



**Amendment No. 2
Lot 9000 Waterloo Road, Roelands
Structure Plan**

Prepared by Calibre Professional Services
for Two Hills Pty Ltd

September 2018

10438

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DOCUMENT CONTROL

Issue	Date	Issue Details	Author	Checked
A	29.09.2015	Client Review	KH	GB
B	04.09.2018	Lodge with DPLH	KS	KH

IT IS CERTIFIED THAT AMENDMENT NO. 2 TO THE LOT 9000 WATERLOO ROAD
ROELANDS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN
AUSTRALIAN PLANNING COMMISSION ON:

10 SEPTEMBER 2018

A handwritten signature in black ink, appearing to read 'Rigali', is written over a horizontal line.

Signed for and on behalf of the Western Australian Planning Commission:

An officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose.

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date approved by the WAPC
1	Revised road design, Provision of water tank site, modified lot configuration and increased yield (46 lots)	standard	August 2012
2	Revised lot configuration and increased yield (55 lots)	minor	

EXECUTIVE SUMMARY

Calibre Professional Services Pty Ltd has been engaged by Two Hills Pty Ltd to prepare an Amendment to the Shire of Harvey Town Planning Scheme No.1 as it relates to Lot 9000 Waterloo Road, Roelands. As a part of the Scheme Amendment, approval is sought for a new Structure Plan, which modifies the current approved Subdivision Guide Plan.

These actions seek to facilitate a subdivision outcome that has been unsuccessful under the current Scheme provisions and approved Subdivision Guide Plan. Details of the Scheme Amendment are contained in a separate Scheme Amendment report.

The Structure Plan is summarised in Table 1.

Table 1: Summary

Item	Data
Total area covered by the structure plan	17.8 hectares
Area of Rural Residential land use proposed:	No. lots
2000m ² to 3000m ²	37
3001m ² to 5000m ²	13
5001m ² to 10,000m ²	5
Total estimated lot yield	55

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PART ONE: IMPLEMENTATION

1.1 STRUCTURE PLAN AREA

The Structure Plan applies to the land known as Lot 9000 Waterloo Road, Roelands. The Structure Plan is at *Figure 1*.

1.2 OPERATION

The Structure Plan comes into effect on the date it is approved by the WAPC.

1.3 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

The subject land is within the Special Residential Zone of the Shire of Harvey Town Planning Scheme No.1.

Clause 6.2 of the Scheme outlines the Special Residential Development Requirements, and states that additional requirements or modifications specified in Schedule 3 of the Scheme also apply. The subject land is referenced within Schedule 3 as Area 11 – Waterloo Road, Roelands East. This section sets out a range of additional development obligations, including the requirement for subdivision to be in accordance with an approved Subdivision Guide Plan endorsed by the Shire of Harvey and the WAPC.

Clause 9.14 of the Scheme outlines the Structure Plan requirements.

The following conditions are recommended to be imposed on the proposed subdivision:

1. The subdivider is to prepare and implement a Black Cockatoo Habitat Management Plan, to the satisfaction of the Department of Biodiversity, Conservation and Attractions.
2. The subdivider is to implement the approved Bushfire Management Plan.
3. The subdivider is to implement a notification on all certificates of title informing landowner of the bushfire management plan and bushfire prone nature of the subject land.
4. The subdivider is to make a proportional contribution to the upgrade of the intersection of Government Road and South Western Highway to the satisfaction of Main Roads Western Australia.
5. The subdivider is to implement notifications on certificates of title informing landowners of the potential amenity impacts of the nearby quarry.
6. The subdivider is to implement a landscaping and revegetation plan, that does not compromise the outcomes of the approved bushfire management plan.
7. The subdivider is to implement a notification on all certificates of title informing landowners that a reticulated sewer service is not available to the land and that alternative effluent disposal units may be required to address constrained on-site conditions.
8. The subdivider is to implement an approved Urban Water Management Plan to the satisfaction of the Local Government in consultation with the Department of Water and Environmental Regulation.
9. The subdivider is to include a notification on titles of lots neighbouring, or in proximity to, drainage basins, advising that effluent disposal systems shall be setback at least 30 metres from the drainage basin.

LEGEND

- Site Boundary
- Existing Cadastre
- Proposed Cadastre
- Drainage Reserve
- Indicative Vegetation Screening Locations
- Future Water Supply Site
- Building Zone
- 100m Buffer from Rodlands Quarry

BOUNDARY SETBACKS

Set backs (general unless specifically identified on Structure Plan)

- Secondary Street = 7.5m
- Front = 10m
- Rear = 10m
- Side = 5m

FIRE BOUNDARY SETBACKS

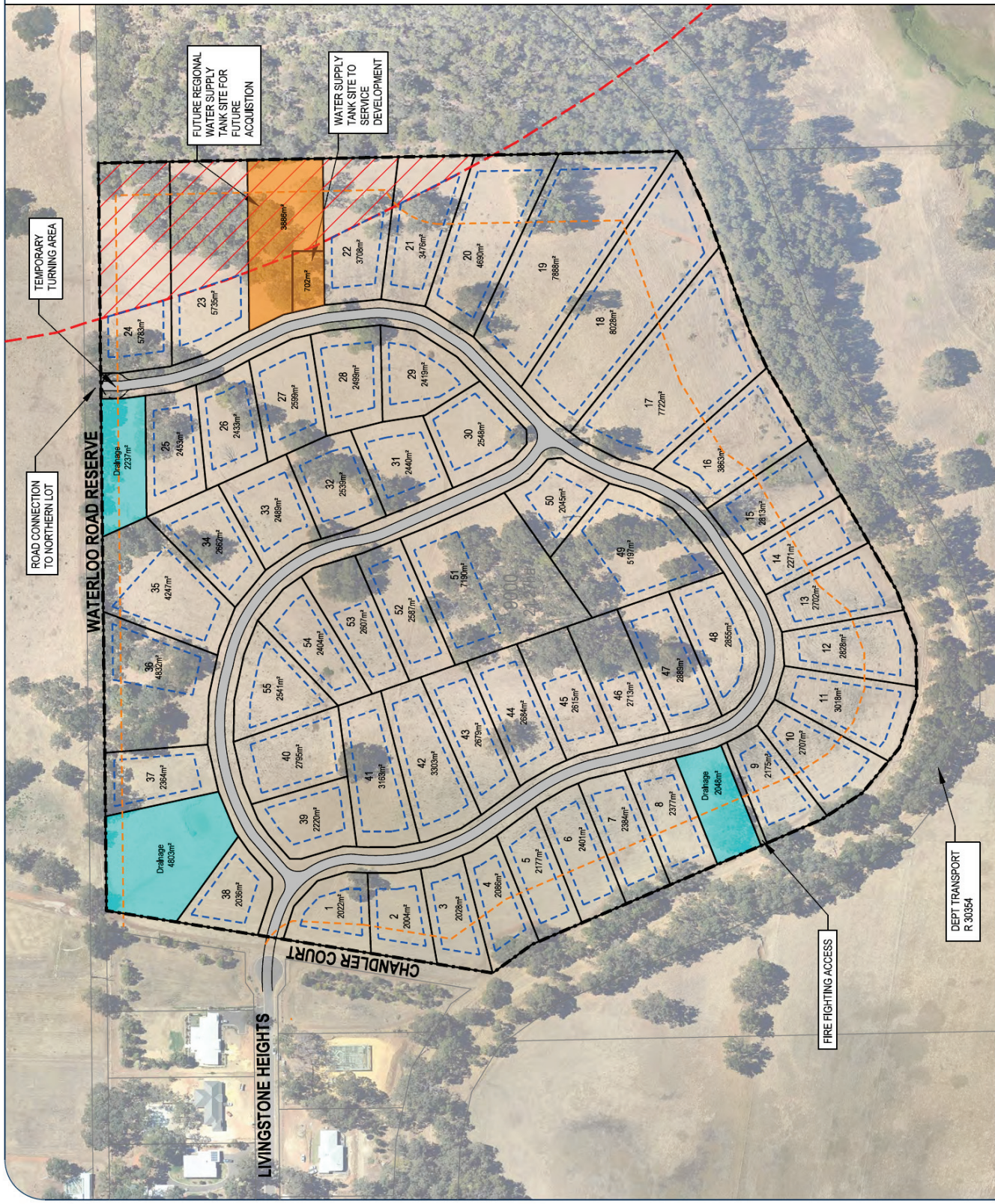
- BAL 29 Setback line

PROVISIONS IN ADDITION TO REQUIREMENTS CONTAINED WITHIN SCHEDULE 3 AREA 11 OF TOWN PLANNING SCHEME NO.1

- 1) Notwithstanding the land use designations in town planning scheme No.1, Dwelling shall be constructed in accordance with the standards specified in the approved fire management plan.

NOTES

- 1) Effluent disposal on Lots 2 - 24 may be permitted outside of the nominated building envelope.
- 2) All effluent disposal systems must setback a minimum of 30m from any drainage basin.
- 3) A requirement for all dwellings to include a notification on title advising of the potential amenity impacts from the quarry activities on Reserve 30354.
- 4) All habitable buildings to be constructed beyond the BAL 29 setback line.



STRUCTURE PLAN - AMENDMENT No. 2
Lot 9000 Waterloo Road, Roelands

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Plan No: 10438P-DP-04F

Date: 04.09.2018
Rev: F
Scale: A1 @ 1:250, A3 @ 1:2500
Co-ords: MGA
Aerial: Nearmap 2014

DEPT TRANSPORT
R 30354

FIRE FIGHTING ACCESS

ROAD CONNECTION TO NORTHERN LOT

TEMPORARY TURNING AREA

WATERLOO ROAD RESERVE

CHANDLER COURT

LIVINGSTONE HEIGHTS

FUTURE REGIONAL WATER SUPPLY TANK SITE FOR FUTURE ACQUISITION

WATER SUPPLY TANK SITE TO SERVICE DEVELOPMENT

9000

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PART TWO: EXPLANATORY REPORT

1 PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSE

The Structure Plan has been prepared in accordance with the obligations set out in the Shire of Harvey Town Planning Scheme No. 1.

The subject land was rezoned to “Special Residential” by Amendment No.78 to the Shire of Harvey Town Planning Scheme No.1 in June 2009. This Amendment introduced the provisions into Schedule 3 of the Scheme – Additional Requirements.

Schedule 3 sets out the specific matters to be addressed during subdivision and development of the subject land. This specifies that subdivision must accord with an approved Subdivision Guide Plan.

A Subdivision Guide Plan was approved as part of Amendment No.78. This was superseded by a modified Subdivision Guide Plan that was subsequently approved in 2012 by both the Shire of Harvey and the WAPC.

In April 2013, the WAPC granted Subdivision Approval to the landowner, approving a subdivision layout consistent with the current approved Subdivision Guide Plan.

Since this time, the landowner has sought to act upon the Subdivision Approval however, this has revealed fundamental difficulties in satisfying the various conditions and delivering a realistic outcome. Of particular difficulty is the condition relating to the provision of a suitable water supply service. Investigations have revealed that this will be very costly and this has in turn, negated the viability of the subdivision in its present form.

Subdivision of the subject land for special residential purposes is anticipated by the Shire of Harvey Town Planning Scheme, and a subdivision has gained approval from the WAPC. However, for the subdivision to proceed, an increase in lot yield is considered necessary in order to partially offset the additional and unique costs of water supply requirements.

The Structure Plan reflects this increase in yield from 46 lots in the current approved Subdivision Guide Plan to 55 lots in this Structure Plan.

1.2 LAND DESCRIPTION

1.2.1 Location

The land is located at Lot 9000 Waterloo Road, Roelands.

1.2.2 Area and land use

The subject land is presently undeveloped land that is used for grazing. The land has an area of 178,175m² (17.8 hectares).

1.2.3 Legal description and ownership

The land is legally described as Deposited Plan 53335. The land is owned by Two Hills Pty Ltd

1.3 PLANNING FRAMEWORK

1.3.1 Zoning and reservations

The subject land is within the Special Residential Zone of the Shire of Harvey Town Planning Scheme No.1.

Clause 6.2 of the Scheme outlines the Special Residential Development Requirements, and states that additional requirements or modifications specified in Schedule 3 of the Scheme also apply. The subject land is referenced within Schedule 3 as Area 11 – Waterloo Road, Roelands East. This section sets out a range of additional development obligations, including the requirement for subdivision to be in accordance with an approved Subdivision Guide Plan endorsed by the Shire of Harvey and the WAPC.

Clause 9.14 of the Scheme outlines the Structure Plan requirements.

Amendment 115 to the Shire of Harvey Town Planning Scheme No. 1 was approved by the WAPC on 22 August 2018. The amendment allows for the additional development provisions of Schedule 3 which are detailed in the Scheme Amendment Report and involve changing the minimum average lot size from 4000sqm to 3200sqm, and then changing three references in the Schedule from Subdivision Guide Plan to Structure Plan.

1.3.2 Greater Bunbury Region Planning Scheme and Strategy

The subject land is zoned urban under the Greater Bunbury Region Planning Scheme. This is also reflected within the Greater Bunbury Region Strategy which advocates a 'compact and connected' growth pattern as the most balanced and responsible way for the Greater Bunbury sub-region to develop. This will support, amongst a range of initiatives, diversity of housing options.

