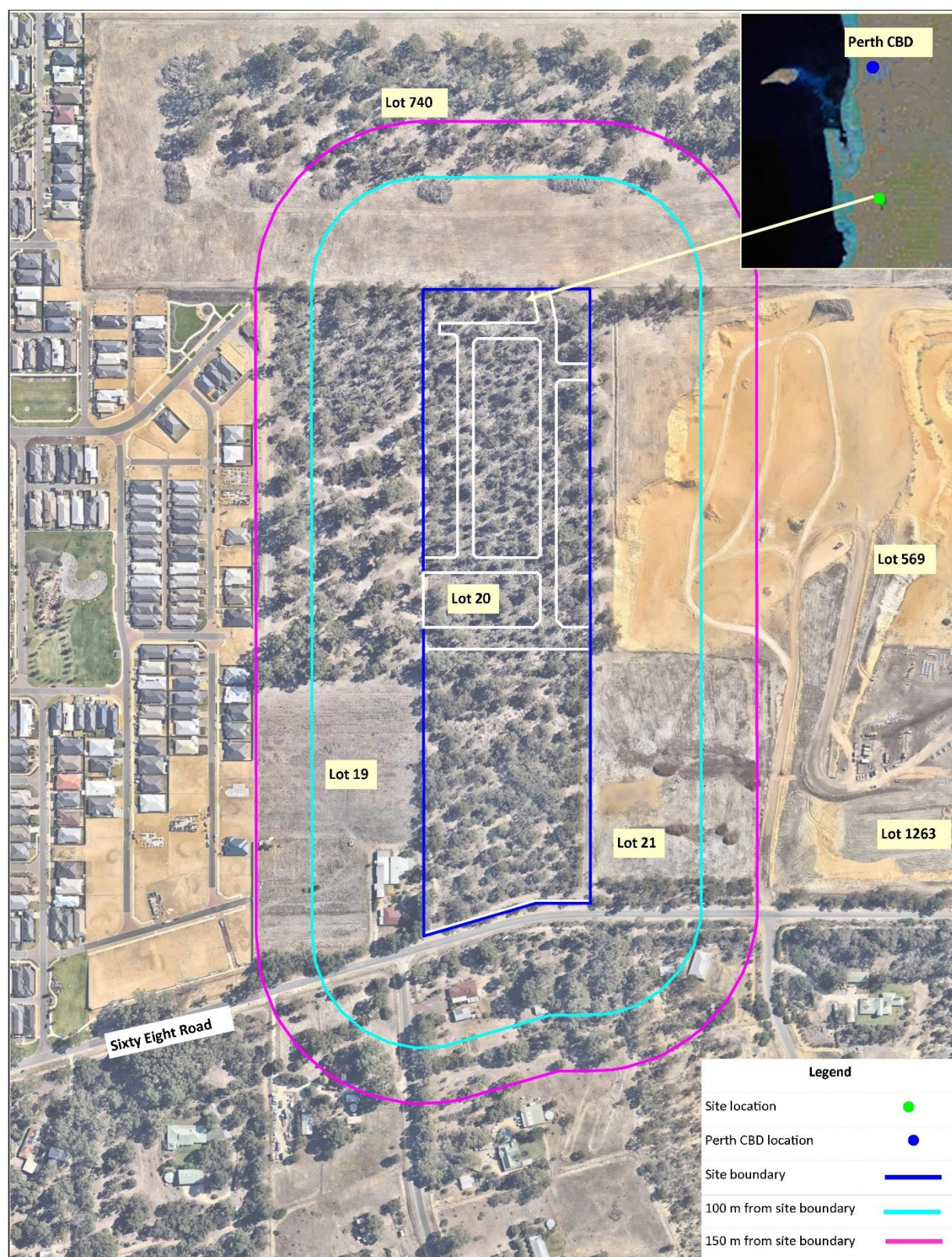
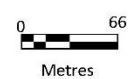


Figure 1:
 Location —Lot 20 Sixty Eight Road, Baldivis



Client: Parcel Property
 Project: BMP — Lot 20 Sixty Eight Road
 Image Source: Near Map, Nov 2016
 Prepared by: Sue Brand
 Datum: GDA 94, Zone 50



2.0 Consideration of Bushfire Threat

2.1 Site Characteristics

2.1.1 Regional Context

Perth is located within the Swan Coastal Plain region of the Interim Biogeographical Regionalisation of Australia (IBRA). The Swan Coastal Plain comprises of two major divisions, namely Swan Coastal Plain 1 – Dandaragan Plateau and Swan Coastal Plain 2 – Perth Coastal Plain. The site is located in the Perth subregion, which is broadly characterised as including areas of Jarrah and Banksia woodlands on sandy soils in a series of sand dunes, along with wetland areas, often within the interdunal swales (Mitchell, Williams and Desmond, 2002).

2.1.2 Vegetation

The vegetation on Lots 19, 20, and 740 is a Jarrah – Banksia Woodland (Type B Woodland). Lot 740 to the north has been cleared for a minimum 120 m from the Lot 20 boundary, and all of Lot 21 is now cleared. The southern portion of Lot 19 is cleared of native vegetation (Figure 1).

The major vegetated areas outside of the development will be Lot 19 to the east and vegetation also present within the road reserves for both Sixty Eight Road (Figure 1). In time, the bushfire risk associated with these locations will be reduced.

2.1.3 Contours and Slope

The site ranges in height from 18 m AHD in the south-west corner to 36 m AHD in the north-east corner (Figure 2). Overall, the land slopes downward 0 – 5° to the east and is upslope to the north and south. The land to the east is downslope 0 – 5° from Sixty Eight Road for an approximate distance of 120 m, then rises to the north (Figure 2; note aerial imagery provided by the Department of Agriculture and Food with contours is historic and does not reflect current site conditions). Slope was measured using a Forestry Pro range finder and confirmed using the rise over run method.

