SPN/0716M-1

ACROSS PLANNING

Structure Plan
Amendment No. 1

LOT 503 GARVEY ROAD, CROOKED BROOK

PREPARED FOR GARVEY ROAD PTY LTD

AP REF: 19001 | February 2020

Land Use. People. Place.

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	APPROVED
Draft	Feb 2019	Draft for Shire preliminary review	LG
Rev 1	April 2019	Assessment	LG
Rev 2	Feb 2020	Modifications required by WAPC	LG

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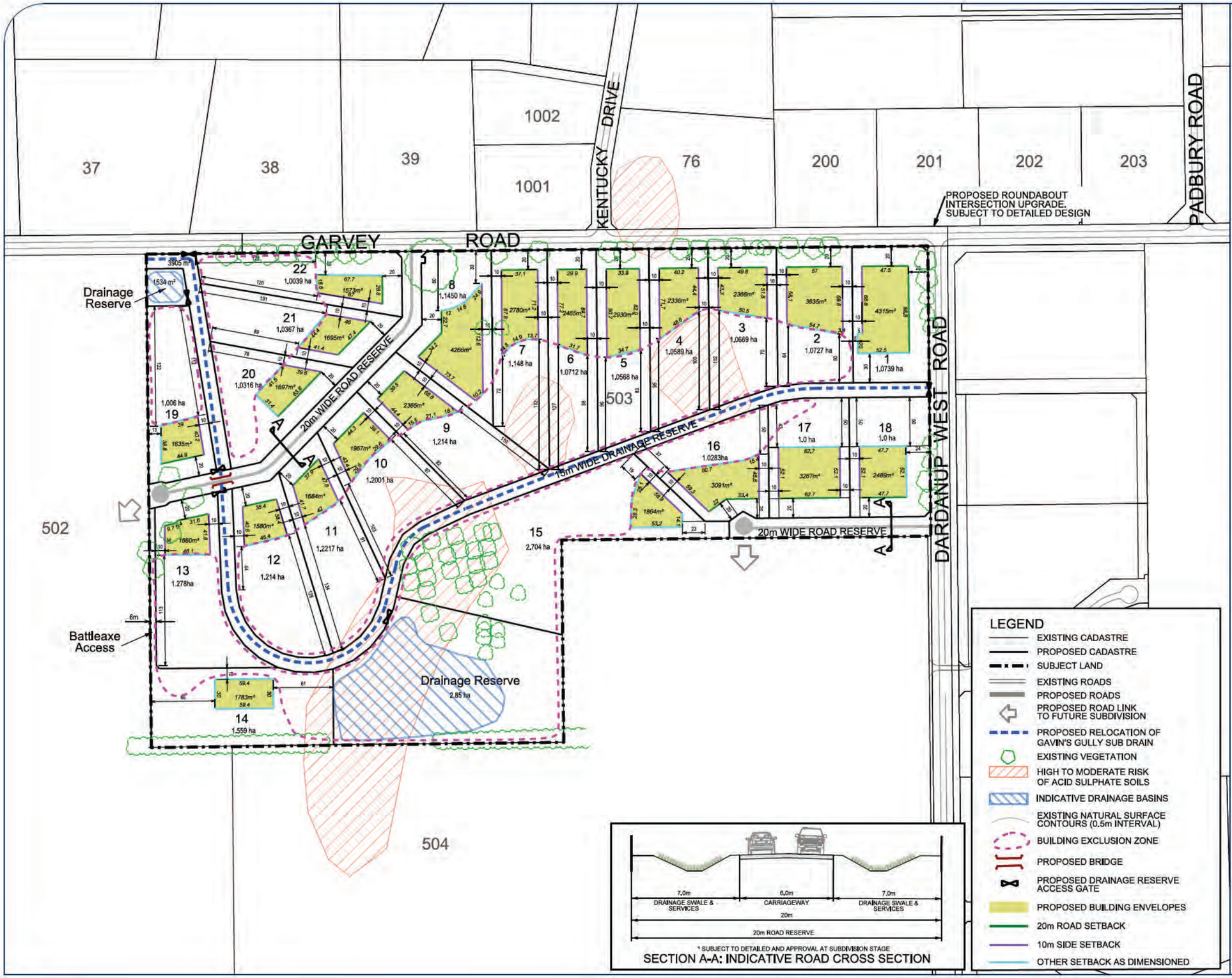

* SUBJECT TO DETAILED AND APPROVAL AT SUBDIVISION STAGE

SECTION A-A: INDICATIVE ROAD CROSS SECTION

LEGEND

- EXISTING CADASTRE
- PROPOSED CADASTRE
- SUBJECT LAND
- EXISTING ROADS
- PROPOSED ROADS
- PROPOSED ROAD LINK TO FUTURE SUBDIVISION
- PROPOSED RELOCATION OF GAVIN'S GULLY SUB DRAIN
- EXISTING VEGETATION
- HIGH TO MODERATE RISK OF ACID SULPHATE SOILS
- INDICATIVE DRAINAGE BASINS
- EXISTING NATURAL SURFACE CONTOURS (0.5m INTERVAL)
- BUILDING EXCLUSION ZONE
- PROPOSED BRIDGE
- PROPOSED DRAINAGE RESERVE ACCESS GATE
- PROPOSED BUILDING ENVELOPES
- 20m ROAD SETBACK
- 10m SIDE SETBACK
- OTHER SETBACK AS DIMENSIONED