Three strategic priorities have been identified to create 'liveable' communities:

1. *"Plan for increased housing supply in response to changing population needs;*
2. *Promote and increase housing diversity, adaptability, affordability and choice; and*
3. *Create attractive, safe, functional, and well-connected neighbourhoods and towns."*

The proposed Structure Plan and Scheme Amendment are consistent with these strategic priorities and goals.

1.3.3 Pre lodgement consultation

The proposed Structure Plan and Scheme Amendment has been discussed with representatives of the Shire of Harvey and the WAPC.

1.4 SITE CONDITIONS AND CONSTRAINTS

Extensive analysis of the site and its opportunities and constraints occurred as a part of the Scheme Amendment to rezone the land to Rural Residential in 2009, and since then as part of modifying the original Subdivision Guide Plan and more recently the WAPC Subdivision Approval.

The essential change between the current approved Subdivision Guide Plan and this Structure Plan is the 9 lot increase in lot yield.

In terms of the increase in lot yield, this has been driven by a Landscape Assessment which is contained at Appendix Nine of the Scheme Amendment Report. Views of the land from the South Western Highway and the Coalfields Highway, being significant arterial roads within proximity of the subject land demonstrate little to no change in views of the land from these vantage points.

The design response sought to minimise any adverse impacts upon the landscape values of the area. It is considered that the new lot layout better reflects the topography of the subject land, providing smaller lots on the lower portions, and larger lots on the more elevated and/or steeper portions of the land. In terms of

visual impact, this does not substantively alter the impacts upon the landscape values of the area than previous versions of the layout.

Site analysis has informed the new Structure Plan layout and the Landscape Assessment confirms that the visual intrusion will be similar to that established when the last Subdivision Guide Plan was approved. In this earlier instance, the initial built form visual intrusion was limited in the beginning, and then reduced further as additional landscaping was established within the subdivision around homes.

The reduction in the lot size minimum specified in Schedule 3 of the Scheme from 4000m² to 3200m² is a marginal reduction that is necessary to deliver a higher lot yield in response to the site and also the essential yet costly water supply requirements.

1.5 LAND USE AND SUBDIVISION REQUIREMENTS

The Structure Plan is sought to be adopted pursuant to Schedule 3 of the Shire of Harvey Town Planning Scheme No.1

The other changes that are proposed to the additional development provisions of Schedule 3 are detailed in the Scheme Amendment Report and involve changing the minimum average lot size from 4000sqm to 3200sqm, and then changing the three references in the Schedule from Subdivision Guide Plan to Structure Plan.

2 TECHNICAL APPENDICES

Apart from the Bushfire Management Plan, technical appendices have not been updated to reflect the modified Structure Plan.

The Bushfire Management Plan can be found at Appendix A of this report.

APPENDIX A BUSHFIRE MANAGEMENT PLAN



Bushfire Management Plan



Lot 9000 Waterloo Road Roelands



LUSH FIRE & PLANNING
PO Box 114
Woodanilling WA 6316
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ABN 74 232 678 543

REF: 16-077
Ver H
January 2018

The subject land is located within a bushfire prone area where bushfires occur on a regular basis. The proposed development is for fifty- five rural residential lots with areas ranging from 2,004m² to 8,084m². It is introducing substantial values (property and people) which must be protected from the risk posed by the potential bushfire hazard.

The subject land is situated on the Darling Escarpment with most of the land having moderate to steep slopes. The site is adjacent to a large area of bushland on the eastern boundary. This extends along the southern boundary in a narrower linear corridor being Reserve 30354. This vegetation corridor is approximately 40m wide and has a low longitudinal gradient of less than 5 degrees. The land to the south is open pasture with steeper slopes.

All of the subject land is considered to have a moderate bushfire hazard level rating. Once development occurs this hazard rating should be maintained or even reduced. However, the surrounding land has an extreme bushfire hazard level.

The objectives of SPP3.7 Planning in Bushfire Prone Areas promote that development should not occur in areas with an extreme bushfire hazard rating. Development may occur in areas with a moderate or low hazard rating and/or where a maximum BAL-29 classification is applied. The proposed subdivision complies with these objectives of State Planning Policy 3.7.

The measures proposed for ensuring appropriate fire protection within the subject land include:-

- ❖ Ensuring that the subdivision design complies with the principles contained within Bushfire Protection Criteria and Guidelines.
- ❖ Compliance with Council's Firebreak Order.
- ❖ The provision of fire hydrants.
- ❖ Requiring dwellings to be constructed in accordance with Australian Standard AS3959 "Construction of Buildings in Bush Fire Prone Areas" with a maximum BAL-29 rating
- ❖ Ensuring that prospective purchasers are advised that there is a Fire Management Plan applicable to the property.

The ongoing maintenance of the properties is required in order to maintain the effectiveness of the recommendations in this report. The recommendations in this report should not be construed to assure total bush fire protection and do not guarantee that a building will not be damaged in a bush fire. The severity of a bush fire will depend upon the vegetation fuel loadings; the prevailing weather conditions and the implementation of appropriate fire management measures.

The bushfire mitigation recommendations for the development are:

1. That dwellings be located so as to have a maximum BAL-29 rating.
2. That any application for a building permit for a dwelling is to include an individual BAL assessment to confirm that sufficient land has been cleared to provide for BAL-29 setbacks.
3. That all grass within each property is to be maintained as low threat vegetation during the fire season by being heavily grazed or slashed to a maximum height of 100mm. If slashing cannot be achieved all remaining grass is to be burnt or sprayed with a suitable herbicide to prevent regrowth during the summer months.
4. That the vegetation within the BAL setback is to be maintained as an asset protection zone / low threat vegetation/low fuel zone as defined in Clause 2.2.3.2 of AS3959.
5. As far as practicable, the asset protection zones shall be incorporated within the individual lots to minimize any reliance on measures being implemented outside the property.
6. That the subdivision roads shall be designed in accordance with Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines
7. That a temporary turn around having a minimum diameter of 17.5m shall be provided at the head of the cul-de-sac.
8. That any new driveway shall have a minimum 4m wide trafficable surface and any access gate shall be a minimum width of 3.6m.

9. Where a driveway is more than 50m in length a turnaround area suitable to a fire appliance shall be provided within proximity to the dwelling.
10. That an interim emergency access way with a minimum trafficable surface of 6m shall be provided through Lot 9001 connecting to Waterloo Road along the proposed subdivision road alignment of Lot 9001 which is currently being finalised.
11. That pending the subdivision of Lot 9001 the interim emergency access way be protected by a carriageway easement.
12. That a fire service access routes with a minimum trafficable surface of 6m shall be provided as shown in Figure 8. These shall have an access gates and be sign posted as "Emergency Access Only".
13. That all lots shall provide a 2m boundary firebreak.
14. That the vegetation along Waterloo Road west of Livingstone Heights be managed to be low threat vegetation. This maintenance program is to be formalised so that it is carried out as part of the annual works program of local government.
15. That fire hydrants be provided in accordance with the Water Corporation's Water Reticulation Standard No 63.
16. A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Harvey and DFES.
17. That any new dwelling shall provide with a static water supply tank having a minimum capacity of 10,000L specifically for firefighting with:
 - a) A 50mm male camlock couplings with full flow valves;
 - b) The fittings positioned at the base of the tank so that the total tank capacity is available for firefighting purposes at any time;
 - c) An adequate hard standing access must also be provided adjacent to such connection/s and must be readily identifiable; and
 - d) A nonelectric firefighting pump (normally 5.5hp) with sufficient hose to protect the dwelling and the surrounding low fuel zone.
18. That the landowners undertake regular maintenance of their property in preparation for the annual fire season.
19. That all fire mitigation measures shall be completed by the date prescribed in Council's Fire Break Order (i.e. 30th November) and these be maintained throughout the fire season.
20. In the event of any staging of the subdivision a plan and statement of the proposed interim fire management measures will be submitted and approved by the Shire as an adjunct to Figure 8.
21. That residents be aware that they live in a fire prone environment and need to take the initiative in learning about, preparing for and responding to bushfires.
22. That the landowners prepare a Bushfire Survival Plan.
23. A notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.
24. That prospective residents be provided with a summary of this Bushfire Management Plan.

Document Reference

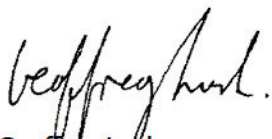
Property Details

Street No	Lot No's	Plan	Street Name
	9000	D53335	Waterloo Road
Locality	Roelands	State WA	Postcode 6226
Local Government Area	Harvey		
Description of the building or works	Rural residential subdivision - 55 lots		

Report Details

Revision	Date	Job No 16 - 077
Town Planning Management Engineering Pty Ltd		
A	27 October 2011	Draft Report
B	30 November	TME name changes
C	19 June	Inclusion of emergency access via Lot 9001
Lushfire & Planning		
D	24 January 2017	Revised subdivision and updated provisions
E	14 August 2017	DFES comments EAW Performance Measure
F	01 December 2017	EAW Landowner letters
G	18 December 2017	EAW Conditions
H	18 January 2018	Lot 9001 design & modify EAW Condition
BPP Group Pty Ltd (Bushfire Prone Planning)		
	14 August 2017	Performance Measure A3.1

Practitioner Details



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1.0 INTRODUCTION

1.1 Background

This bushfire management plan has been prepared for the proposed subdivision of Lot 9000 D53335 Waterloo Road, Roelands. The subject land is located at the eastern end of Livingstone Heights (road) and has an area of 21.267 hectares. It has a frontage of 466 metres to Waterloo Road and is located approximately 1 kilometre from the Roelands townsite as shown in Figure 1.

This report has been prepared to demonstrate that the design of proposed subdivision has given appropriate regard to:

- State Planning Policy 3.7 Planning in Bushfire Prone Areas; and
- Guidelines for Planning in Bushfire Prone Areas (2015)

The aim of this Report is to reduce the threat to the residents in the proposed subdivision and fire fighters in the event of a bushfire within or adjacent to the development. It defines the responsibilities of relevant stakeholders and the measures required to manage the potential likelihood of fires starting on the proposed lots or the adjoining land. The assets which are highlighted for protection from bushfires are:

- Any future dwelling within the subdivision; and
- The existing development surrounding the properties.

The first priority for fire management is the preservation of life and to reduce the impact of bushfires on property and infrastructure (1).

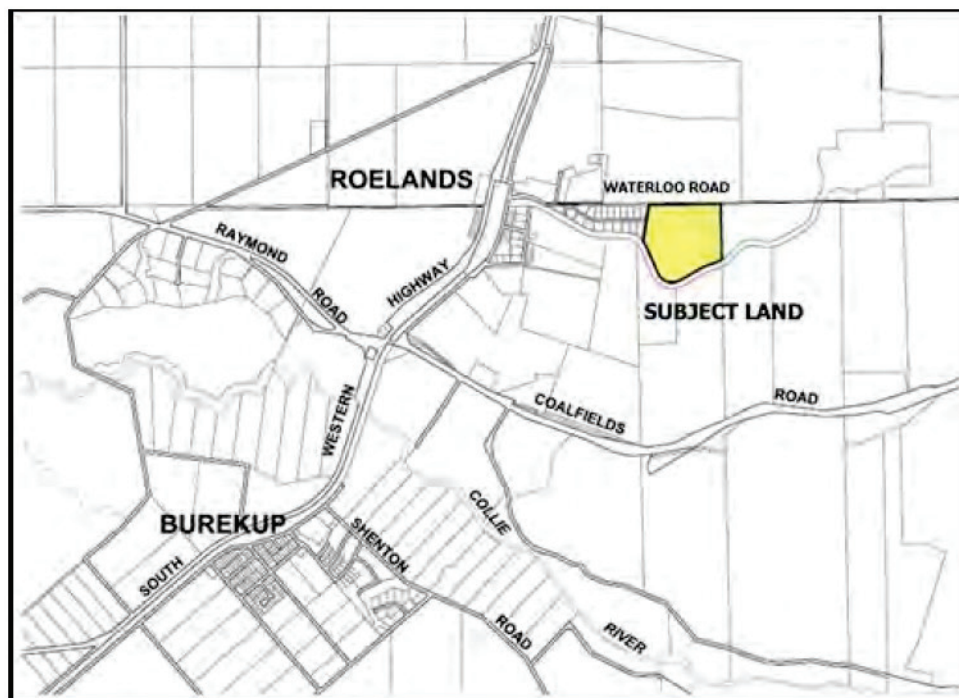


Figure 1 Location Plan

1 WAPC (2015) SPP3.7 Planning in Bushfire Prone Areas page 1

1.2 Site History

A subdivision approval (Ref 138402) was issued in May 2009 to allow the site to be developed into 26 lots ranging in size from 2,000 sqm to 2 hectares. Condition 12 required that a fire management plan be prepared for the subdivision to the satisfaction of FESA. A fire management plan was prepared by RPS Koltasz Smith in March 2009 and was approved by FESA and Council.

The proposed subdivision was subsequently revised comprising of 46 lots with areas between 2,152 and 8,911 sqm. It was proposed that they not be provided with any reticulated water supply.

A fire management plan was prepared by TME Town Planning Management Engineering Pty Ltd and approved by FESA in 2012. This included an agreement with the neighbouring landowner for the construction of an emergency access way through the adjoining Lot 9001.

The approval letter from FESA for the 2012 fire management plan is contained in Appendix 1.