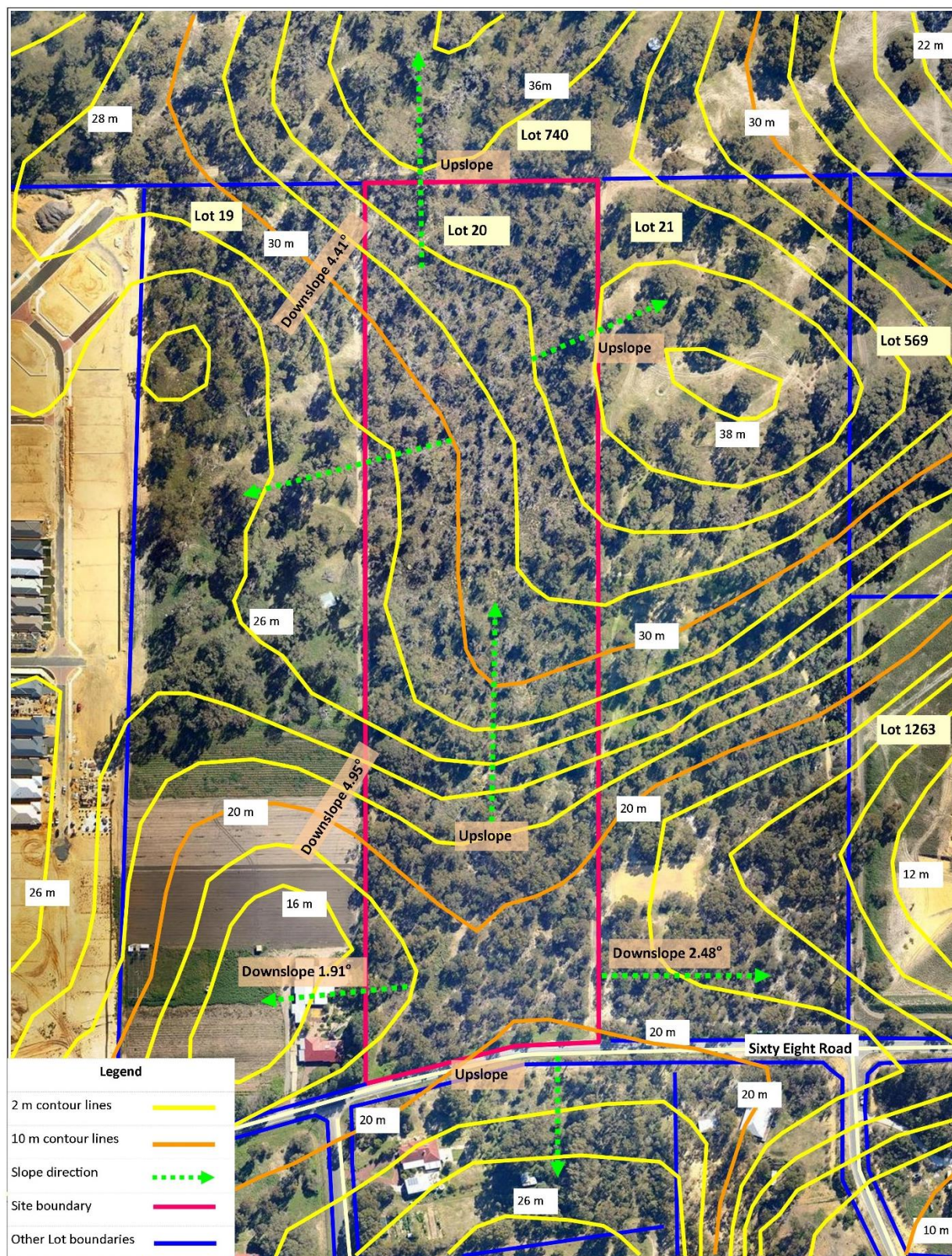
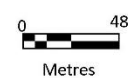


Figure 2:
Site contours and slope
—Lot 20 Sixty Eight Road, Baldvis



Client: Parcel Property
Project: BMP —Lot 20 Sixty Eight Road
Image Source: Department of Agriculture and Food, 2015
Prepared by: Sue Brand
Datum: GDA 94, Zone 50



2.1.4 Land Use

Lot 20 Sixty Eight Road is owned by Parcel Property and is uncleared, with no other assets within the subject site. The northern portion of Lot 19 to the west (owned by a different developer) is uncleared, and housing and a range of outbuildings have been cleared from the southern portion of the Lot. Property immediately to the north of the site (owned by a different developer) is cleared with some scattered trees approximately 100 m from the Lot 20 boundary. Some scattered trees remain within Lot 21 to the east.

2.1.5 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. The Bureau of Meteorology (2017) describes the climate at the Perth Airport (Station 009021) as:

- average rainfall is 771.6 mm pa, with the majority falling between May and August
- average maximum temperature ranges from 17.9 °C in winter to 31.9 °C in summer, with the highest recorded maximum being 46.7 °C
- average minimum temperatures range from 8.0 °C in winter to 17.5 °C in summer, with the lowest recorded minimum being -1.3 °C
- predominant wind directions include morning easterlies followed by south-westerly sea breezes during summer months when the risk of fire is greatest (Figure 3). The average wind speed is 23.8 km/h with gusts of more than 100 km/h possible, particularly during storm events.

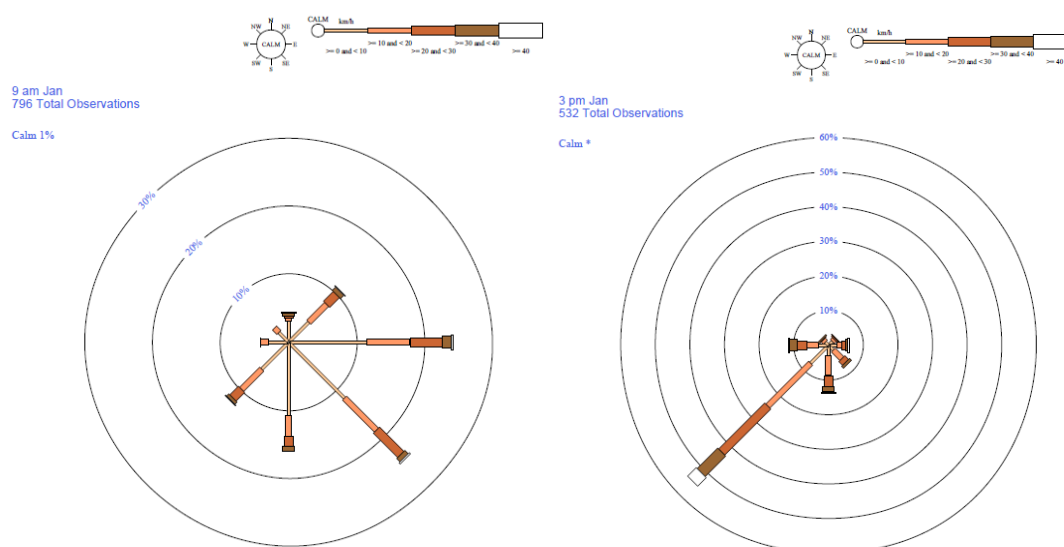


Figure 3: Average January wind direction, Medina Research Station
Source: Bureau of Meteorology, 2017