NOTES:
At subdivision stage, the Local Government shall request the Western Australia Planning Commission impose the following (but not limited to) as conditions of approval:

1. Section 70A notification on title advising land owners that all dwellings shall be constructed to have a minimum finished floor level of 500mm above the nearest adjoining road level or 600mm above natural ground level, whichever is the greater, as determined by a licensed surveyor;
2. Section 70A notification on title advising land owners that the area is subject to seasonal mosquito infestation;
3. Section 70A notification on title advising land owners that the area may be subject to seasonal inundation;
4. Preparation and Implementation of a landscaping plan;
5. Preparation and Implementation of an acid sulphate soils management plan;
6. No more than 1 dwelling is permitted per lot.
7. All buildings, structures and on-site effluent disposal systems on each lot shall conform to the minimum setbacks as follows:
   - 20 metres from any road;
   - 50 metres from line edge of any natural water body or wetland (sumpland) or native vegetation line or man-made drainage basin (excluding Gavins's Gully Sub-drain);
   - 10 metres from all side boundaries;
   - Be outside of all "Building Exclusion Zones"as identified on the endorsed Structure Plan Amendment No. 1.
8. Stormwater is to be managed in accordance with the Decision process for stormwater management in WA (DoW 2009) and the Stormwater management manual for Western Australia (DoW 2004-2007).
   Compliance with this may be achieved through provision of engineering drawings and specifications.
9. Section 70A notification on title advising land owners that they may be impacted by noise levels above the normal assigned level for night time but within the bounds of the noise regulation 17 approved.
10. Drainage Reserve to be fenced and provided with access gates at the intersection of the reserve and the proposed road reserve, Garvey Road and Dardanup West Road.
11. Bridge over drainage reserve to be installed at the time of subdivision, at the subdividers cost to the satisfaction of the Shire of Dardanup.
12. A Bushfire Management Plan is to be prepared and implemented to the satisfaction of the Shire of Dardanup and the Department of Fire of Emergency Services.
13. A Section 70A notification is to be included on title stating that: 'A reticulated sewerage service is not available to the lot(s). As such, an on-site secondary treatment and disposal system for sewage (which includes nutrient removal) will be required. Therefore, the developable area of the lot is reduced. There are ongoing landowner obligations to ensure that the treatment and disposal system is regularly maintained in accordance with relevant health regulations. Contact the local government for further information.'
14. The 2.85ha Drainage Reserve shall be revegetated with locally endemic wetland species to the specifications of the Department of Biodiversity, Conservation and Attractions (Parks and Wildlife Branch) to the satisfaction of the Shire of Dardanup.
15. The Groundwater Depth Investigation Report (TME 2014) is to be updated prior to subdivision to take into account available long-term data to the specifications of Department of Water and Environment Regulation.
16. As a condition of subdivision, the drainage reserve is to be shown on the diagram or plan of survey as a reserve for drainage and vested in the Crown under Section 152 of the Planning and Development Act 2005, such land to be provided free of cost and without payment of compensation by the Crown.
17. A drainage easement is required and is to be shown of the diagram or plan of survey over the constructed drain on Lot 13 as detailed on the approved engineering plans.

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STRUCTURE PLAN AMENDMENT No. 1

Lot 503, Garvey Road, Crooked Brook

Plan No: 14119P-SP-01D

Date:	25.02.2020
Rev:	REV C
Scale:	A1 @1:2500, A3 @ 1:5000
Co-ords:	MGA
Aerial:	NA

This plan has been prepared for planning purposes. Areas, contours and dimensions shown are subject to survey.

Amendment 1 to the Lot 503 Garvey oad, rooked Brook Structure Plan has been approved by the estern Australian Planning ommission on the 20 arch 2020.

Signed by an officer duly authorised by the estern Australian Planning ommission pursuant to Section 16 of the Planning and evelopment Act 2005

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date approved by the WAPC
1.	• Adding proposed building envelopes • Providing a cul-de-sac on the boundary with Lot 502 pending future extension of the road to the west • Widening the battle-axe access leg of Lot 14 to 6m • Modifying the Building Exclusion Zone • Modifying Note (7) to apply a 50m setback from all buildings, structures and on-site effluent disposal systems to any wetland and natural water bodies but not to the manmade Gavin's Gully sub-drain • Include reference to Proposed Stage 2 Earthworks Plan • Include reference to Bushfire Management Plan (Version D) prepared by Lush Fire and Planning dated 10 July 2019 • Modify Provision 13 to include a Section 70A notification on title regarding on-site secondary treatment and disposal for sewage.	Minor	

Executive Summary

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Executive Summary

Across Planning and *Calibre Professional Services Pty Ltd* (Calibre) have been engaged by Garvey Road Pty Ltd to prepare an amendment to the Subdivision Guide Plan Lot 503 Garvey Road Crooked Brook (now referred to as a structure plan) endorsed by the WAPC on 29 February 2016 (WAPC Ref: SPN 0716).

The subject land is zoned 'Small Holding' (Rural Residential) under the Shire of Dardanup Local Planning Scheme No. 3 and forms part of the wider Dardanup Small Holdings Structure Plan endorsed by the WAPC in 2007.