2.0 EXISTING CONDITIONS

2.1 Existing Development and Land Use

The existing conditions are shown in Figure 2 and photographs of the site are included in Appendix 2.

The subject land is vacant land which has traditionally been used for broad acre farming. Waterloo Road adjoins the northern boundary of the site and this is an unconstructed road reserve. Chandler Court adjoins the western boundary of the site and this is also an unconstructed road reserve.

The land to the north (Lot 9001) is still used for broad acre farming. The land to the east (Lot 51) is heavily vegetated vacant land.

Immediately to the west of the site on Livingstone Heights is an existing special residential estate of 19 lots with a minimum size of 3,900sqm. These have all been developed. To the north west of the site is the Heritage Hills Estate which contains 32 lots with a minimum size of 4,000sqm. While the subdivision has been constructed there are presently no dwellings on these lots.

The southern boundary of the site adjoins Reserve 30354. This reserve is managed by the Department of Transport and its purpose is for a "quarry". The section to the south of the site is a 40m wide linear corridor which extends from Roelands to the quarry, which is located east of Lot 51.



LEGEND

SUBJECT LAND



SCALE



FIGURE 2
EXISTING CONDITIONS



Rev	Description	Date
A	Preliminary	16/01/2017



Job No 16-077

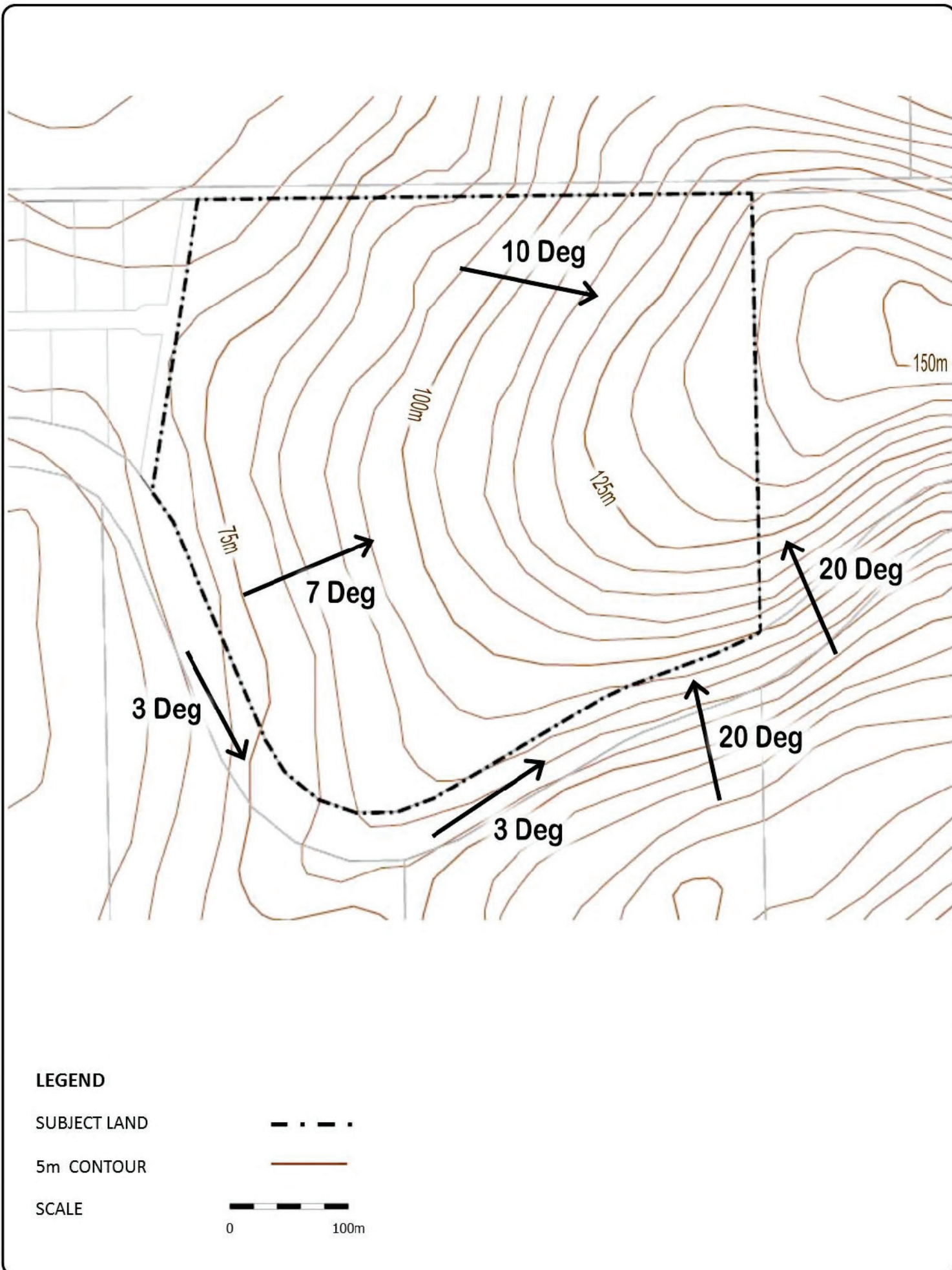


FIGURE 3
TOPOGRAPHY



Rev	Description	Date
A	Preliminary	16/01/2017



2.2 Topography

The site is situated on the escarpment with steeply sloping land. As shown in Figure 3 the site elevation varies from 65m AHD on the western boundary to 140m AHD on its boundary.

The general direction of the slope is towards the south west. On the western portion of the site the slopes are generally between 5 and 10 degrees. This increases to 10 to 15 degrees in the eastern half of the site and 15 to 20 degrees in the south eastern corner of the site.

2.3 Vegetation

The subject land is cleared with isolated small areas of paddock trees. These are predominantly Marri and Jarrah trees with no native understory. The adjacent Lot 51 is more heavily vegetated while R30354 has trees on either side of the old accessway.

A vegetation assessment was conducted on the site (2) by Eco Logic Environmental Services Pty Ltd. This noted that the vegetation structure has been severely impacted by past disturbance including clearing and stock grazing. Most remnant vegetation areas were recorded to be in a 'parkland cleared' state with mature trees over introduced pasture grasses.

2.4 Access

External access to the site is via the South Western Highway, Waterloo Road and then Livingstone Heights. Livingstone Heights is a constructed sealed subdivision road which extends for 500m from Waterloo Road to the western boundary of the site.

2.5 Water Supply

A reticulated water supply extends along Livingstone Heights to the western boundary of the subject land.

2.6 Climate

The Roelands locality (3) has a Mediterranean climate, which is characterised by hot dry summers and mild wet winters. There is an annual average rainfall of 949mm in the locality and the average maximum temperature varies between of 16.7 degrees in July to 31 degrees in January.

During summer there are morning breezes from the east and sea breezes in the afternoon. Wind speeds are typically from 10 to 30 kph in the mornings and as high as 40 to 50 kph in the afternoon.

2 Eco Logic Environmental Services Pty Ltd (2011) Spring Flora and vegetation Assessment, Lot 9000, Waterloo Road Roeland
3 Bureau of Meteorology – Wokelup Weather Station

3.0 DEVELOPMENT FRAMEWORK

3.1 Bushfire Prone Land

An extract of the Bushfire Prone Map is shown in Figure 4 and all of the subject land is defined as being bushfire prone.

The designation of bushfire prone areas triggers:

- The application of Australian Standard AS3959 Construction of Buildings in Bushfire Prone Areas under the Building Code of Australia (from the 8th April 2016);
- The provisions of the Planning and Development (Local Planning Schemes) Amendment Regulations 2015 (from the 8th April 2016); and
- The application of SPP3.7 Planning in Bushfire Prone Areas (from the 7th December 2015).

3.2 SPP 3.7 Planning in Bushfire Prone Areas

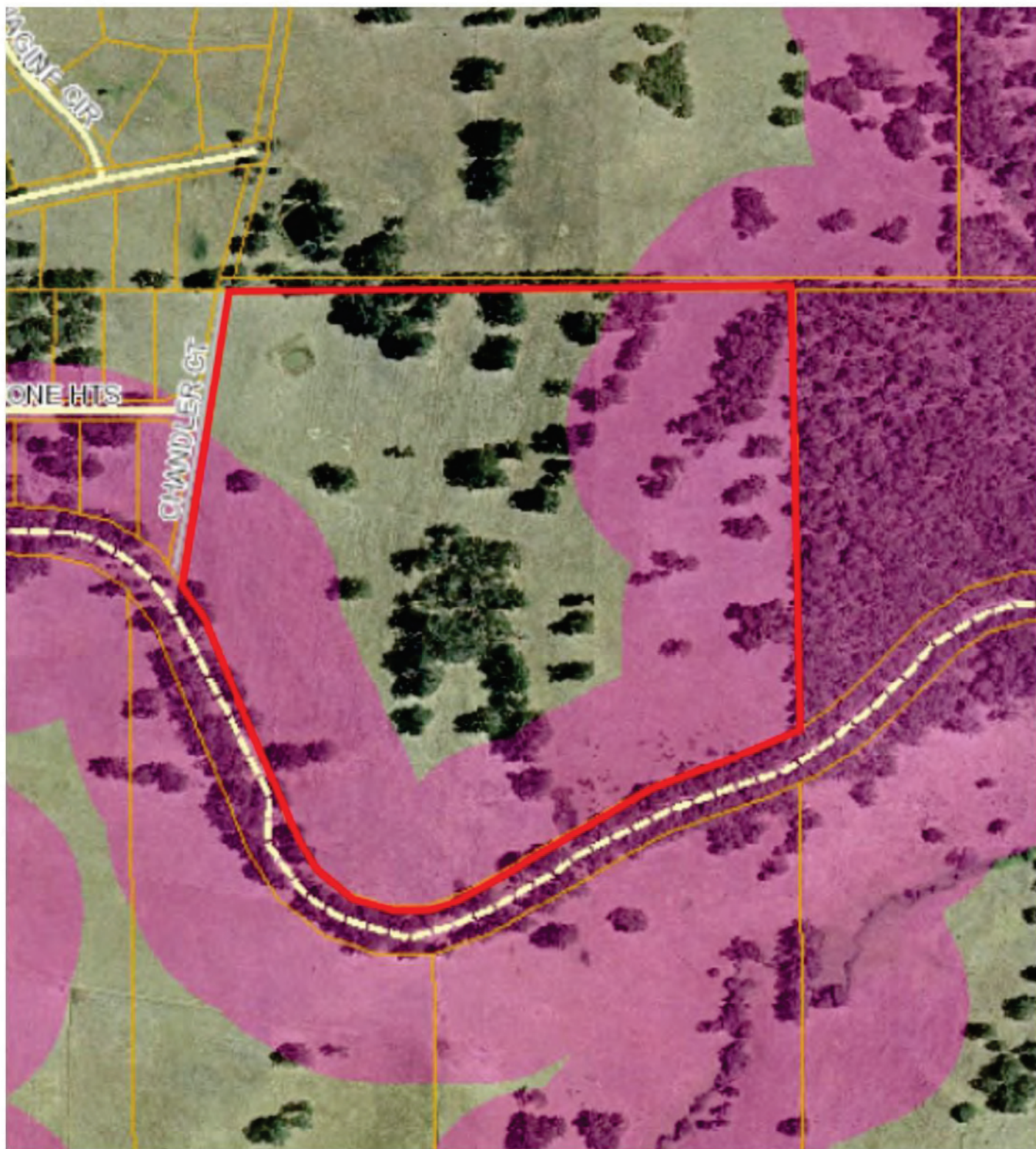
State Planning Policy 3.7 Planning in Bushfire Prone Areas was gazetted on the 7th December 2015. The policy provides the foundation for land use planning to address bushfire risk management in Western Australia. It contains objectives and policy measures, as well as reference to the bushfire protection criteria contained in the Guidelines.

The objectives of the policy are to:

1. Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.
2. Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.
3. Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.
4. Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change.

The Policy requires that planning proposals, subdivision and development applications should have on completion:

- A moderate bushfire hazard level (BHL); and/or
- A Bushfire Attack Level (BAL) rating of between BAL-12.5 to BAL-29 applies.

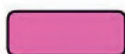


LEGEND

SUBJECT LAND



BUSHFIRE
PRONE LAND



(Includes bushfire prone
vegetation and 100m wide buffer)

FIGURE 4
BUSHFIRE PRONE LAND



Rev	Description	Date
A	Preliminary	16/01/2017



Job No 16-077

3.3 Bushfire Protection Criteria

The Bushfire Protection Criteria are contained in Appendix 4 of the Guidelines for Planning in Bushfire Prone Areas (2015). The criteria contain a set of performance criteria and acceptable solutions that new subdivision and developments are required to meet in bush fire prone areas. The main components are:

- Element 1 Location
- Element 2 Siting and Design of Development
- Element 3 Vehicular Access
- Element 4 Water

3.4 Australian Standard AS3959 (2009)

AS3959 Construction of Building in Bush Fire Prone Areas (4) provides measures for improving the ability of buildings to withstand burning debris, radiant heat and flame contact during a bush fire. The lower the separation distance from bushfire prone vegetation, the higher the standard of construction is required for buildings. The construction requirements relate to: -

- Subfloor Supports;
- Floor;
- External Walls;
- External Elements and Doors
- Roofs;
- Verandas, Decks, Steps; and
- Water and gas pipes.