2.2 Vegetation Classification

Vegetation on and within 100 m of the site was assessed during a visit to the site on 17 November 2015 using descriptions provided in Table 2.3 and Figure 2.4 of AS 3959 – 2009 (Figure 7). Each area is discussed separately.

2.2.1 Area 1: Type B Woodland

Area 1 is Type B Woodland is primarily located within Lot 20 and in Lot 19 to the west (Figure 4). Vegetation in these areas will be cleared to accommodate the respective subdivisions at some future point in time.

Area:	1	Classificaiton or Exclusion Clause:	Type B Woodland
			
Photo ID: 1		Photo ID: 2	

Figure 4: Type B vegetation, Lots 20 and 19 Sixty Eight Road

2.2.2 Area 2: Unmanaged Grassland – Lots 740 and 19

Unmanaged grassland is present to the north between the boundary of Lot 20 and for a minimum distance of 100 m within Lot 740, as well as being present in Lot 19 to the west and in private property to the south of Sixty Eight Road (Figure 5).



Area:	2	Classification or Exclusion Clause:	Type G Grassland
			
Photo ID: 3		Photo ID: 4	

Figure 5: Unmanaged grassland – Lot 740

2.2.3 Non-vegetated Areas

Non-vegetated areas are present in Lot 21 to the east and along Sixty Eight Road (Figure 6).



Area:	3	Classification or Exclusion Clause:	Exclusion Clause 2.2.3.2 (e)
			
Photo ID: 5		Photo ID: 6	

Figure 6: Non-vegetated areas

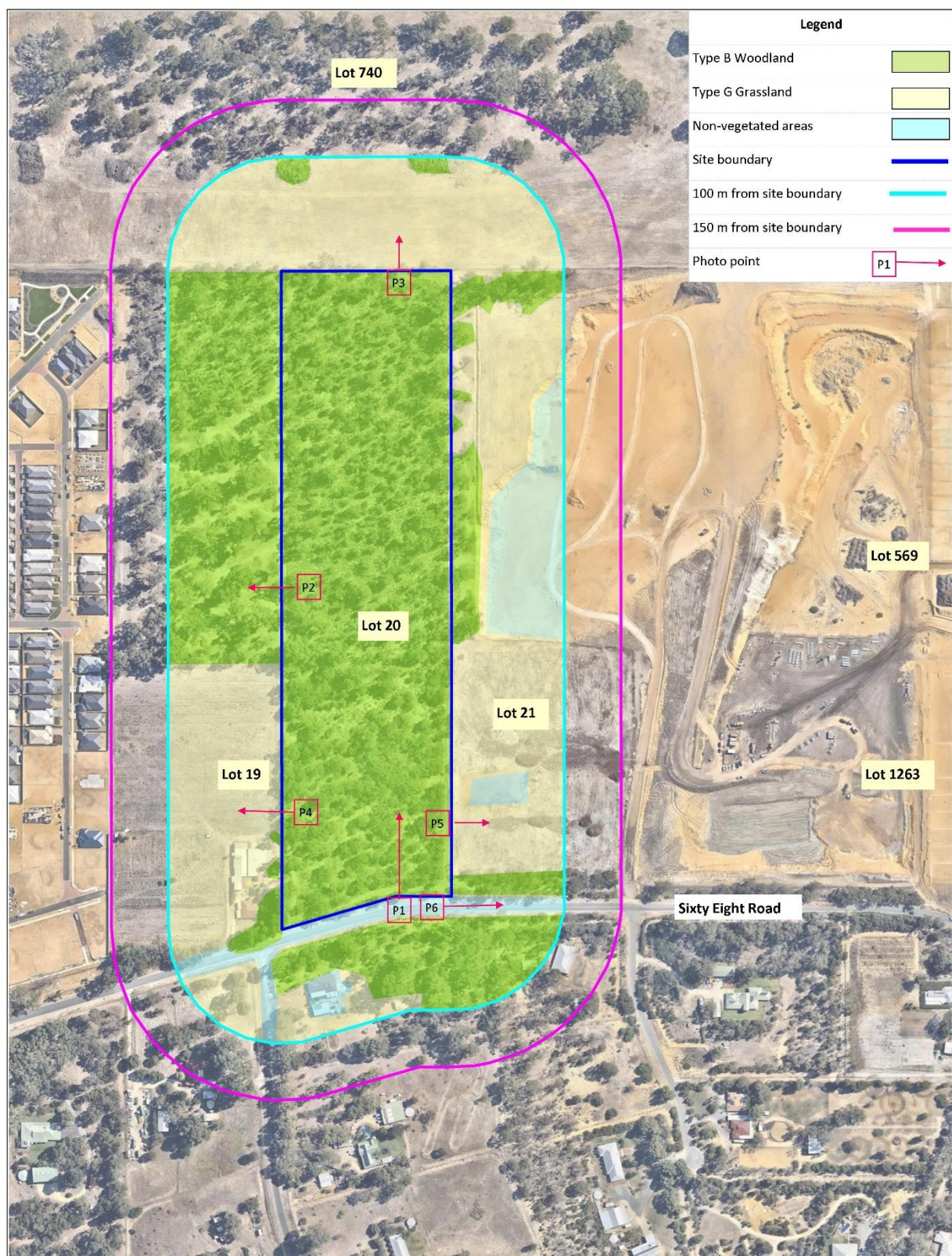


Figure 7:
Vegetation types as per AS 3959—2009
—Lot 20 Sixty Eight Road, Baldvis



Client: Parcel Property
Project: BMP — Lot 20 Sixty Eight Road
Image Source: NearMap, Nov 2016
Prepared by: Sue Brand
Datum: GDA 94, Zone 50



2.3 Bushfire Hazard Level

2.3.1 Fire History

Landgate imagery for August 2011 shows signs that a fire may have occurred in the northern portion of Lot 21 during between March and August 2011; the timing suggests this was a controlled burn. There are reports of fire at a location on Sixty Eight Road in 2009, but it was not possible to determine the actual site or its proximity to the subject site.