The endorsed Subdivision Guide Plan provides for 22 rural residential lots ranging from 1.0 - 2.73 ha. Stage 1 (Lots 1 – 7) has already been developed. Stage 2 (Lots 8-14 and 19-22) is currently under construction. Stage 3 (final stage) will involve lots 15-18.

The purpose of Amendment No. 1 is to add proposed building envelopes to each lot (to provide greater clarity and certainty for prospective purchasers and decision-makers), to modify the Building Exclusion Zone (consistent with site conditions and proposed supplementary filling of building envelopes – where required), and modifying the Note (7) on the Structure Plan Amendment No. 1 map to apply a 50m setback from all buildings, structures and on-site effluent disposal systems to any wetland and natural water bodies but not to the manmade Gavin's Gully sub-drain. This overcomes the situation in which development of dwellings on several lots cannot comply with the existing endorsed Subdivision Guide Plan, which was unintended in the original wording of Note (7).

The *Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2 Deemed Provisions for Local Planning Schemes contains Part 4 'Structure plans'. Clause 29 provides for amendment of a structure plan. Sub-clause (1) states that a structure plan may be amended by the Commission at the request of the local government or a person who owns land in the area covered by the plan.

Given the circumstances surrounding Amendment No. 1 (including no change to proposed land use, lot layout and lot yield) it is considered that the changes to the requirements for making a structure plan as set out in Part 4 must necessarily be limited to the relatively minor modifications arising from the amendment.

Accordingly, Amendment No. 1 is limited to the Structure Plan – Amendment No. 1 map and the matters addressed in this amendment report.

Clause (3) states that, despite subclause (2), the local government may decide not to advertise an amendment to a structure plan if, in the opinion of the local government and the Commission, the amendment is of a minor nature. As described above, the proponent considers the amendment is of a minor nature that does not warrant advertising.

Table 1 Summary Table provides a summary of the principal structure plan data. It confirms that there is no change to the proposed land use, lot layout and number of lots.

Table 2 Summary Table

Item	Data
Total area covered by the structure plan	32.3031 hectares
Area of each land use proposed: • Rural Residential	Hectares Lot yield 26.1907 22
Total estimated lot yield	22
Estimated number of dwellings	22
Estimated population	55
Estimated area and percentage of public open space	Not required for Rural Residential
Estimated percentage of natural area (drainage reserve and wetland)	3.03434 + 1.8377 (15m wide reserve) Total 4.8426 hectares 15 %

1. Part One – Implementation

Part One contains the amended structure plan map and outlines the requirements that will be applied when assessing subdivision and development applications over the land to which the structure plan relates.

The structure plan aligns with Local Planning Scheme No. 3 and relevant WAPC policy requirements.

1. Structure plan area

The structure plan applies to the whole of Lot 503 Garvey Road Crooked Brook comprising 32.4439ha as shown on the Structure Plan – Amendment No. 1 map.

2. Operation

The amended structure plan comes into effect on the date the structure plan amendment is approved by the Western Australian Planning Commission.

3. Staging

Stage 1 (Lots 1 – 7) and Stage 2 (Lots 8-14 and 19-22) have already been developed. Stage 3 (final stage) will involve lots 15-18.

4. Subdivision and development requirements

Modifications to the subdivision and development requirements are set out as Notes on the Structure Plan – Amendment No. 1 map.

2. Part Two – Explanatory section and technical appendices

The purpose of Part Two is to support the structure plan contained in Part One by providing the background and explanatory information used to prepare the structure plan amendment.

The information included is to be relevant and sufficient to support the structure plan and provide further information to assist decision-making.

In this instance, being of a minor nature, Amendment No. 1 proposes only limited changes to the existing Subdivision Guide Plan. Accordingly, Part Two only addresses the changes.

2.1. Building Envelopes

The Structure Plan – Amendment No. 1 shows 'Proposed Building Envelopes' – one per lot. The purpose is to provide greater clarity and certainty for prospective purchasers and decision-makers. Each designated building envelope complies with the required boundary setbacks and Bushfire Attack Level (BAL) setbacks and achieves the required minimum vertical separation distance from the base of the irrigation area of an Alternative Effluent Treatment system and the highest-known water table.

Amendment No. 1 also modifies the 'Building Exclusion Zone'. It is unclear precisely how the original Building Exclusion Zone was defined because it is now evident that it does not fully reflect actual site conditions. Although it appears the intent of the zone was to exclude dwellings and other buildings from being built in low-lying areas, the zone boundary only partially reflected this.

Importantly, some borrow material is available on-site to provide supplementary fill where a particular building envelope may require this. Earthworks for the road at the western end of the site have already taken place, with some borrow already benefiting some proposed building envelopes as well as road construction. Remaining suitable borrow material can be selectively extracted and re-located to building envelopes, where needed.

The Proposed Stage 2 Earthworks Plan No: 14119PMP-03A (Attachment B) is to be given due regard in subdivision and development.

2.2. Wetland Setbacks

Note (7) on the existing Structure Plan map states that:

"All buildings, structures and on-site effluent disposal systems on each lot shall conform with the minimum setbacks as follows:

- 20 metres from any road;
- 50 metres from line edge of any wetland (sumpland) or natural vegetation line, man-made water bodies or waterway;
- 10 metres from all side boundaries;
- Be outside of all "Building Exclusion Zones" as identified on the endorsed Subdivision Guide Plan No. 1."