The Standard contains six Bushfire Attack Levels (BAL) categories as follows:

BAL Low	The risk is considered to be very low and does not warrant any specific construction requirements.
BAL 12.5	The risk is considered to be low but there is still a risk of ember attack.
BAL 19	The risk is considered to be moderate. There is risk of ember attack and burning debris by wind borne embers and a likelihood of exposure to radiant heat.
BAL 29	The risk is considered to be high. There is an increased risk of ember attack and burning debris by wind borne embers and a likelihood of exposure to an increased level of radiant heat.
BAL 40	The risk is considered to be very high.
BAL FZ	The risk is considered to be extreme.

The BAL rating reduces the further the dwelling is located away from bushfire prone vegetation. The measures contained in the Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is due to the unpredictable nature and behaviour of fire and extreme weather conditions.

4 Standards Australia (2009) AS 3959 – Construction of Buildings in Bush Fire Prone Areas. Sydney. Standards Australia International Ltd.

3.5 Planning Bulletin 111 Planning in Bushfire Prone Areas

A revised version of Planning Bulletin 111 was released in October (2016) to provide improved guidance for the administration of SPP3.7.

It states that the overarching policy intentions for Planning in Bushfire Prone Areas are:

- That strategic planning documents or proposals, subdivision and development applications within a bushfire prone area, should demonstrate a Bushfire Attack Level (BAL) of 29 or below; and
- Proposals that on completion, are extreme and/or BAL-40 or BAL-Flame Zone will generally not be supported (subject to exemptions relating to minor or unavoidable development).

3.6 Firebreak Order

Council's Firebreak Order stipulates the following requirements.

A. RURAL LAND/SPECIAL RURAL LAND

Firebreaks not less than 3 metres wide must be provided in the following positions:

- (a) within 10 metres inside and along all boundaries of all land.
- (b) so as to divide the land into areas of not more than 120 ha (300 acres).
- (c) around all groups of buildings, haystacks (includes two or more round bales placed in a paddock for storage purposes) and fuel installations but not closer than 6 metres.
- (d) Irrigation Areas - Owners or occupiers may be exempted from all or part of the requirements of the above. Contact Council's Law and Safety Services.

B. URBAN LAND/SPECIAL RESIDENTIAL

(Residential, Commercial and Industrial land within a townsite or any other area subdivided for residential purposes)

- (a) where the area of land is 2,024m² (approx. ½ acre) or less, remove all flammable material on the land except live standing trees, shrubs and plants, from the whole of the land;
- (b) where the area of land exceeds 2,024m² (approx. ½ acre) provide firebreaks of at least 2 metres wide and within 6 metres of the inside of all external boundaries of the land, cleared hardstand areas and reticulated grassed areas maintained in a green state maybe considered acceptable as an adequate firebreak.

4.0 PROPOSED DEVELOPMENT

The proposed subdivision is shown in Figure 5.

There will be fifty - five (55) lots with areas of between 2,022m² and 8.028m².

Building envelopes have been designated for each lot with the following setbacks:

- 10m from the front boundary;
- 7.5m from the secondary street;
- 10m from the rear boundary; and
- 5m from the side boundary.

The building envelopes also contain areas for on-site effluent disposal. The envelopes are extended and the Structure Plan nominates "habitable building setback areas". In these areas, no habitable buildings can be constructed, however effluent disposal systems can be located there.

The subdivision road will have a 15m wide road reserve and will extend for approximately 900m to the northern boundary of the site. This is then intended to connect into the future development of Lot 9001.

There are also three drainage reserves having areas of 4803m², 2237m² and 2048m². In addition a proposed reserve for a regional water "header" tank site is also included.

There is no vehicle access on to Reserve 30354 along the southern boundary. However, a fire service access will connect into the reserve.

5.0 THE BUSHFIRE ISSUE

5.1 Bushfire History

The annual fire season extends from approximately mid-October to mid-May. This is the normal period where weather conditions are conducive to the ignition and spread of bushfires. The fire risk increases once vegetation has cured which is generally later in the season.

Bush fires occur annually within the locality with sufficient intensity to cause property damage and potentially to be life threatening. The eastern portion of the subject land was impacted by a bushfire on the 17th January.

5.2 Bushfire Hazard

A Bushfire Hazard Level assessment provides a 'broadbrush' means of determining the potential intensity of a bushfire for a particular area.

The bush fire hazard primarily relates to the vegetation on the site, the type and extent (area) of vegetation and its characteristics. The methodology for determining the bushfire hazard level is contained in the Guidelines for Planning in Bushfire Prone Areas (Section 4.1 and Appendix 2). This classifies vegetation based on tree height and the percentage of canopy cover. The classification of the vegetation also takes into account The Visual Guide for Bushfire Risk Assessment in Western Australia (WAPC 2016).

The classification of the vegetation is shown in Figure 6.

The Bushfire Hazard Level assessment is shown in Figure 7.

The subject land generally has a moderate hazard rating. A large portion of the site is cleared pasture which has an extreme hazard level because the slopes greater than 10 degrees.

5.3 Bushfire Risk

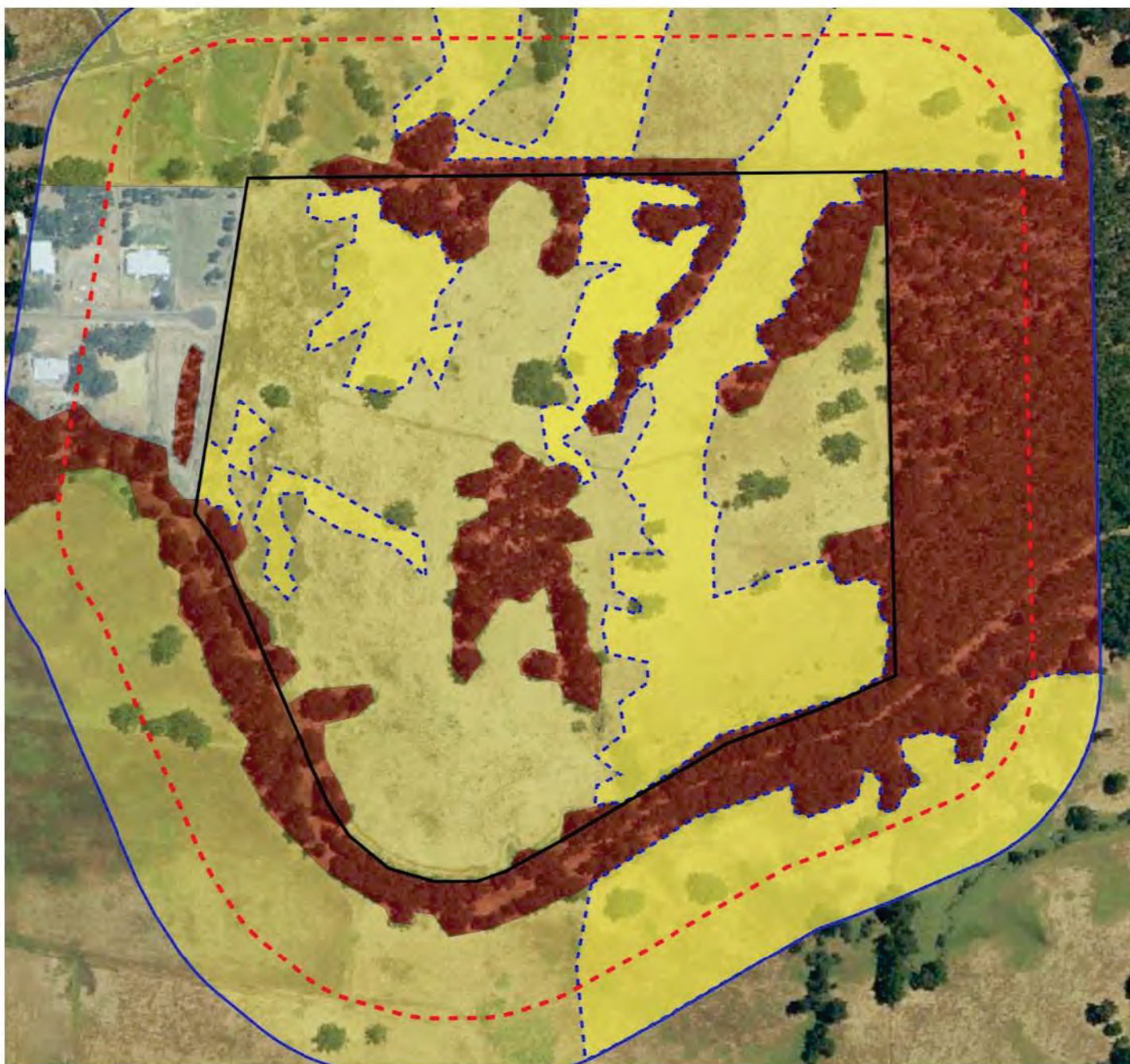
The "risk" posed by a bush fire is a function of the "likelihood" and "consequences."

The likelihood is classified as; almost certain; likely; possible; unlikely; or rare. The likelihood of a bushfire occurring increases when there is a high chance of ignition due to the amount of fuel, the extent of vegetation curing (drying out) the temperature; relative humidity and wind speed. This is referred to as the "fire danger index" which represents the difficulty of controlling a bushfire as shown in Table 1.

The consequence arising from a bush fire might be insignificant, minor, moderate, major, or catastrophic. The priority for the formulation of fire mitigations measures are:

- The protection of life is the most important consideration. This not only includes any residents on the property but also fire fighters;
- The protection of property and in particular any dwellings; and
- The protection of the environment.

Days when the Fire Danger Index (FDI) is equal to or greater than 50 are significant to fire agencies because of the difficulty of suppressing fires under these conditions.



LEGEND

SUBJECT LAND



100m MAPPING
BUFFER

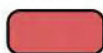


150m MAPPING
BUFFER

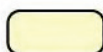


VEGETATION CLASSIFICATIONS

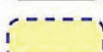
FOREST



GRASSLAND



GRASSLAND
(Greater 10 Deg)



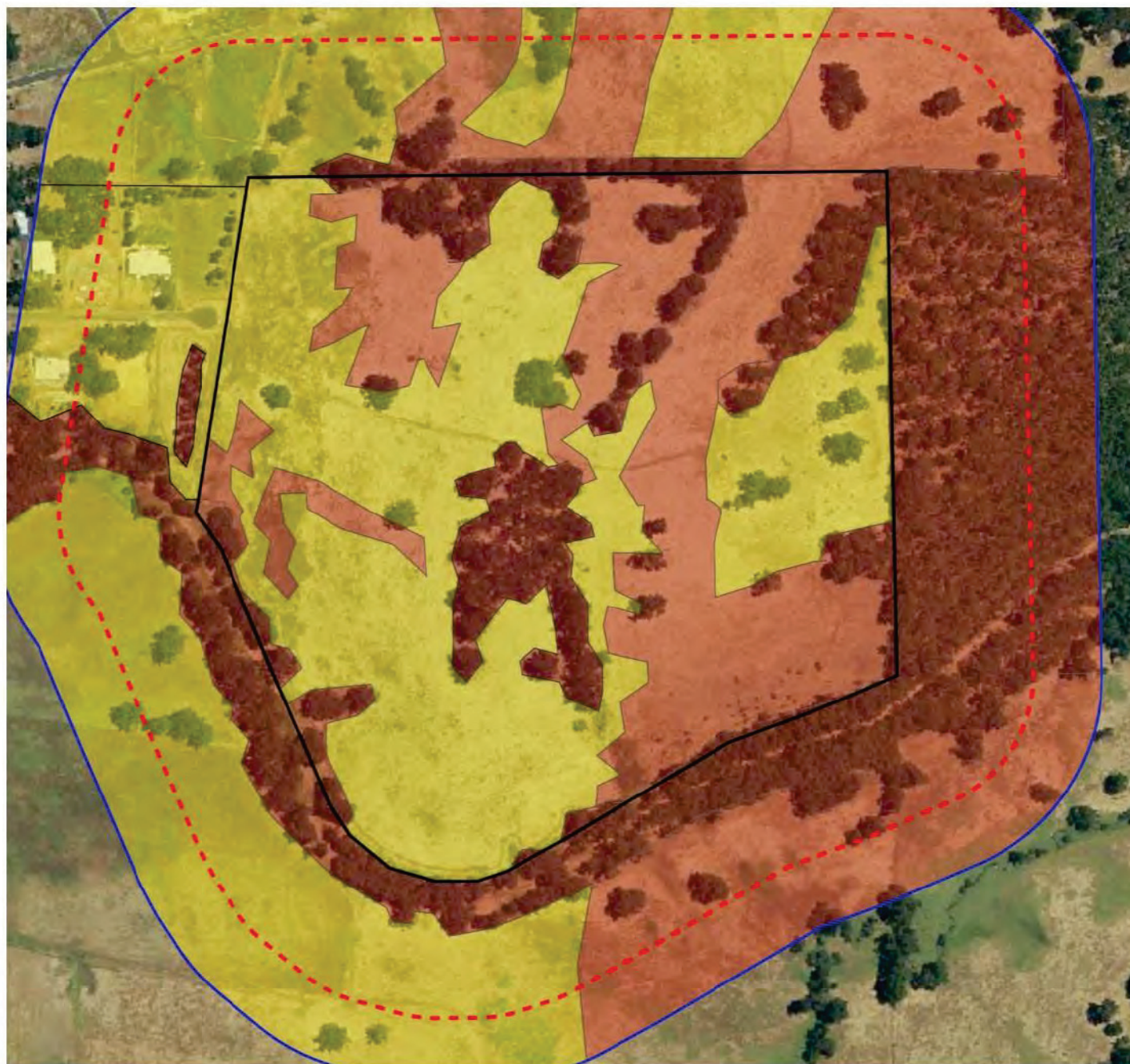
LOW THREAT
VEGETATION



FIGURE 6
VEGETATION CLASSIFICATIONS



Rev	Description	Date
A	Preliminary	20/01/2017
B	New guidelines	11/08/2017



LEGEND

SUBJECT LAND



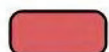
100m MAPPING
BUFFER



150m MAPPING
BUFFER



EXTREME HAZARD



MODERATE HAZARD



LOW HAZARD



NOTES

1. Assessment has been prepared in accordance with the methodology contained in Appendix 2 of the Guidelines for Planning in Bushfire Prone Areas 2015.
2. Areas with a low hazard rating which are located within 100m of land with either a moderate or extreme hazard rating is classified as having a moderate hazard rating because of the increased level of risk.
3. Date of inspection - 19th January 2017

FIGURE 7
BUSHFIRE HAZARD LEVELS



Rev	Description	Date
A	Preliminary	20/01/2017
B	Updated Guidelines	11/08/2017



Job No 16-077

Table 1 Bushfire Danger Rating

FDR Category	Fire Dander Index	Comment
Catastrophic	100 +	These are the worst conditions for a bushfire.
Extreme	75 - 99	These are very hot, dry and windy conditions.
Severe	50 - 74	A bushfire will spread quickly and be difficult for to control.
Very High	32 - 49	These are hot and dry conditions and a bush fire may be hard to control.
High	12 - 31	A bushfire is likely to be controlled in these conditions.
Low - Moderate	0 - 11	The risk of a bushfire is low.