2.3.2 Bushfire Hazard Assessment

Depending on the vegetation type, a hazard rating of low, moderate or high is assigned. The nature of the vegetation in and around Lot 20 Sixty Eight Road mean that the pre-development bushfire hazard rating is moderate – extreme, with all locations within 100 m of the site shown as having a moderate hazard due to the increased risk levels (Figure 9). As development at the site proceeds, the hazard rating within the site will decrease, and will decrease further when clearing occurs in Lot 19 to the west due to development.

2.3.3 Bushfire Fuels

Bushfire fuels are present in the Type B Woodland and Type G Grassland within Lots 19 to the west, 20 (the site), 740 (to the north) and 21 (to the east). At some future point in time, the fuel load in each of these locations will change through various mechanisms, such as subdivision works (Lot 20 and 21). The public open space area within Lot 21 will be landscaped and maintained in a low bushfire fuel condition, with an indicative design provided in Figure 8.

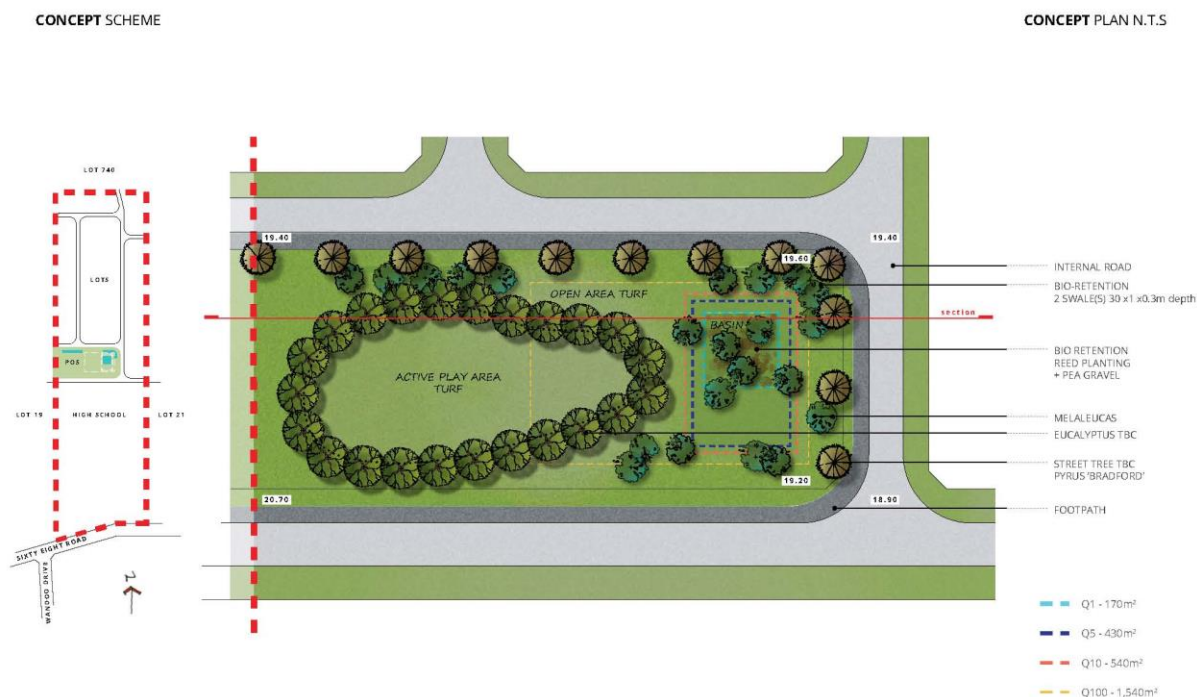


Figure 8: Indicative landscape concept – POS area, Lot 20 Sixty Eight Road

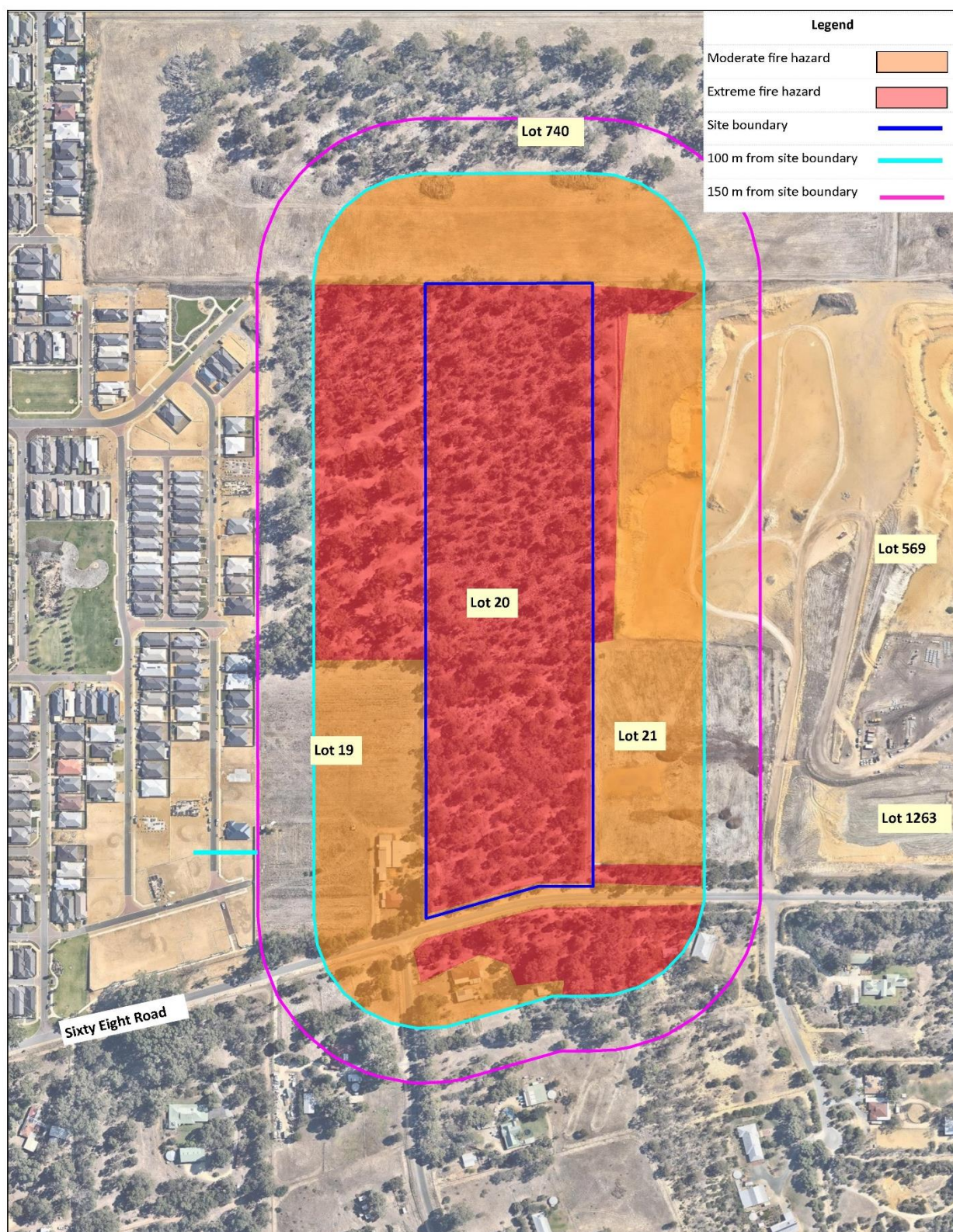
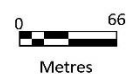


Figure 9:
 Pre-development bushfire hazard
 —Lot 20 Sixty Eight Road, Baldavis



Client: Parcel Property
 Project: BMP — Lot 20 Sixty Eight Road
 Image Source: NearMap, Nov 2016
 Prepared by: Sue Brand
 Datum: GDA 94, Zone 50



2.3.4 Fire Danger Index (FDI)

The fire danger index for this site is FDI 80, as documented in Table 2.4.3 of AS 3959 and which is the nominated FDI for Western Australia.

2.3.5 Potential Fire Impacts

Potential fire impacts within Lot 20 include smoke, ember attack and radiant heat.

2.4 BAL-Assessment

The indicative BAL-assessment for Lot 20 has been provided taking into consideration vegetation currently present within 100 m of the site boundary, with separation distances defined in AS 3959 – 2009 based on current vegetation types provided in Table 1 and Figure 10 showing the indicative BAL-zones. It is noted that on this basis, some development may be within the BAL-FZ, BAL-40 zones, so it is necessary to provide some additional context and highlight triggers for adjustments:

- it has been accepted that the site is within a bushfire prone area, and that the bushfire risk can be managed
- the current subdivision layout concept has been proposed in the local structure plan and may be subject to change, noting that the size and location of individual Lots is not yet available
- when development occurs, clearing will take place in Lot 20
- subdivision approval has been granted for Lot 21, which is also owned by the Parcel Property, with residual vegetation on that Lot expected to be cleared when development occurs to accommodate that subdivision