Under Amendment No. 1, the 50-metre setback from the line edge of any natural water body or wetland (sumpland) or native vegetation line or man-made drainage basin is maintained. However, the man-made Gavins' Gully Sub-drain is excluded from the 50-metre setback requirement. This will remedy the current situation in which development of dwellings on several lots cannot comply with the existing endorsed Subdivision Guide Plan, which was un-intended in the original wording of Note (7).

2.3. Other changes

The other changes in Amendment No. 1 are the correction of minor typos or updating titles, such as the names of some Government agencies.

2.4. Bushfire Management Plan

Lush Fire and Planning prepared a Bushfire Management Plan (BMP) for Stages 2 and 3 of the subject land. The revised BMP (Version D dated 10 July 2019) was considered by the Department of Fire and Emergency Services, which considered that the revised BMP complies with the Planning for Bushfire Protection Policy and Guidelines. The BMP confirms that the changes proposed in Amendment No. 1 conform to the BAL setbacks and other requirements of the BMP and no modification is necessary, apart from the Structure Plan – Amendment No. 1 map (including the revised Building Exclusion Zone) being reflected in the BMP report.

The revised BMP is included at Appendix C.

2.5. Urban Water Management Strategy

Calibre has prepared an Urban Water Management Strategy (UWMS) for the subject land. Calibre notes that the amended building envelopes on Lots 12, 13 and 15 slightly encroach into the modelled 1;100ARI floodplain. The reduced floodplain storage is minimal and will have no significant impact on flood levels within the development area or upstream. Calibre sees no reason to update the approved UWMP to reflect this minor change to building envelope areas (refer Appendix 1).

2.6. Endorsement

It is recommended that the Shire of Dardanup and the WAPC endorse the Structure Plan – Amendment No. 1 Lot 503 Garvey Road Crooked Brook.

Appendix A – Calibre letter dated 19th February 2019

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Level 1, Unit 5, 53 Victoria Street | Bunbury WA 6230
+61 8 9791 4411 | ABN 55 070 683 037 | www.calibregroup.com

Our Ref: 16057

19th February 2019

Across Planning

Attention: Larry Guise

Dear Larry

Review of building envelopes in relation to water management at Lot 503 Garvey Road, Crooked Brook

Calibre has reviewed the amended building envelopes for Lot 503 Garvey Road in relation to water management across the site.

It is noted that the building envelopes on internal proposed lots 12, 13 and 15 slightly encroach into the modelled 1:100ARI floodplain. The reduced floodplain storage is minimal and will have no significant impact on flood levels within the development area or upstream.

The envelope area also doesn't form a constriction to the flow rate along the drain, beyond that posed by the modelled internal road culvert and crossing.

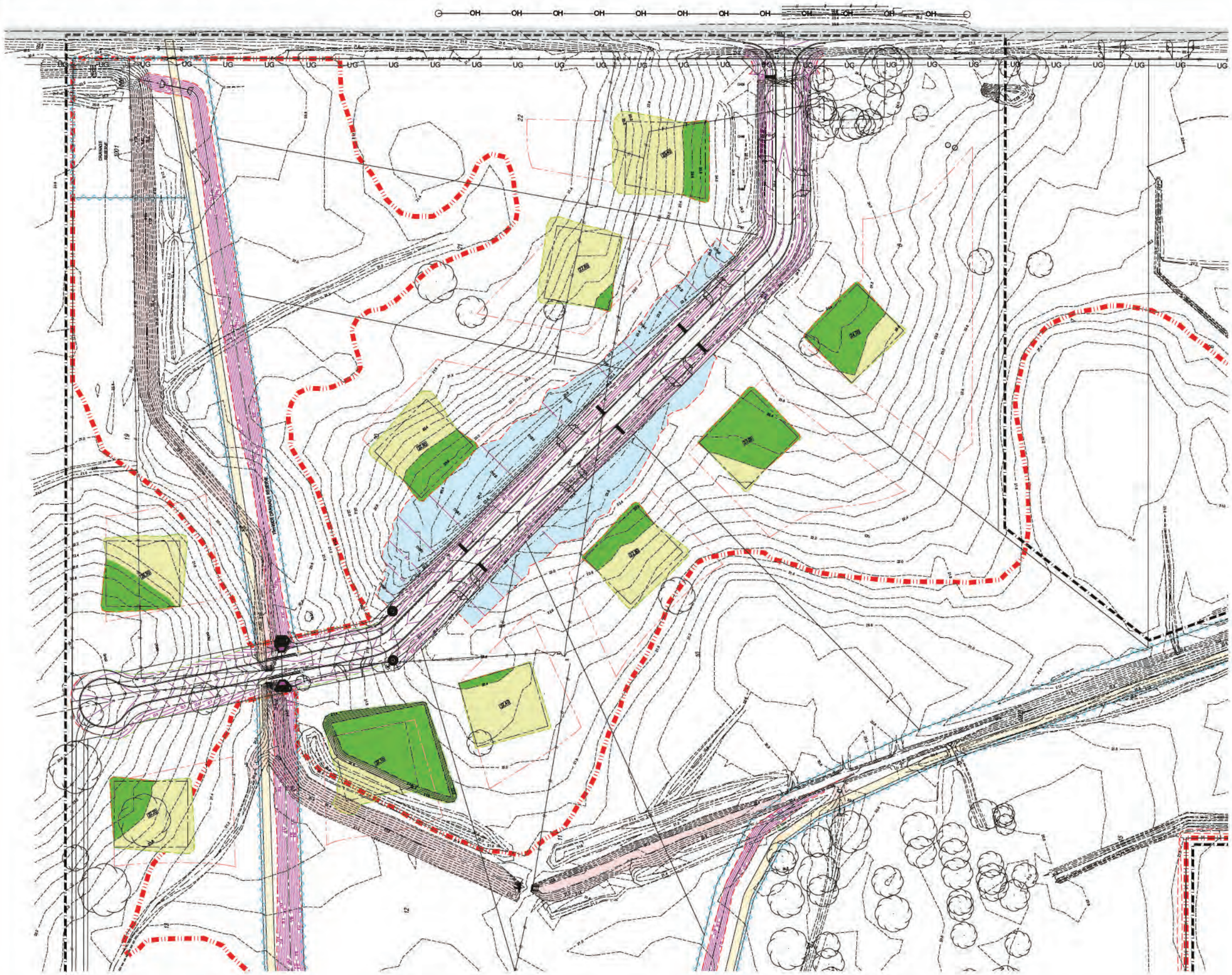
For these reasons the change to building envelopes is unlikely to change the flood flows or levels.