5.4 Bushfire Threat

The threat from a bushfire is the product of the hazard and risk. There are three identified bushfire threats which could impact upon the development of the subject land. These are: -

1. Fire originating from external sources being the surrounding properties which contain hazard vegetation,
2. Fire originating from within the property which could be from a variety of sources; and
3. Structural fires (dwellings and buildings).

A bushfire can have a number of ignition sources which can originate from either natural or human causes such as:

- Lighting strikes;
- Unattended camp fires;
- Discarded match or cigarette;
- Dry grass in contact with vehicle exhausts;
- Sparks from grinders, slashing or other mechanical operations;
- Backyard rubbish burning;
- Hazard reduction burns;
- Powerlines sparking in strong winds or falling;
- Pole top fires; or
- Deliberate arson.

The majority of bushfires are caused either by lightning strikes or by arson, whether accidental or deliberately.

5.5 Issues Summary

The context of the site to the surrounding district is shown in Figure 8.

In considering the relevant bushfire issues, it is noted that the factors which affect the survivability of a dwelling include (5):

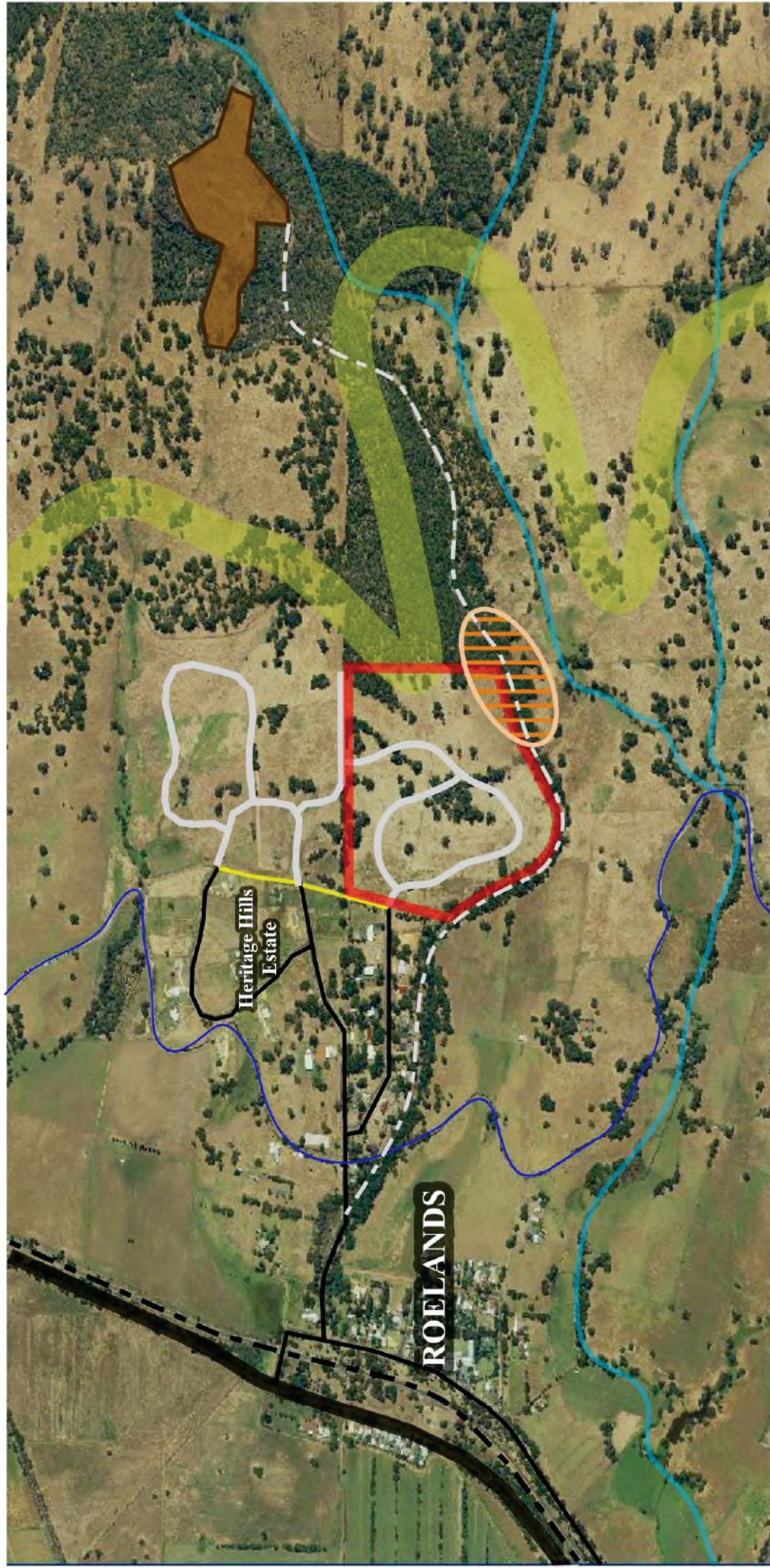
- Terrain (slope);
- Vegetation - overall fuel load;
- Weather (temperature, relative humidity, wind speed);
- Distance of building from unmanaged vegetation;
- Individual elements surrounding the building that are either a shield or an additional fuel source;
- Proximity to surrounding infrastructure;
- Building design and maintenance;
- Human behaviour - probability to be present and capacity to fight the fire;
- Access to the building and how that influences human behaviour;
- Water supply for active and/or passive defence; and
- Power supply.

The subject land is situated on the Darling Escarpment with most of the land having moderate to steep slopes. The site is adjacent to a large area of bushland on the eastern boundary. This extends along the southern boundary in a narrower linear corridor being Reserve 30354. This vegetation corridor is approximately 40m wide and has a low longitudinal gradient of less than 5 degrees. The land to the south is open pasture with steeper slopes.

At the district level the locality only has one access route from the South Western Highway and Roelands townsite. However, this has not prevented multiple fire management plans being approved both on the subject land and the adjoining Heritage Hills Estate.

At the local level, a secondary access route will be provided in conjunction with the development of the adjoining Lot 9001. This has been subject to a separate examination and review undertaken by Bushfire Prone Pty Ltd as contained in Appendix 5.

5 Leonard J (2009) Report to the 2009 Victorian Bushfires Royal Commission Building performance in Bushfires CSIRO page 22.



LEGEND

SUBJECT LAND	SOUTH WESTERN HWY	PROPOSED ROADS AS PER STRUCTURE PLANS	QUARRY (R30354)	ESCARPMENT RIDGE
EXISTING SUBDIVISION	RAILWAY LINE	EXISTING FIRE ACCESS	QUARRY ACCESS	STEEP SLOPES
ROADS			IRRIGATION CHANNEL	DRAINAGE LINE

FIGURE 8

CONTEXT PLAN

Rev	Description	Date
A	Preliminary	17/01/2017



6.0 FIRE MITIGATION MEASURES

The proposed mitigation measures give appropriate regard to the objectives, general principles, guidance statements and performance criteria contained in the Guidelines for Planning in Bushfire Prone Areas and specifically the Bushfire Protection Criteria. The mandatory requirements in the Bushfire Protection Criteria are referred to as "acceptable solutions" and these are designated below in brackets after each heading.

The fire management recommendations for the subject land and are shown on Figure 9 and discussed further in the following sections.

6.1 Bushfire Protection Criteria

6.1.1 Element 1 Location

A1.1 Development Location

This provision stipulates that the development is to be located so that it has or will have:

- A moderate to low bushfire hazard level; or
- A Bushfire Attack Level rating of BAL-29 or below.

The potential setbacks required to meet a BAL - 29 rating are shown in Figure 9. The hazard vegetation surrounding the site has been assigned as either Class A Forest, or Class G Grassland. The relative cross section setbacks for each vegetation plot are shown in Table 2.

The vegetation within the site will be modified and maintained so as to be Low Threat Vegetation (6). This means that the groups of trees within the site will:

- Have a canopy separation of more than 20m to trees adjoining the boundary;
- Will be clustered in groups having an area of less than 0.25ha in area and being more than 20m from each other and/or the proposed house site.

Table 2 BAL Setbacks

Vegetation Plots	Vegetation Classification	Bushfire Attack Levels (BALs)				
		BAL - FZ	BAL - 40	BAL - 29	BAL - 19	BAL – 12.5
		Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land						
PLOT 9	A Forest	< 16	16 - < 21	21 - < 31	31 - < 42	42 - <100
Downslope >0 to 5 degrees						
PLOT 3	A Forest	< 20	20 - < 27	27 - < 37	37 - < 50	50 - < 100
PLOT 5	G Grassland	< 7	7 - < 9	9 - < 14	14 - < 20	20 - < 50
Downslope >5 to 10 degrees						
PLOT 4	A Forest	< 26	26 - < 33	33 - < 46	46 - < 61	61 - < 100
Downslope >10 to 15 degrees						
PLOT 6 & 8	A Forest	< 33	33 - < 42	42 - < 56	56 - < 73	73 - < 100
Downslope >15 to 20 degrees						
PLOT 7	A Forest	< 42	42 - < 52	52 - < 68	68 - < 87	87 - < 100
PLOT 1	G Grassland	< 10	10 - < 14	14 - < 21	21 - < 30	30 - < 50



1. That dwellings be located so as to have a maximum BAL-29 rating.
2. That an application for a building permit for a dwelling is to include an individual BAL assessment.
3. That all grass within each property is to be maintained as low threat vegetation during the fire season by being heavily grazed or slashed to a maximum height of 100mm.
4. That the vegetation within the BAL setback is to be maintained as an asset protection zone.
5. As far as practicable, the asset protection zones shall be incorporated within the individual lots to minimize any reliance on measures being implemented outside the property.
6. That the subdivision roads shall be designed in accordance with Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines
7. That a temporary turn around shall be provided at the head of the cul-de-sac.
8. That any new driveway shall have a minimum 4m wide trafficable surface and any access gate shall be a minimum width of 3.6m.
9. Where a driveway is more than 50m in length a turnaround area suitable to a fire appliance shall be provided within proximity to the dwelling.
10. That an interim emergency access way with a minimum trafficable surface of 6m shall be provided through Lot 9001 connecting to Waterloo Road along the proposed subdivision road alignment of Lot 9001 which is currently being finalised.
11. The interim emergency access way shall be protected by a carriageway easement.
12. That fire service access routes shall be provided as shown.
13. That all lots shall provide a 2m boundary firebreak.
14. That the vegetation along Waterloo Road west of Livingstone Heights be managed to be low threat vegetation. This maintenance program is to be formalised so that it is carried out as part of the annual works program of local government.
15. That fire hydrants be provided in accordance with the Water Corporation's Standard No 63.
16. A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Harvey and DFES.
17. That any new dwelling shall provide with a static water supply tank having a minimum capacity of 10,000l specifically for firefighting with associated fittings and equipment.
18. That the landowners undertake regular maintenance of their property in preparation for the annual fire season.
19. That all fire mitigation measures shall be completed by the date prescribed in Council's Fire Break Order (i.e. 30th November) and these be maintained throughout the fire season.
20. In the event of any staging of the subdivision a plan and statement of the proposed interim fire management measures will be submitted and approved by the Shire.
21. That residents be aware that they live in a fire prone environment and need to take the initiative in learning about, preparing for and responding to bushfires.
22. That the landowners prepare a Bushfire Survival Plan.
23. A notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.
24. That prospective residents be provided with a summary of this Bushfire Management Plan.