- the developer has committed to no development of Lots along the boundary between Lot 20 and other lots to the west, north and east until they can achieve a BAL-rating of BAL-29 or less
- the presence of classified vegetation south of Baldivis Road will influence construction within the school site, but has little influence on BAL-ratings in the northern portion of Lot 20.

Note also that the asset protection zone coincides with the boundary between the BAL-40 and BAL-29 zones shown on Figure 10.

Table 1: Minimum separation distances for BAL-ratings based on slope and vegetation type

Location and slope	Vegetation classification	Distances for BAL determination (m) (AS 3959)				
		BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Lot 19 – downslope	Woodland	<13	13 - <17	17 - <25	25 - <35	35 - <100
Lot 19 – downslope	Grassland	<7	7 - <9	9 - <14	14 - <20	20 - <50
Lot 740 - upslope	Grassland	<6	6 - <8	8 - <12	12 - <17	17 - <50
Lot 20 – upslope (north)	Woodland	<10	10 - <14	14 - <20	20 - <29	29 - <100
Lot 20 – downslope (south)	Woodland	<13	13 - <17	17 - <25	25 - <35	35 - <100
Lot 20 – downslope	Grassland	<7	7 - <9	9 - <14	14 - <20	20 - <50
South of Lot 20 - upslope	Woodland	<10	10 - <14	14 - <20	20 - <29	29 - <100

2.4.1 Boundary of Lots 19 and 20

As Lot 20 will be cleared to accommodate the development, the vegetation that will influence BAL-ratings is the woodland to the west in Lot 19 that is within 100 m of proposed urban Lots.

Figure 10 shows the locations in Lot 20 that are within 100 m of classified vegetation in Lot 19 to the west, and indicative BAL-ratings based on downward slope of 0 – 5° for a Type B – Woodland approximately 20 m from the Lot 20 boundary. Setback distances have been measured from the edge of the vegetated areas, but are subject to survey at a later stage of the development process. Further refinement of the BAL-rated areas will occur at the subdivision design stage when the actual Lot layout is known; the developer has committed to achieving a maximum BAL-29 rating for these Lots.

2.4.2 Boundary of Lots 20 and 21

Some trees have yet to be cleared in Lot 21, with the vegetation consistent with Type B Woodland. The presence of this vegetation has been considered in the BAL-assessment as it represents the current situation. Setback distances have been measured from the edge of the vegetated areas, but are subject to survey at a later stage of the development process. Further refinement of the BAL-rated areas will occur at the subdivision design stage when the actual Lot size and layout is known; the developer has committed to achieving a maximum BAL-29 rating for these Lots.