As such, Calibre see no reason to update the approved UWMP to reflect this minor change to building envelope areas.

Yours sincerely
Calibre Professional Services Pty Ltd

Brendan Oversby
Manager Water and Environment

Appendix B – Proposed Stage 2 Earthworks Plan



LEGEND

- Building Envelopes
- Building area prepared by developer with indicative RL
- Building envelope earthworks - cut
- Fill from roadworks
- Portion of Gavins Gully drain to be
- Stage 2 boundary

Note: Earthworks shown within the Building Envelopes is to be undertaken by the developer. Lot owners may choose to build elsewhere within the designated Building Envelope.

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Building Envelopes - Proposed Stage 2 earthworks

Lot 503, Garvey Road, Crooked Brook

Plan No: 14119P-MP-03A

Date:	13.06.2019
Rev:	ORIG
Co-ords:	MGA 50 GDA 94
Aerial:	N/A

This plan has been prepared for planning purposes. Areas, contours and dimensions shown are subject to survey.

Appendix C – Bushfire Management Plan (Version D) dated 10 July 2019

Bushfire Management Plan

Lot 9000 Garvey Road
Dardanup

BPAD
Bushfire
Planning & Design
Accredited Practitioner
Level 2

LUSH FIRE & PLANNING
3 Paterson Rd
Pinjarra WA 6208
0418 954 873
ABN 74 232 678 543

REF: 18-075
Ver D
July 2019

Fire Protection Association Australia
Life. Property. Environment.

BPAD Bushfire Planning & Design

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference:	Lot 9000 DP409122 Garvey Road				
Suburb: Dardanup West		**State:**	WA	**P/code:**	6235
Local government area:	Dardanup				
Description of the planning proposal:	Rural residential subdivision				
BMP Plan / Reference Number:	18-075	**Version:**	D	**Date of Issue:**	10/07/2019
Client / Business Name:	Garvey Road Pty Ltd				

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☒	☐
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☐	☒
Vulnerable land-use	☐	☒

If the development is a special development as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The proposal includes a minor variation to an existing structure plan which reflects the current subdivision approval for the development.

Note: The decision maker (e.g. the local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Geoffrey Lush	Level 2	BPAD 27682	28/02/2020
Company		**Contact No.**	
Lush Fire & Planning		0418 954 873	

I declare that the information provided in this bushfire management plan is to the best of my knowledge true and correct.

Signature of Practitioner Geoffrey Lush. **Date** 10/07/2019

This bushfire management plan is prepared for the proposed subdivision of Lot 9000 Garvey Road West Dardanup. The subject land is located approximately 2.7 kilometres south west of the Dardanup townsite and it has an area of 24.7 hectares.

A portion of the subject land is designated as being bushfire prone, which primarily relates to the vegetation along Garvey Road.

The subject land is being developed under subdivision approval 151949 (March 2016). The proposed subdivision will create fifteen lots which are generally 1 hectare in size. There are three stages of development being:

- Stage 1 - seven lots which have already been created;
- Stage 2 - eleven lots and road 1; and
- Stage 3 - four lots, road 2 and the main drainage reserve.

Stage 1 has already been completed and this is subject to a separate approved bushfire management plan prepared by Lushfire & Planning (Ref 16-021 Ver B July 2017). This current Bushfire Management Plan relates to Stages 2 and 3.

The subdivision is subject to an approved structure plan, which is being modified to:

- Define the building envelopes on each lot; and
- Update the Building Exclusion Zone to reflect the actual site conditions.

This is in effect an administrative modification to reflect the approved subdivision, which is now being constructed.

The primary bushfire hazard is from a fast moving grass fire which can still have the potential to be a destructive fire threatening life and property.