Rev	Description	Date
A	Preliminary	24/01/2017
B	Access	14/08/2017
C	Lot 9001 design	18/01/2018





Enlargements



EAW Requirements

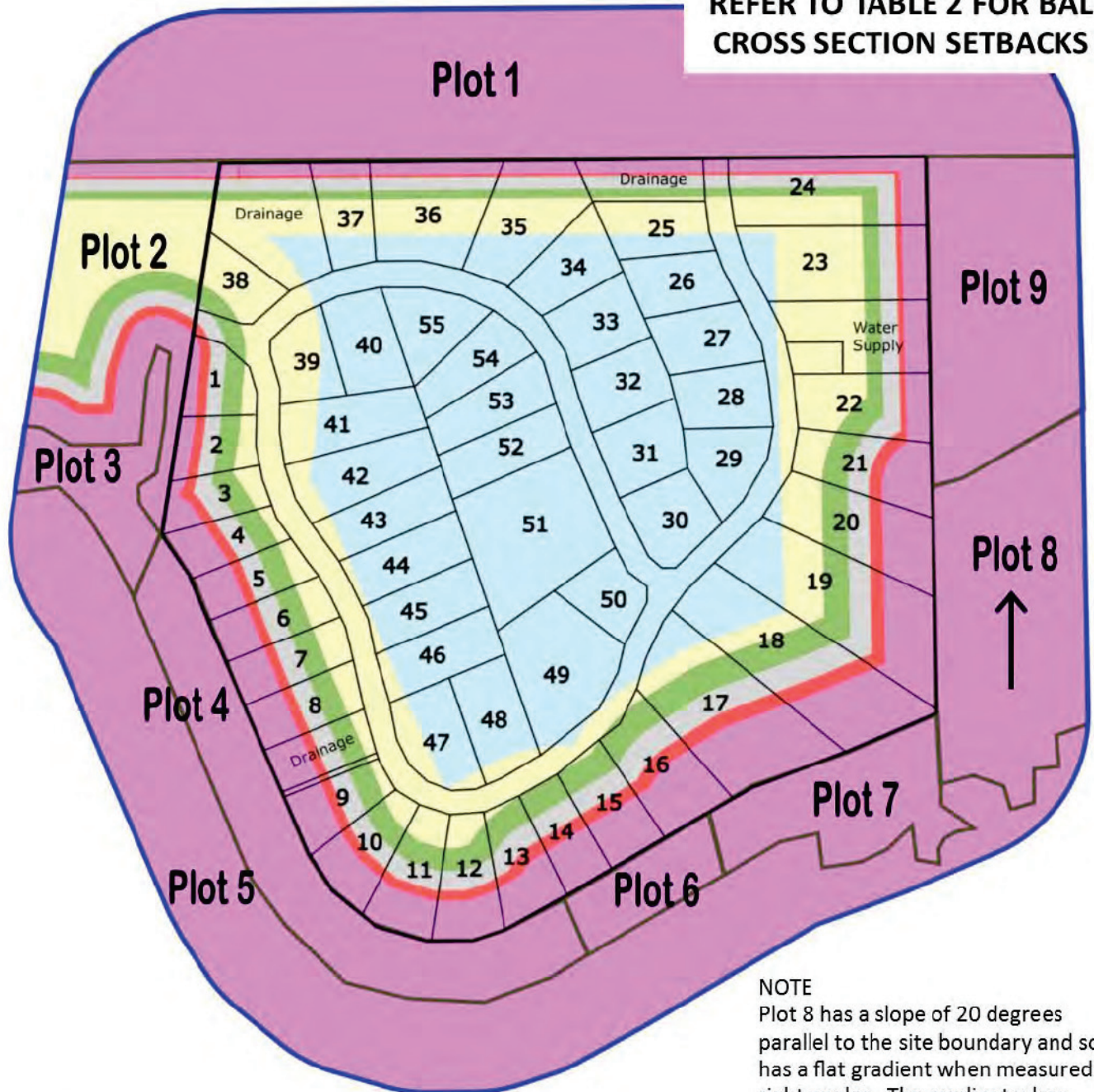
- 1) Fire accessible gate with signage to satisfaction of Department of Fire & Emergency Services (DFES) to be located on existing fence line.
- 2) Track (unfenced) to be constructed to west side of irrigation channel to also function as maintenance track. To be constructed of gravel or limestone to satisfaction of DFES.
- 3) Alignment utilises recently constructed bridge over irrigation channel.

RECOMMENDATIONS SUMMARY

1. That dwellings be located so as to have a maximum BAL-29 rating.
2. That an application for a building permit for a dwelling is to include an individual BAL assessment.
3. That all grass within each property is to be maintained as low threat vegetation during the fire season by being heavily grazed or slashed to a maximum height of 100mm.
4. That the vegetation within the BAL setback is to be maintained as an asset protection zone.
5. As far as practicable, the asset protection zones shall be incorporated within the individual lots to minimize any reliance on measures being implemented outside the property.
6. That the subdivision roads shall be designed in accordance with Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines
7. That a temporary turn around shall be provided at the head of the cul-de-sac.
8. That any new driveway shall have a minimum 4m wide trafficable surface and any access gate shall be a minimum width of 3.6m.
9. Where a driveway is more than 50m in length a turnaround area suitable to a fire appliance shall be provided within proximity to the dwelling.
10. That an interim emergency access way with a minimum trafficable surface of 6m shall be provided through Lot 9001 connecting to Waterloo Road along the proposed subdivision road alignment of Lot 9001 which is currently being finalised.
11. The interim emergency access way shall be protected by a car-riageway easement.
12. That fire service access routes shall be provided as shown.
13. That all lots shall provide a 2m boundary firebreak.
14. That the vegetation along Waterloo Road west of Livingstone Heights be managed to be low threat vegetation. This maintenance program is to be formalised so that it is carried out as part of the annual works program of local government.
15. That fire hydrants be provided in accordance with the Water Corporation's Standard No 63.
16. A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Harvey and DFES.
17. That any new dwelling shall provide with a static water supply tank having a minimum capacity of 10,000L specifically for fire-fighting with associated fittings and equipment.
18. That the landowners undertake regular maintenance of their property in preparation for the annual fire season.
19. That all fire mitigation measures shall be completed by the date prescribed in Council's Fire Break Order (i.e. 30th November) and these be maintained throughout the fire season.
20. In the event of any staging of the subdivision a plan and statement of the proposed interim fire management measures will be submitted and approved by the Shire.
21. That residents be aware that they live in a fire prone environment and need to take the initiative in learning about, preparing for and responding to bushfires.
22. That the landowners prepare a Bushfire Survival Plan.
23. A notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.
24. That prospective residents be provided with a summary of this Bushfire Management Plan.

FIGURE 9
FIRE MITIGATION MEASURES (SHEET 2 OF 2)

REFER TO TABLE 2 FOR BAL
CROSS SECTION SETBACKS



NOTE
Plot 8 has a slope of 20 degrees
parallel to the site boundary and so
has a flat gradient when measured at
right angles. The gradient when
measured at 45 degrees to the
boundary has been used.

LEGEND

SUBJECT LAND	
100m BUFFER	
BAL RATINGS	
BAL - FZ	
BAL - 40	
BAL - 29	
BAL - 19	
BAL - 12.5	
BAL - Low	

VEGETATION PLOTS

PLOT 1 Class G Grassland. Variable slopes plan shows >15-20 degrees
PLOT 2 Low Threat Vegetation - managed land
PLOT 3 Class A Forest. Downslope >0-5 degrees
PLOT 4 Class A Forest. Downslope >5-10 degrees
PLOT 5 Class G Grassland. Downslope >5-10 degrees
PLOT 6 Class A Forest. Downslope >10-15 degrees
PLOT 7 Class A Forest. Downslope >15-20 degrees
PLOT 8 Class A Forest. Downslope >10-15 degrees (see note)
PLOT 9 Class A Forest. Upslope

FIGURE 10
BAL CONTOURS



Rev	Description	Date
A	Preliminary	16/01/2017



Job No 16-077

Figure 9 illustrates that the subject land can be developed with a maximum BAL - 29 rating in accordance with the objectives of SPP3.7.

Where an individual lot is developed and the adjoining lot is not maintained as Low Threat Vegetation, then the BAL setbacks will apply from the lot boundary. Given that the site generally has slopes of 5 - 10 degrees then the BAL-29 setback for Class G Grassland is 10m.

Recommendations

1. That dwellings be located so as to have a maximum BAL-29 rating.
2. That any application for a building permit for a dwelling is to include an individual BAL assessment to confirm that sufficient land has been cleared to provide for BAL-29 setbacks.
3. That all grass within each property is to be maintained as low threat vegetation during the fire season by being heavily grazed or slashed to a maximum height of 100mm. If slashing cannot be achieved all remaining grass is to be burnt or sprayed with a suitable herbicide to prevent regrowth during the summer months.

6.1.2 Element 2 Siting and Design of Development

A2.1 Asset Protection Zone (APZ)

An asset protection zone is a "low fuel zone" located around a building. The APZ is by default the distance between the building and the hazard vegetation provided that this is not less than a BAL-29 rating.

The requirements for the asset protection zone are as follows:

- a) Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances.
- b) Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).
- c) Management: the APZ is managed in accordance with the following requirements:
 - Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
 - Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
 - Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
 - Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.
 - Shrubs (0.5 metres to 5 metres in height): should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.

- Ground covers (<0.5 metres in height): can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- Grass: should be managed to maintain a height of 100 millimetres or less.

Recommendations

4. That the vegetation within the BAL setback is to be maintained as an asset protection zone / low threat vegetation/low fuel zone as defined in Clause 2.2.3.2 of AS3959.
5. As far as practicable, the asset protection zones shall be incorporated within the individual lots to minimize any reliance on measures being implemented outside the property.

6.1.3 Element 3 Vehicular Access

A3.1 Two Access Routes

The subject land has a single access from Livingstone Heights.

The subdivision design for the adjoining Lot 9001 provides for a connecting subdivision road to the northern boundary of the subject land. Pending the development of Lot 9001 it is proposed to have an emergency access way through the land to the north. The owners of Lot 9001 have agreed (see Appendix 2) to the construction of an interim emergency access way through the land until Lot 9001 is subdivided. This access way is to be protected by a carriageway easement.

As part of the development of the adjoining Heritage Hills Estate an emergency access was proposed to extend to the South Western Highway through the adjoining Lots 6 and 50 as shown in Figure 9. The owners of Lots 6 and 50 have also agreed that this can be used to service the subject land and their letters of consent are included in Appendix 3.

Reserve 33045 on the southern boundary is not suitable for access because: -

- It is not a public road but reserved land which is managed by the Department of Transport;
- While there is an existing access track on the reserve it has not been maintained and is only suitable for 4WD vehicles. It is presently blocked in one location by a fallen tree; and
- There are substantial height differences between the track on R33045 and the subject land. In places, there is a steep embankment which makes access impractical.

The above arrangements were specifically approved by DFES in the previous fire management plan.

The existing and proposed access, including the emergency access way, have been separately reviewed and assessed by Bushfire Prone Pty Ltd as a Performance Based solution. This report is contained as Appendix 5 and the relevant features are shown in Figure 10 Sheet 2.

In addition to the emergency access way, Bushfire Prone recommends that additional fuel/vegetation management occurs along Waterloo Road from Livingstone Road to Government Road as being:

- a) Clear tree on the verge for a distance up to 5m from the sealed road;

- b) Prune remaining tree branches below 2m in height;
- c) Maintain the grass (slash/mow) to a height lower than 100mm and remove shrubs for the area identified. This will require multiple treatments to allow for vegetative matter to decompose during the growing season to present a low fuel load during the bushfire risk period. The area to be managed area consists of:
 - the area from the road to the boundaries of the neighbouring lots; and
 - On the southern side of the road the area of land between the lot boundary and the gravel (quarry access) road - if this is possible; and
- d) Formalise the maintenance program so that it is carried out as part of the annual works program of local government with funding to be derived by a levy charged on the new landowners. This would need to be continued until an alternative access/egress route is provided by future development in the area.

A3.2 Public Roads

The proposed subdivision roads will be designed in accordance with the standards specified in the Local Government Subdivisional Guidelines (7).

Table 4 of the Guidelines stipulate that the maximum grade <50 metres for a public road shall be 1 in 10. The 2010 Guidelines (A2.2 Public roads) stipulated a maximum grade <50m of 1 in 5.

The gradients for the subdivision roads are shown in Figure 11. This shows where the gradient for the subdivision road exceeds 1 in 10 (10 percent) but they don't exceed 1 in 5 (20 percent) in accordance with the 2010 Guidelines. It is noted that the 2015 Bushfire Protection Criteria are currently being reviewed but the working group has yet to consider the access provisions.

A3.3 Cul – de-sacs

As shown in Figure 10 the subdivision road will extend for approximately 900m. This has an internal loop and the length of the final cul-de-sac is approximately 300m.

A3.3 limits the length of a cul-de-sac to 600m provided that:

No more than eight lots are serviced; and

The connecting emergency access way is no more than 600m in length.

The proposed emergency access way is approximately 400m in length and the cul-de-sac will have eleven lots.

A3.4 Battle-Axes

This is not applicable to the subdivision.