2.4.3 Grassland – Lot 740

Grassland present to the north in Lot 740 has been reflected in the provision of current BAL-zones (Figure 10). On the basis of current land-uses, it is expected that a maximum BAL-29 rating can be achieved through survey of separation distances and nominating building envelopes.

2.4.4 Public Open Space

The public open space that will be provided in the development will be landscaped and vegetated in a manner that ensures a low bushfire hazard threat level that will comply with exclusion clause 2.2.3.2 (f) of AS 3959 – 2009 (Figure 8).

2.4.5 Future High School

BAL-zones for the future high school site have been shown (Figure 10), with a BAL-rating being determined at a later stage of the development process and in accordance with building construction requirements specified in the Building Code of Australia for class 2 – 9 buildings when the layout of the school site is known. The presence of vegetation within the Sixty Eight Road reserve may influence BAL-ratings within the high school site, but is more than 100 m away from the proposed residential lots. If the proposed land use changes to residential, a review of the site in terms of BAL-rating(s) will be required.

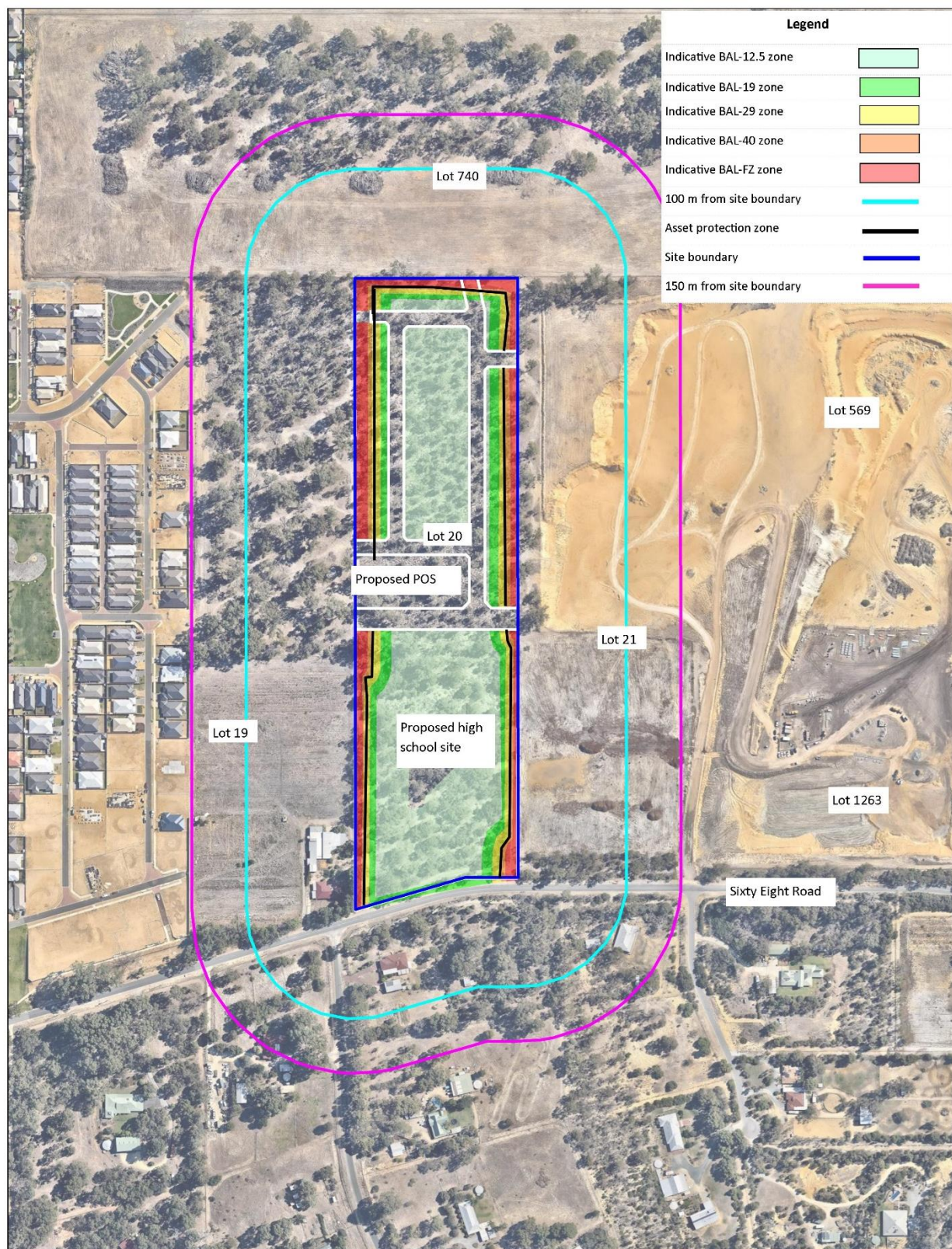
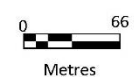


Figure 10:
Indicative BAL-zones,
Lot 20 Sixty Eight Road Baldvis



Client: Parcel Property
Project: BMP – Lot 20 Sixty Eight Road
Image Source: NearMap, Nov 2016
Prepared by: Sue Brand
Datum: GDA 94, Zone 50



2.5 Shielding

Shielding provisions outlined in clause 3.5 of AS 3959 – 2009 allow for the construction of the next lowest BAL-rating on those parts of the building shielded from the direction of bushfire attack, but cannot be less than BAL-12.5. Accordingly, shielding provisions are applicable to Lots rated BAL-29 or BAL-19, with those parts of the buildings shielded from the direction of the bushfire attack able to be built to next lower BAL-rating. Shielding will not apply to buildings located on Lots with a BAL-12.5 rating.

2.6 Staging

The residential development within Lot 20 will occur holistically in a single stage.

2.7 Implementation and Responsibilities

Initial implementation of this Bushfire Management Plan rests with the Developer, Parcel Property. When ownership arrangements change over time, the responsibility for the maintenance of fire management measures will devolve to the new owner or managing organisation, noting that landowners or managers are responsible for land under their direct control only. For example, for POS areas, the City of Rockingham will become responsible for ensuring fire fuel loads are maintained at suitable levels, and Lot owners will become responsible for ensuring asset protection zones within their property are maintained.