The second bushfire hazard issue is that Road 1 is a dead end road being 400m in length which in accordance with the approved structure plan is to extend through the adjoining Lot 4. While this doesn't comply with the Bushfire Protection Criteria it is submitted that:

a) It is impactable to extend the road through Lot 4 because this would be for another 1km distance;

b) The subdivision approval has already been issued reflecting the proposed subdivision which should now be considered as a legacy issue. Subdivision approval 151949 was issued in March 2016 without consideration of the Bushfire Protection Criteria. Condition 1 of the subdivision approval specifically provides for the construction of this road. Enforcement of Acceptable Solution A3.3 Cul-de-sac (200m maximum length) would prevent the approved subdivision from occurring. This would be a defacto refusal and contrary to well established planning law as the application of the subdivision condition cannot prevent or contradict the principal approval.

The subject land has moderate bushfire hazard level due to the surrounding farming and rural residential properties with associated cropping and pasture areas. This rating is also influenced by the extent of remnant vegetation scattered along the road reserves. Any proposed dwelling can be sited so as to ensure that there is a moderate hazard level reflected by having a maximum BAL-29 rating and most likely a BAL -12.5 rating.

The proposed subdivision and development comply with the objectives of State Planning Policy 3.7 as far as it is practical to do so:

1. It avoids any increase in the threat of bushfire to people, property and infrastructure; by the implementation of the bushfire management measures set out in this BMP;

2. It reduces vulnerability to bushfire through the identification and consideration of bushfire risks in the design of the development and the decision-making process; because these risks have been identified and assessed;
3. The design of the subdivision and the development takes into account bushfire protection requirements and include specified bushfire protection measures; as demonstrated in the proposed mitigation measures and recommendations; and
4. The subdivision achieves 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 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.

Document Reference

Property Details

Street No	Lot No's	Plan	Street Name	
	9000	409122	Garvey Road	
Locality	Dardanup West		State WA	Postcode 6235
Local Government Area	Dardanup			
Description of the building or works	Rural residential subdivision			

Report Details

Revision	Date	Job No 18-075
Lush Fire & Planning		
A	18/11/2018	Preliminary
B	17/12/2018	Editing & Spatial Plan
C	24/05/2018	Structure Plan modification
D	10/07/2019	DFES modification

Practitioner Details

BPAD	Level 2 Practitioner	Accreditation No	27682

Disclaimer

The measures contained in this report do not guarantee that a building will not be damaged in a bushfire. The ultimate level of protection will be dependent upon the design and construction of the dwelling and the level of fire preparedness and maintenance under taken by the landowner. The severity of a bushfire will depend upon the vegetation fuel loadings; the prevailing weather conditions and the implementation of appropriate fire management measures.

Geoffrey Lush
10 July 2019

geoffrey@lushfire.com.au

BPAD
Bushfire
Planning & Design
Accredited Practitioner
Level 2

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1.0 PROPOSAL DETAILS

1.1 Introduction

This bushfire management plan is prepared for the proposed subdivision of Lot 9000 Garvey Road West Dardanup. The subject land is located approximately 2.7 kilometres south west of the Dardanup 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 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 subject land is being developed under subdivision approval 151949 (March 2016) and Stage 1 has already been completed. Stage 1 is shown in Figure 2 and this is subject to a separate bushfire management plan prepared by Lushfire & Planning (Ref 16-021 Ver B July 2017).

1.2 Existing Conditions

The subject land has an area of 24.7 hectares with a frontage of approximately 350m to Garvey Road and 160m to Dardanup West Road.

The cadastral information is documented in Table 1 and shown in Figure 2. The existing conditions are shown in Figure 3.

The subject land is generally flat with a minor rise in the north western portion of the site. The site is predominantly cleared land and has been used for pasture and grazing. There are no buildings on the subject land but there are stockyards adjacent to Garvey Road. Lots 4 and 5 to the west and the south of the subject land are large rural lots used for broad acre farming.