A3.5 Private Driveways Longer than 50 metres

The driveways to some of the lots exceed 50m in length. Where it does, then it must comply with the following provisions:

- A minimum trafficable surface of 4m width;
- A horizontal clearance of 6m to vegetation;
- A maximum grade of 1:10;
- Curves with a minimum 8.5m inner radius;

7 Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines Perth



LEGEND

SUBJECT LAND



TOTAL ROAD LENGTH



CUL-DE-SAC LENGTH



SLOPE



SCALE



FIGURE 11
SUBDIVISION ROADS



Rev	Description	Date
A	Preliminary	24/01/2017



- 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 weight capacity of 15 tonnes; and
- An all-weather surface (i.e. compacted gravel, limestone or sealed).

Acceptable Solution A3.6 Emergency Access Way (EAW)

An emergency access way is proposed to be created linking the subdivision road at the northern boundary through the adjoining Lot 9001 back to Waterloo Road. This will provide a second access as required by Acceptable Solution A3.1.

This provision is also dealt with in the Bushfire Prone review and performance based measure. Bushfire Prone have also recommended that the EAW should have turning areas every 200m to compensate for its length.

Acceptable Solution 3.7 Fire Service Access Routes (FSAR)

Two fire service access routes are proposed as shown in Figure 9.

A3.8 Firebreak Width

Five of the proposed lots are larger than 0.5ha and are required to have a 3m wide boundary firebreak. As Council's Firebreak Order requires a 2m boundary firebreak on any lot greater than 2,024m² it is proposed that all lots shall comply.

Recommendations

6. That the subdivision roads shall be designed in accordance with Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines.
7. That a temporary turn around having a minimum diameter of 17.5m shall be provided at the head of the cul-de-sac.
8. That any new driveway shall have a minimum 4m wide trafficable surface and any access gate shall be a minimum width of 3.6m.
9. Where a driveway is more than 50m in length a turnaround area suitable to a fire appliance shall be provided within proximity to the dwelling.
10. That an interim emergency access way with a minimum trafficable surface of 6m shall be provided through Lot 9001 connecting to Waterloo Road along the proposed subdivision road alignment of Lot 9001 which is currently being finalised.
11. That pending the subdivision of Lot 9001 the interim emergency access way be protected by a carriageway easement.
12. That a fire service access routes with a minimum trafficable surface of 6m shall be provided as shown in Figure 9. These shall have an access gates and be sign posted as "Emergency Access Only".
13. That all lots shall provide a 2m boundary firebreak.
14. That the vegetation along Waterloo Road west of Livingstone Heights be managed to be low threat vegetation. This maintenance program is to be formalised so that it is carried out as part of the annual works program of local government.

6.1.4 Element 4 Water

Acceptable Solution 4.1 Reticulated Water

The subdivision will be serviced by a reticulated water supply with fire hydrants.

Acceptable Solution 4.2 Non Reticulated Areas

This is not applicable to the subdivision.

A4.3 Non-reticulated areas - One Additional Lot

This is not applicable to the subdivision.

Recommendations

15. That fire hydrants be provided in accordance with the Water Corporation's Water Reticulation Standard No 63.
16. A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Harvey and DFES.
17. That any new dwelling shall provide with a static water supply tank having a minimum capacity of 10,000L specifically for firefighting with:
 - a) A 50mm male camlock couplings with full flow valves;
 - b) The fittings positioned at the base of the tank so that the total tank capacity is available for firefighting purposes at any time;
 - c) An adequate hard standing access must also be provided adjacent to such connection/s and must be readily identifiable; and
 - d) A nonelectric firefighting pump (normally 5.5hp) with sufficient hose to protect the dwelling and the surrounding low fuel zone.

6.2 Annual Property Maintenance

Annual property maintenance is an important preparation for the annual fire season. This should focus on the area around the proposed dwelling and the following maintenance works should be considered:

Autumn and Winter (May-August)

- ❖ Tree pruning and remove lower branches and check that power lines are clear.
- ❖ Clear long grass, leaves, twigs and flammable shrubs.
- ❖ Overhaul the emergency water pump, fixtures and hoses.

Spring (September-November)

- ❖ Prepare boundary firebreaks.
- ❖ Carry out maintenance of strategic firebreak.
- ❖ Reduce grass levels within the hazard separation and building protection zones.
- ❖ Prune the dead material from the shrubs in the building protection zone.
- ❖ Clean out gutters, remove debris from roof.

Early summer (December onwards)

- ❖ Re-check personal and home protection gear, screens, water supplies and gutters.
- ❖ Keep yards as free as possible from combustible materials, fuels and debris.
- ❖ Avoid storing any felled trees and rubbish on your property.

- ❖ Remove dead shrubs and avoid long grasses, bracken or neglected masses of tall quick-curing annuals.
- ❖ Prepare a bushfire survival plan.

Recommendations

18. That the landowners undertake regular maintenance of their property in preparation for the annual fire season.
19. That all fire mitigation measures shall be completed by the date prescribed in Council's Fire Break Order (i.e. 30th November) and these be maintained throughout the fire season.

6.3 Staging

The proposed subdivision plan does not make any provision for the staging of the development. In the event that the subdivision is staged then it is necessary to ensure that appropriate interim measures are provided.

These may include:

- Interim access or emergency access ways;
- Creation of additional low fuel zones to ensure that the recommended BAL ratings can be applied; or
- The provision of boundary firebreaks especially on any balance lot.

Recommendations

20. In the event of any staging of the subdivision a plan and statement of the proposed interim fire management measures will be submitted and approved by the Shire as an adjunct to Figure 9.

6.4 Bushfire Survival Plan

Before the start of the fire season landowners need to decide what to do in the event of a bushfire. Based upon the "Prepare, Act, Survive" program landowners need to:

- Prepare residents by knowing the risk from bushfire and having a bushfire survival plan.
- Acting on the Fire Danger Ratings and associated triggers; and
- Surviving by monitoring conditions if a fire starts and knowing the bushfire warning alert levels.

A Bushfire Survival Plan can help landowners make important decisions about what to do during a fire - like when to leave, what to take and what to do with animals. The Survival Plan template is contained as Appendix 4 and further information regarding the preparation of a plan can be found at www.areyouready.wa.gov.au.

Recommendations

21. That residents be aware that they live in a fire prone environment and need to take the initiative in learning about, preparing for and responding to bushfires.
22. That the landowners prepare a Bushfire Survival Plan.

6.5 Purchaser Advice

All prospective purchasers must be made aware of the fire management issues, measures and responsibilities associated with the subdivision. This can be a notification placed upon the Certificate of Title of all lots pursuant to Section 70A of the Transfer of Land Act advising landowners of this Bushfire Management Plan and BAL requirements.

Recommendations

23. A notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.
24. That prospective residents be provided with a summary of this Bushfire Management Plan.

6.6 Implementation

The management of the risk posed by bushfires is a shared responsibility between landowners, government and industry. While state and local government undertakes bushfire prevention measures (e.g. planned burning), land use planning and emergency response (fire suppression); land owners in bushfire prone areas must take the necessary steps to prepare their property. These responsibilities are summarised in Table 3.

Table 3 Implementation

REC	RESPONSIBILITIES	WHO	WHEN
1	That dwellings be located so as to have a maximum BAL-29 rating.	Residents Council	Development Application
2	That any application for a building permit for a dwelling is to include an individual BAL assessment to confirm that sufficient land has been cleared to provide for BAL-29 setbacks.	Residents Council	Development Application
3	That all grass within each property is to be maintained as low threat vegetation during the fire season by being heavily grazed or slashed to a maximum height of 100mm. If slashing cannot be achieved all remaining grass is to be burnt or sprayed with a suitable herbicide to prevent regrowth during the summer months.	Residents	Annually prior to the fire season
4	That the vegetation within the BAL setback is to be maintained as an asset protection zone / low threat vegetation/low fuel zone as defined in Clause 2.2.3.2 of AS3959.	Residents	Annually prior to the fire season.
5	As far as practicable, the asset protection zones shall be incorporated within the individual lots to minimize any reliance on measures being implemented outside the property.	Residents	Annually prior to the fire season.
6	That the subdivision roads shall be designed in accordance with Institute of Public Works Engineering Australia WA Division Inc. (2009) Local Government Subdivisional Guidelines	Developer	Subdivision
7	That a temporary turn around having a minimum diameter of 17.5m shall be provided at the head of the cul-de-sac.	Developer	Subdivision
8	That any new driveway shall have a minimum 4m wide trafficable surface and any access gate shall be a minimum width of 3.6m.	Residents	Development
9	Where a driveway is more than 50m in length a turnaround area suitable to a fire appliance shall be provided within proximity to the dwelling.	Residents	Development
10	That an emergency access way with a minimum trafficable surface of 6m shall be provided through Lot 9001 connecting to Waterloo Road. The EAW shall have vehicle turn around areas every 200m distance. This shall have an access gates and be sign posted as "Emergency Access Only".	Developer	Subdivision
11	That pending the subdivision of Lot 9001 the interim emergency access way be protected by a carriageway easement.	Developer	Subdivision
12	That a fire service access routes with a minimum trafficable surface of 6m shall be provided as shown in Figure 8. These shall have an access gates and be sign posted as "Emergency Access Only".	Developer	Subdivision
13	That all lots shall provide a 2m boundary firebreak.	Residents	Annually prior to the fire season
14	That the vegetation along Waterloo Road west of Livingstone Heights be managed to be low threat vegetation. This maintenance program is to be formalised so that it is carried out as part of the annual works program of local government.	Developer Council	Subdivision Annually prior to the fire season

15	That fire hydrants be provided in accordance with the Water Corporation's Water Reticulation Standard No 63.	Developer	Subdivision
16	A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Harvey and DFES.	Developer	Subdivision
17	That any new dwelling shall be provided with a static water supply tank having a minimum capacity of 10,000L specifically for firefighting with: a) A 50mm male camlock couplings with full flow valves; b) The fittings positioned at the base of the tank so that the total tank capacity is available for firefighting purposes at any time; c) An adequate hard standing access must also be provided adjacent to such connection/s and must be readily identifiable; and d) A nonelectric firefighting pump (normally 5.5hp) with sufficient hose to protect the dwelling and the surrounding low fuel zone.	Residents	Development
18	That the landowners undertake regular maintenance of their property in preparation for the annual fire season.	Residents	Annually prior to the fire season
19	That all fire mitigation measures shall be completed by the date prescribed in Council's Fire Break Order (i.e. 30th November) and these be maintained throughout the fire season.	Residents	Annually prior to the fire season
20	In the event of any staging of the subdivision a plan and statement of the proposed interim fire management measures will be submitted and approved by the Shire as an adjunct to Figure 8.	Developer	Subdivision
21	That residents be aware that they live in a fire prone environment and need to take the initiative in learning about, preparing for and responding to bushfires.	Developer	Subdivision
22	That the landowners prepare a Bushfire Survival Plan.	Developer	Prior to sale.
23	A notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.	Developer	Prior to sale.
24	That prospective residents be provided with a summary of this Bushfire Management Plan.	Developer	Prior to sale.

7.0 CONCLUSION

The subject land is located within a bushfire prone area where bushfires occur on a regular basis. Any bushfire can pose a risk to life and property, especially when they are greater than 1 hectare in size (8). The proposed development is introducing substantial values (property and people) which must be protected from the risk posed by the potential bushfire hazard.

All of the subject land is considered to have a moderate bushfire hazard level rating. Once development occurs this hazard rating should be maintained or even reduced. However, the surrounding land has an extreme bushfire hazard level.

The objectives of SPP3.7 Planning in Bushfire Prone Areas promote that development should not occur in areas with an extreme bushfire hazard rating. Development may occur in areas with a moderate or low hazard rating and/or where a maximum BAL-29 classification is applied. The proposed subdivision complies with these objectives of State Planning Policy 3.7.

The ongoing maintenance of the properties is required in order to maintain the effectiveness of the recommendations in this report. The recommendations in this report should not be construed to assure total bush fire protection and do not guarantee that a building will not be damaged in a bush fire. The severity of a bush fire will depend upon the vegetation fuel loadings; the prevailing weather conditions and the implementation of appropriate fire management measures.

8 A fire of 1 hectare is the minimum sized used in the modelling for BAL ratings (radiant heat flux) in AS3959.

8.0 REFERENCES

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- Webster J (2012) *Essential Bushfire Safety Tips* CSIRO Publishing Collingwood

Appendix 1 – DFES Approval of 2012 BMP



Government of Western Australia
Fire & Emergency Services Authority



Your Ref: 144917
Our Ref: 138402

South Western Highway
BUNBURY WA 6230
PO Box 1288 BUNBURY WA 623
Telephone (08) 9780 1900
Facsimile (08) 9725 4230
Email fesa@fesa.wa.gov.au
www.fesa.wa.gov.au

19 July 2012

WA Planning Commission
6th Floor, Bunbury Tower
61 Victoria Street
BUNBURY WA 6230

Attention: Andrew Blee

Dear Sir

REFERRAL RESPONSE – WAPC REF 144917 LOT 9000 WATERLOO ROAD, ROELANDS

The proposal and associated Fire Management Plan have been assessed and are in compliance with the State's *"Planning for Bush Fire Protection Guide Lines Edition 2 May 2010"*. As such, FESA has endorsed the submitted Fire Management Plan dated June 2012 and raises no objection to the proposal subject to the imposition of the following condition of subdivision approval:

- The subdivider implementing, to the satisfaction of the Western Australian Planning Commission, the FESA endorsed Fire Management Plan, dated June 2012, which is applicable to the subject land. (FESA)

Should you require further assistance or clarification in relation to the above fire safety measures please contact the FESA Regional Office on 9780 1900.