It should be noted that the City of Rockingham has the responsibility and powers under Town Planning Scheme No 2 and the *Bush Fires Act 1954* (including any special orders) to ensure that this bushfire management plan, City of Rockingham annual Fire Control Notice are complied with.

Activities that will be involved with the implementation of this plan are described in Table 1, and which also includes an indication of maintenance responsibilities associated with each activity.

Table 1: Implementation Schedule

Activity	Responsibility	Maintenance	Responsibility
Ensuring bushfire protection of land and property during the various stages of the development, as detailed in relevant sections of this bushfire management plan	Developer	Checking and maintaining firebreaks, low fuel zones and other protection mechanisms during staging activities on an ongoing basis	Developer
Install and maintain 100 m low fuel zone around each stage	Developer	Checking and maintaining on regular basis, noting that the City may inspect compliance	Developer
Maintain firebreaks on remainder of site as required by City	Developer	Checking of firebreaks on regular basis, in accordance with City requirements, noting the City may initiate inspections to ensure compliance	Developer
Assessing fire fuel loading in areas of onsite vegetation during various stages of the development	Developer	Annually After ceding of POS areas, the CoR will become responsible for ensuring fire fuel loads are maintained in a manner that minimises risks to nearby residents	Developer until hand over of POS areas to CoR
Undertake slashing of long grass to 50 mm and other weed control to reduce fuel load	Developer	Annual, prior to summer, in accordance with information issued to ratepayers by the City of Rockingham After ceding of POS areas, the CoR will become responsible for ensuring any long grass that develops over time is slashed	Developer, until sale of individual lots or hand over of POS areas to the CoR
Assess fire management implications of proposed landscaping/revegetation plans when they become available	Developer	As required, during landscaping design phase	Developer

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Bushfire Management Plan – Lot 20 Sixty Eight Road, Baldavis

Activity	Responsibility	Maintenance	Responsibility
Provide appropriate information, including a copy of this BMP, to potential purchasers of Lots within the development that have a BAL-12.5 or higher rating to inform them of the bushfire risks and minimum building construction requirements	Developer	Ongoing requirement until Lots are sold	Developer
Arrange for Section 70A notification on the title of Lots subject to the requirements of this BMP	Developer	Title phase	Developer
Education	Developer and City of Rockingham	Updating materials and information to reflect current policies, plans, knowledge, or accepted practice City through annual firebreak or similar notices to owners and residents	Developer – during sale process City – during normal administrative activities to residents and rate payers
BMP review; recognising that the City of Rockingham will review and approve the bushfire management plan	Developer in consultation with City of Rockingham	Ensure continued suitability of BMP by reviewing contents in conjunction with current site conditions	Developer
Ensure buildings are constructed in accordance with the requirements of the relevant sections of AS 3959 – 2009 for those Lots assigned a BAL-rating	Owner	As required	Owner

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Bushfire Management Plan – Lot 20 Sixty Eight Road, Baldivis

Activity	Responsibility	Maintenance	Responsibility
Where required, maintain asset protection zones between building walls and the edge of classified vegetation	Owner	As required	Owner
Include ember shields on evaporative air conditioners	Owner	As required	Owner
Inform DFES as soon as practicable after a fire is noticed within bushland within the subdivision boundary or nearby areas	Owner	As required	Owner

3.0 Compliance and Justifications

3.1 SPP 3.7 Objectives and Application of Policy Measures

The intent of *State Planning Policy (SPP) 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) is to ensure that bushfire risks are considered in a timely manner and that planning documents demonstrate the appropriate application of the various policy measures. Table 2 summarises the intent and objectives of SPP 3.7 and provides evidence of how the subdivision of Lot 20 Sixty Eight Road Baldivis complies.

Table 2: Evidence of compliance with SPP 3.7 intent and objectives

SPP Reference	Description	Evidence of Compliance
Intent	<ul style="list-style-type: none">▪ Ensure that risks associated with bushfires are planned using a risk-based approach	<ul style="list-style-type: none">▪ Preparation of a bushfire management plan in accordance with SPP 3.7▪ Hazard assessment indicates risks associated with bushland are manageable
Objective 1	<ul style="list-style-type: none">▪ Avoid any increase in the threat of bushfire to people, property and infrastructure	<ul style="list-style-type: none">▪ Hazard assessment indicates risks associated with bushland are manageable▪ Lots within 100 m of vegetation assigned BAL-rating as per AS-3959 - 2009
Objective 2	<ul style="list-style-type: none">▪ Reduce vulnerability to bushfire	<ul style="list-style-type: none">▪ Hazard assessment indicates risks associated with bushland are manageable▪ Lots within 100 m of vegetation assigned BAL-rating as per AS-3959 - 2009
Objective 3	<ul style="list-style-type: none">▪ Ensure that higher order strategic planning documents and proposals consider bushfire protection requirements at an early stage	<ul style="list-style-type: none">▪ Planning at the site is in the early stages, with bushfire risk being considered▪ This bushfire management plan documents the risks as they stand, and will be adjusted as required as information about the site such as lot layout and other factors are finalised
Objective 4	<ul style="list-style-type: none">▪ Achieve an appropriate balance between bushfire risk management and biodiversity conservation	<ul style="list-style-type: none">▪ Site environmental values have been considered during the planning approvals process

3.2 Bushfire Protection Criteria

Table 3 demonstrates Lot 20's Compliance with Bushfire Protection Criteria; Figure 10 provides the indicative subdivision design and projected BAL-zones according to vegetation types currently present.