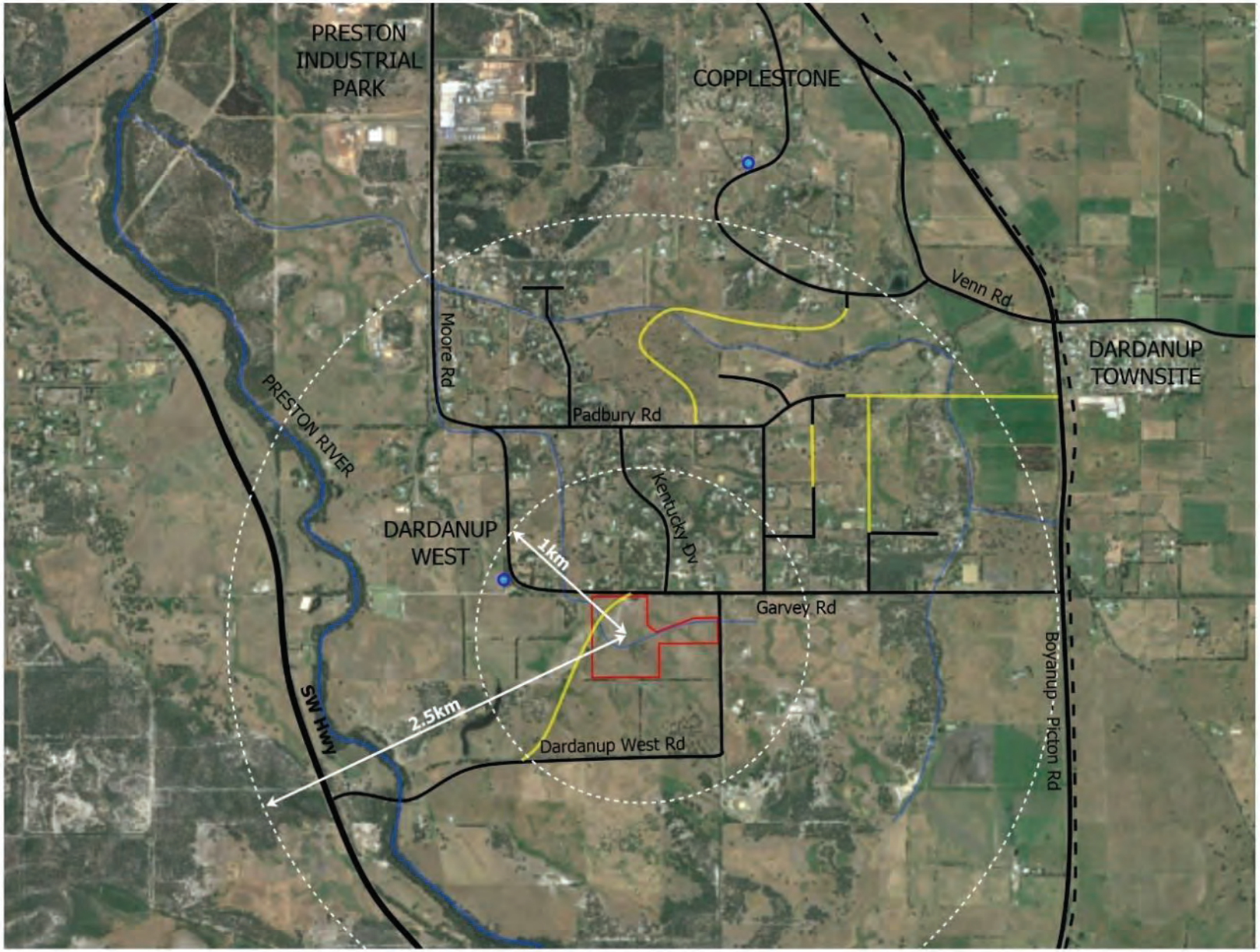
The surrounding land to the north and south of the site has been developed for rural residential purposes. The land to the east and south west of the site are large rural lots still used for broad acre grazing.

There is a district drainage channels traversing the land from east to west and then exits from the north western corner of the site.

Access to the site is from Garvey Road which is a sealed local distributor road. Secondary access if from Dardanup West Road which provides a connection to the South Western Highway.

Table 1 Land Details

Lot	Plan	Vol	Folio	Registered Proprietor	Area(ha)
9000	409122	2942	360	Garvey Road Pty Ltd	24.776



LEGEND

- SUBJECT LAND
- EXISTING ROAD
- PROPOSED ROAD
- RAILWAY
- DRAIN
- FIRE TANK

FIGURE 1
LOCATION AND CONTEXT

N

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018

LUSHfire and planning
geoffrey@lushfire.com.au
0418 954873

FIGURE 2
CADASTRAL

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018

LUSHfire and planning
geoffrey@lushfire.com.au
0418 954873

LEGEND

SUBJECT LAND

DRAIN

FIGURE 3
EXISTING CONDITIONS

N

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018

LUSHfire and planning
geoffrey@lushfire.com.au
0418 954873

1.3 Bushfire Prone Land

The portions of the subject land are designated on the Map of Bush Fire Prone Areas as being bushfire prone as shown in Figure 4. Bushfire prone areas are comprised of (1):

- Bushfire prone vegetation; and
- A 100m wide bushfire prone buffer.

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;
- The provisions of the Planning and Development (Local Planning Schemes) Regulations 2015; and
- The application of SPP3.7 Planning in Bushfire Prone Areas.

1.4 Fire Prevention Order

Within the Small Holdings Zone which includes the subject land, Council's fire prevention order requires:

- Bare earth firebreaks of 2m width and 4m in height must be maintained within and adjacent to the lot boundary.
- Fire hazards on properties must be slashed to a height of no more than 50mm and flammable material must be removed.
- Must have a 20 metre low fuel area around all buildings and haystacks or groups thereof.

Fire prevention measures must be completed by the 30th November each year and maintained until the 26th April.

1.5 Town Planning Scheme No 3

The subject land is included in Small Holding Zone 14 which is subject to the Dardanup West / Crooked Brook structure plan. Appendix VIII of the Scheme contains additional requirements for each small holding zone and of relevance to this report are:

(f) All buildings, and structures shall have minimum setback as follows:
- 20 metres from any road;
- 50 metres from the edge of any wetland (sumpland) or natural vegetation line, man-made water bodies or waterways;
- 10 metres from all side boundaries; and
- be outside of all 'Building Exclusion Areas' as identified on the endorsed Subdivision Guide Plan.