Yours faithfully

DOUG VAN BAVEL
LAND USE PLANNING OFFICER

Appendix 2 – Site Photographs



Inspection date - 19th January 2017

APPENDIX 1 SITE PHOTOGRAPHS



Rev	Description	Date
A	Preliminary	20/01/2017



Job No 16-077



APPENDIX 1 SITE PHOTOGRAPHS



Rev	Description	Date
A	Preliminary	20/01/2017



Job No 16-077



APPENDIX 1 SITE PHOTOGRAPHS



Rev	Description	Date
A	Preliminary	20/01/2017



Job No 16-077



APPENDIX 1 SITE PHOTOGRAPHS



Rev	Description	Date
A	Preliminary	20/01/2017



Job No 16-077

Appendix 3 – EAW Adjacent Owner's Agreements

Principal:

Stuart Thompson

PO Box 29 Bunbury WA 6231
0408 932 079
stuart@prioritymanagement.net.au
www.prioritymanagement.net.au

Priority
MANAGEMENT

ABN 78 168 542 934



Our Ref: 14008
Date: 2 November 2017

Shire of Harvey
PO BOX 500
HARVEY WA 6220

Attention: Simon Hall

Dear Simon

**RE: EMERGENCY FIRE ACCESS ROUTE
LOT 9000 AND 9001 WATERLOO ROAD, ROELANDS**

This letter is to confirm the agreement in place between the landowners of Lot 9001 Waterloo Road and Lot 9000 Waterloo Road, Roelands regarding the use of and provision for an emergency access way route.

As per the attached plan, an adjoining road is proposed between the future developments of Lot 9000 (Two Hills) and 9001 (Stage 2, Heritage Hills Estate).

As a temporary measure, until such time as development at Lot 9001 Waterloo Road is progressed, the owners of Lot 9001 agree to permit the construction of an emergency access way route (along the alignment identified on the attached plan) to connect development at Lot 9000 to the existing Waterloo Road to provide an alternate access/exit point from the development in the case of an emergency.

Should development of Lot 9001 Waterloo Road occur prior to the development of Lot 9000, then this temporary access route will not be required and connection to Waterloo Road will be via the constructed road.

Yours sincerely
ROELANDS DEVELOPMENT PTY LTD

GEORGE CHAFFEY
Director

Date

8/11/2017

TWO HILLS PTY LTD

STUART THOMPSON
Director

Date 15 November 2017

Principal:

Stuart Thompson

✉ PO Box 29 Bunbury WA 6231
☎ 0408 932 079
✉ stuart@prioritymanagement.net.au
💻 www.prioritymanagement.net.au



Our Ref: 14008
Date: 2 November 2017

Shire of Harvey
PO BOX 500
HARVEY WA 6220

Attention: Simon Hall

Dear Simon

**RE: EMERGENCY FIRE ACCESS
LOTS 6, 50 AND 9000 & 9001, ROELANDS**

This letter is to advise the Shire of Harvey that we, as the landowners of Lots 6 and 50 South Western Highway, Roelands have been approached by the adjoining landowners to the South, Lots 9000 and 9001 Waterloo Road, Roelands regarding their future development proposals and their need to provide an alternate emergency fire access route.

A similar letter was provided to the Shire of Harvey in July 2012, but is superseded by the acceptance of this letter.

We advise Council that we agree to the proposed Emergency Fire Access route and acknowledge that this will necessitate the construction of a limestone or gravel track adjoining the western side of the existing irrigation channel through our land, as identified on the attached plan. We also acknowledge that the proposed route will connect with the existing emergency access reserve located along the western boundary of both Lots 9000 and 9001 (partly referred to as Chandler Court) and that it will rely on the use of our existing driveway as an outlet connector to the South Western Highway.

We acknowledge that the developers will, at their own cost, be required to:

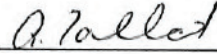
1. Construct the track to a standard trafficable by 2 wheel drive vehicles (i.e. either limestone or gravel standard);
2. Provide suitable signage to ensure that residents (or users) are made aware that the track is only available for emergency fire access and irrigation channel maintenance;
3. Install a gate (suitable for the purpose of emergency fire access) in the approximate location shown on the attached plan; and
4. At a later date, prepare a formal legal agreement (to which we will be required to become a party to) consistent with achieving the required alternative emergency fire access.

Yours sincerely



Mr Mark Talbot

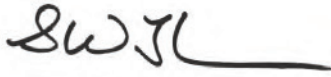
Date 15.11.2017



Mrs Angela Talbot

Date 15.11.2017

TWO HILLS PTY LTD

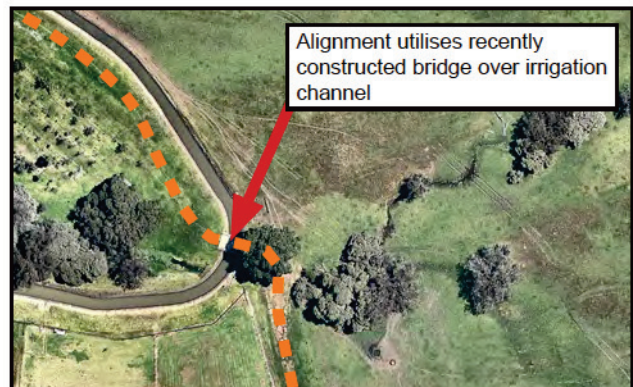
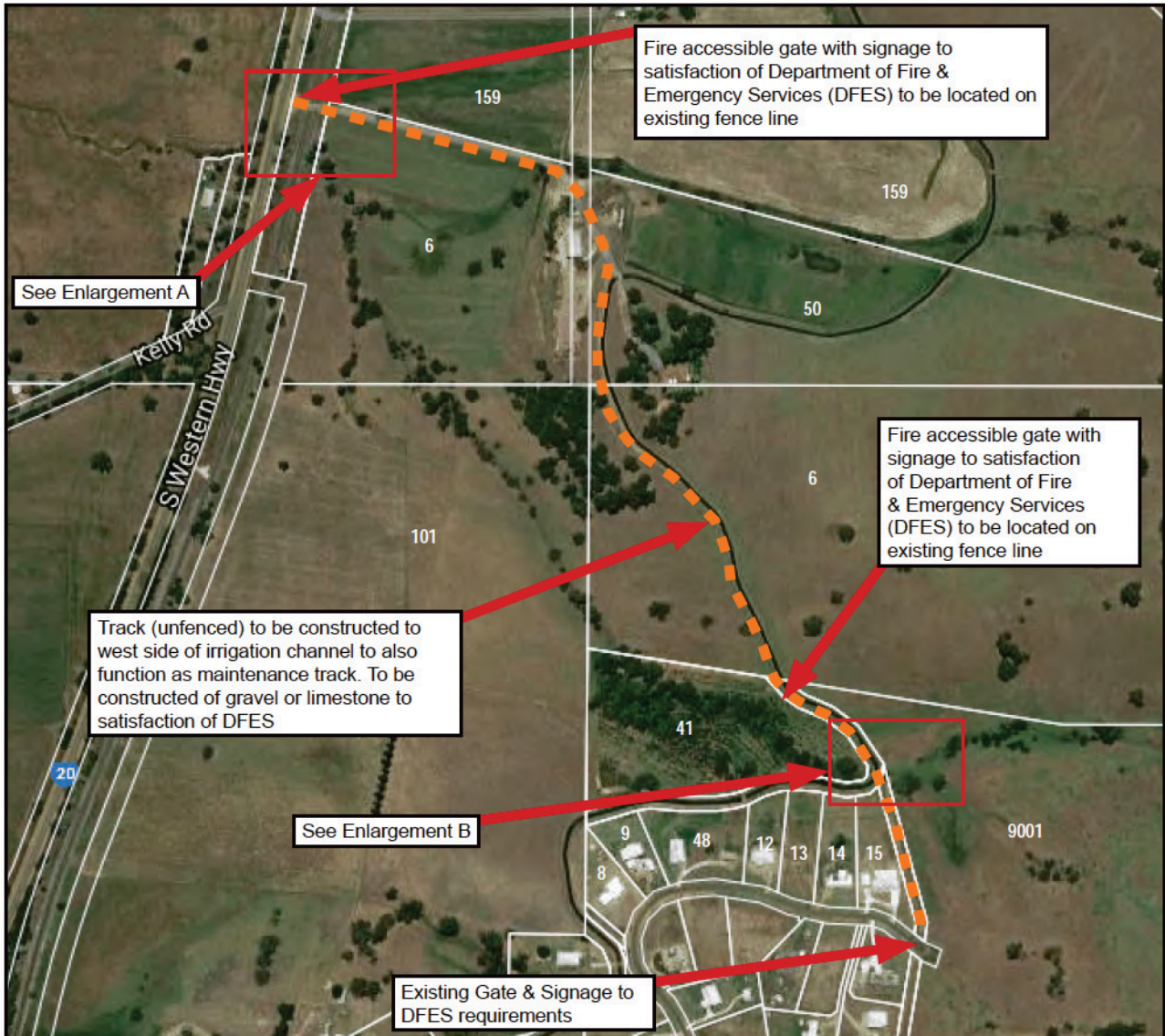


STUART THOMPSON
Director

Date 15 November 2017



Enlargement A



Enlargement B

Lots 6 & 50 Alternative Fire Access Alignment Plan

Appendix 4 – Bushfire Survival Plan



BUSHFIRE SURVIVAL PLAN LEAVING FOR A SAFER PLACE

Use this guide to develop a bushfire survival plan that is suitable for your family and personal situation. You may wish to sketch a plan of your house and property to help you identify hazards and plan actions to reduce these risks.

FAMILY CONSIDERATIONS

This bushfire survival plan is for (list all household members):

What will be your trigger to leave? (consider triggers such as seeing a fire, the smell of smoke, family members being home alone, the Fire Danger Rating, loss of water or power and the ability to leave your home safely)

What will you do with your pets and/or livestock?

What will you take with you? (eg. survival kit, personal documents, personal items, medications and mobile phones)

How will you get to your safer place?

Where will you and your family/household go?

Address:

What will you do if someone is at school or work?

Who have you told about your bushfire survival plan and your intention to leave?

List any actions that you need to take that are specific to your home: (that may not be outlined in the leaving for a safer place checklist)

Who will you call when you arrive at your safer place?

List the items of protective clothing you will need: (everyone should have protective clothing in case they are unable to leave)

Where will you store your protective clothing?



BUSHFIRE SURVIVAL PLAN LEAVING FOR A SAFER PLACE

WHAT IS YOUR BACKUP PLAN?

You and your family planned to leave but it is too late.
What will you do?

What might go wrong with your plan to leave? (eg. you have no transport)

How safe is your home if leaving is no longer an option?

PREPARING YOUR PROPERTY

What will you do as the fire front approaches? (ie. closing all doors and windows, filling buckets with water, turning off your evaporative air conditioner)

Identify potential fire risks around your home: (gaps in roofing and structure, evaporative air conditioners, vents, chimneys etc.)

List equipment you will need: (hoses, rakes, shovels pumps, generators etc.)

Where is your independent water supply and how will you access it?
Do you have at least 20,000 litres?

What will you do if your home catches on fire while the fire front is passing? Where will you go to be safer?



BUSHFIRE SURVIVAL PLAN PLANNING TO ACTIVELY DEFEND

Use this guide to develop a bushfire survival plan that is suitable for your family and personal situation. You may wish to sketch a plan of your house and property to help you identify hazards and plan actions to reduce these risks.

FAMILY CONSIDERATIONS

This bushfire survival plan is for: (list all household members)

Who will leave for a safer place? (consider very young children, elderly, people with disabilities and ill family members).

Where will they go and how will they get there?

What will be the trigger for them to leave?

What will you do if someone is at school or work?

What additional items do you need to add to your survival kit and where will it be stored?

PREPARING YOUR PROPERTY

Identify potential fire risks around your home: (gaps in roofing and structure, evaporative air conditioners, vents, chimneys etc.)

List any modifications you need to make and when:

List equipment you will need and where you will store it: (hoses, rakes, shovels, pumps, generators etc.)

Where is your independent water supply and how will you access it? Do you have at least 20,000 litres to defend your property?



BUSHFIRE SURVIVAL PLAN PLANNING TO ACTIVELY DEFEND

PERSONAL SAFETY

How many people will you need to actively defend your home?

Who will be there to help you?

List the items of protective clothing you will need: (everyone should have protective clothing in case they cannot leave)

Where will you store your protective clothing?

What is your backup plan if one person is home alone?

What is your backup plan if you cannot to return to your home to actively defend your house (roads blocked)?

ON THE DAY OF A BUSHFIRE

List what you need to do before the fire front arrives that are specific to your property: (that may not be listed in the 'planning to actively defend' checklist)

What do you need to do to make your pets and livestock safe?

If you plan to relocate some family members, pets or livestock and then return to your house, when will this be done and how long will this take?

What will you do if your home catches on fire while the fire front is passing? Where will you go to shelter?

Appendix 5 – Bushfire Prone Pty Ltd