Intent	Acceptable Solutions	Lot 20 Solution
Element 1: Location		
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 <ul style="list-style-type: none"> Bushfire hazard assessment is or will on completion be moderate or low BAL-rating is BAL-29 or lower 	<ul style="list-style-type: none"> The subdivision is located in an area where the bushfire hazard level is manageable Bushfire hazard will be moderate or low on completion Some lots will have a BAL-rating, with none higher than BAL-29 Any Lot that is projected to have a BAL-rating higher than BAL-29 will not be developed at this stage
Element 2: Siting and Design of Development		
To ensure that the siting and design of development minimises the level of bushfire impact	A2.1 Asset Protection Zone (APZ) <p>Every habitable building is surrounded by, and every proposed lot can achieve an APZ depicted on plans that meets the following:</p> <ul style="list-style-type: none"> Width – bushfire radiant heat does not exceed radiant heat of 29 kW/m² (BAL-29) as measured from any external wall or supporting post or column in all circumstances Location – APZ contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot(s) will be managed in a low-fuel state on an ongoing basis, in perpetuity 	<ul style="list-style-type: none"> Minimum APZ coincides with boundary of BAL-40 and BAL-29 zones (Fig 10) Some lots will have a BAL-rating, with none higher than BAL-29 Any Lot that is projected to have a BAL-rating higher than BAL-29 will not be developed at this stage The APZs include roads, landscaped areas and minimum building setbacks in individual lots, depending on location within the subdivision

Intent	Acceptable Solutions	Lot 20 Solution
	<ul style="list-style-type: none"> Management – the APZ is managed in accordance with the requirements of ‘<i>Standards for Asset Protection Zones</i>’ (Schedule 1) 	
Element 3: Vehicular Access		
Vehicular access servicing a subdivision/development is available and safe during a bushfire event	A3.1 Two Access Routes	
	<ul style="list-style-type: none"> Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions 	<ul style="list-style-type: none"> Subdivision design will include two roads that will connect to the road network currently being constructed in Lot 21 to the east and to the west when Lot 19 is developed
	A3.2 Public Road	
	<ul style="list-style-type: none"> Public roads will be constructed in accordance with requirements detailed in Table 4, Column 1 on page 64 of the guidelines 	<ul style="list-style-type: none"> Public roads will be constructed in accordance with technical requirements
	A3.3 Cul-de-Sac (including a dead-end road)	
	<p>A cul-de-sac and/or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved:</p> <ul style="list-style-type: none"> Requirements in Table 4, Column 2 on page 64 of the guidelines Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access 	<ul style="list-style-type: none"> Any temporary cul-de-sacs will be constructed in accordance with technical requirements No permanent cul-de-sacs are planned

Intent	Acceptable Solutions	Lot 20 Solution
	<p>way is no more than 600 metres)</p> <ul style="list-style-type: none"> ▪ Turn-around area requirements, including a minimum 17.5 metre diameter head. 	
	<p>A3.4 Battle-axe Blocks</p> <p>Battle-axe access leg should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) all of the following requirements are to be achieved:</p> <ul style="list-style-type: none"> ▪ Requirements in Table 4, Column 3 ▪ Maximum length: 600 metres ▪ Minimum width: six metres. 	<ul style="list-style-type: none"> ▪ No battle-axe blocks are planned
	<p>A3.5 Private Driveways longer than 50 m</p> <p>A private driveway is to meet all of the following requirements:</p> <ul style="list-style-type: none"> ▪ Requirements in Table 4, Column 3 ▪ Required where a house site is more than 50 metres from a public road ▪ Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres) ▪ Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house ▪ Any bridges or culverts are able to support a minimum 	<ul style="list-style-type: none"> ▪ No private driveways are planned

Intent	Acceptable Solutions	Lot 20 Solution
	<p>weight capacity of 15 tonnes</p> <ul style="list-style-type: none"> All-weather surface (i.e. compacted gravel, limestone or sealed). 	
	<p>A3.6 Emergency Access Way</p> <p>An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:</p> <ul style="list-style-type: none"> Requirements in Table 4, Column 4 on page 64 of the guidelines No further than 600 metres from a public road Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency Must be signposted. 	<ul style="list-style-type: none"> Emergency access will be via the internal road network
	<p>A3.7 Fire Service Access Routes (Perimeter Roads)</p> <p>Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for fire-fighting purposes. Fire service access routes are to meet the following requirements:</p> <ul style="list-style-type: none"> Requirements Table 4, Column 5 on page 64 of the 	<ul style="list-style-type: none"> No fire service access routes will be required, access will be via the internal road network which includes perimeter roads between bushfire prone areas and developed areas

Intent	Acceptable Solutions	Lot 20 Solution
	<p>guidelines</p> <ul style="list-style-type: none"> ▪ Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency ▪ Surface: all-weather (i.e. compacted gravel, limestone or sealed) ▪ Dead end roads are not permitted ▪ Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) ▪ No further than 600 metres from a public road ▪ Allow for two-way traffic ▪ Must be signposted. 	
	A3.8 Firebreak Width	
	Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.	<ul style="list-style-type: none"> ▪ Owners must comply with City of Rockingham annual fire control notice
Element 4: Water		
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	
	The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services	<ul style="list-style-type: none"> ▪ Subdivision will be connected to scheme water; i.e., located within a reticulated area ▪ Hydrants will be in accordance with Water Corporation's 'No 63 Water Reticulation Standard'
	A4.2 Non-reticulated Areas	<ul style="list-style-type: none"> ▪ N/A
	A4.3 Individual Lots within Non-Reticulated Areas	<ul style="list-style-type: none"> ▪ N/A

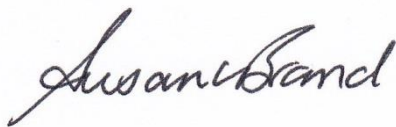
3.3 Compliance with Relevant Documents

Sections 3.1 and 3.2 demonstrate how Lot 20 complies with *State Planning Policy 3.7* (Department of Planning and WA Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning, Department of Fire and Emergency Services and WA Planning Commission, 2015).

The subdivision of Lot 20 will create residential Lots of varying sizes, and owners must comply with relevant sections of the annual firebreak notice and bushfire information prepared by the City of Rockingham, such as total fire ban and hazard reduction programs. The proposed high school in the southern portion of the site will need to comply with Building Code of Australia requirements.

3.4 Compliance Statement

This Bushfire Management Plan has been prepared in accordance with the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning, Department of Fire and Emergency Services and Western Australian Planning Commission, 2015).



Signed:

Date: 22 November 2017

Accreditation Number: BPAD36638

Expiry Date: 30 April 2018



4.0 References

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Department of Agriculture and Food. (2016). *SLIP NRM Portal*. Available World Wide Web URL: <http://maps.agric.wa.gov.au/nrminfo/>.

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