(g) No trees or substantial vegetation shall be felled or removed from the site except where:
(a) required for approved development works;
(b) required to fulfil the provisions of an approved Fire Management Plan;
(c) required by a Council fire break order; or
(d) trees are dead, diseased or dangerous.

(k) The Local Government will request that the WAPC impose a condition of subdivision requiring the implementation of an approved fire management plan to the satisfaction of the Local Government and the Fire and Emergency Services Authority of Western Australia.

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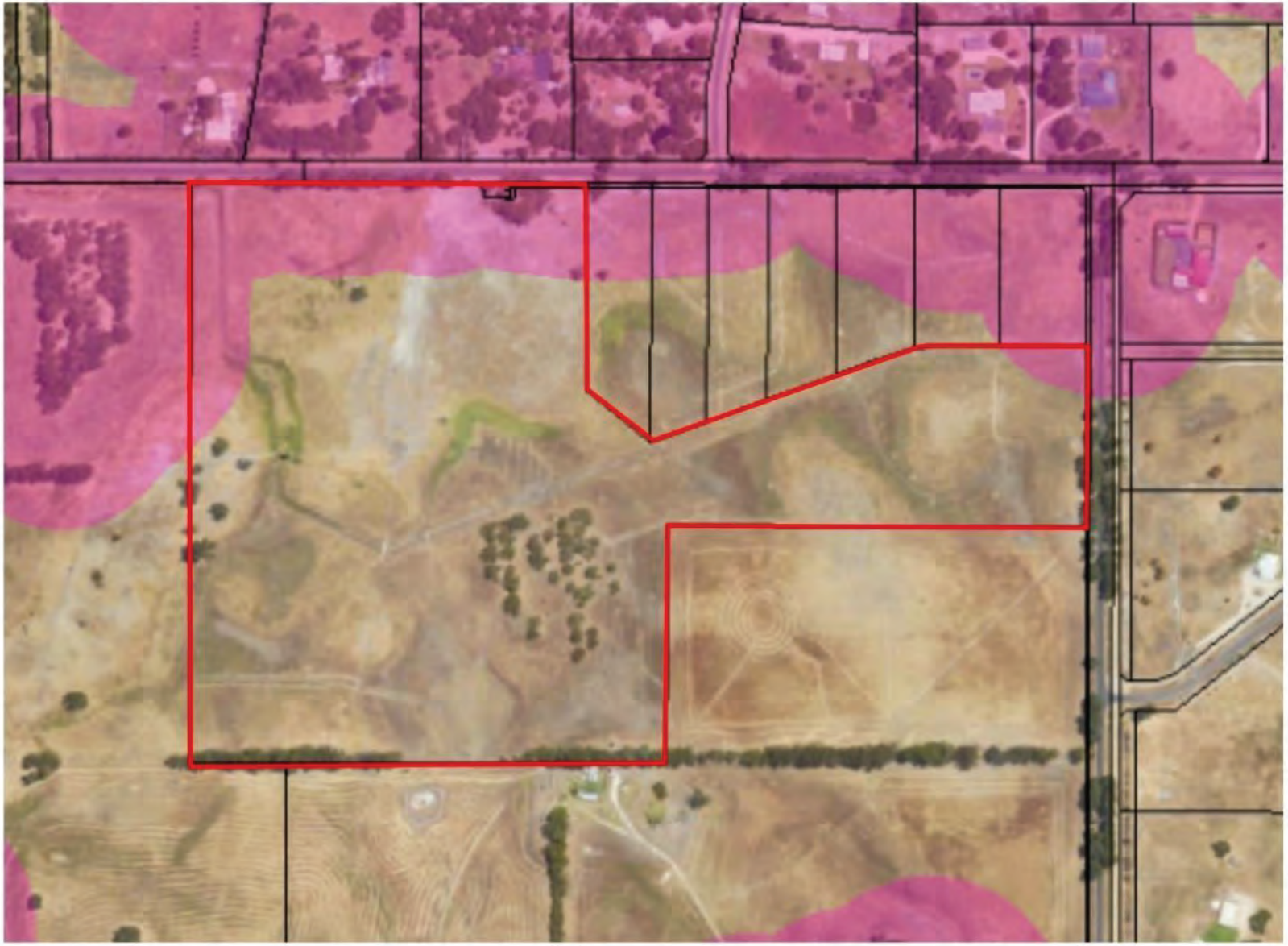
1 DFES (2015) Mapping Standard for Bush Fore Prone Areas.



LEGEND

SUBJECT LAND

BUSHFIRE PRONE LAND

FIGURE 4
BUSHFIRE PRONE LAND

N

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018

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1.6 Proposed Development

The proposed subdivision is shown in Figure 5 and this shows fifteen lots which are generally 1 hectare in size. There are three stages of development being:

- Stage 1 - seven lots which have already been created;
- Stage 2 - eleven lots and road 1; and
- Stage 3 - four lots, road 2 and the main drainage reserve.

Stage 1 was subject to a separate bushfire management plan prepared by Lushfire & Planning (Ref 16-021 Ver B July 2017).

The Western Australian Planning Commission approved the subdivision of the land (Ref No 151949) on the 2nd March 2016 and Condition 19 states that:

> A bushfire management plan being prepared, approved and relevant prov1s1ons implemented during subdivisional works, in accordance with the WAPC's Guideline for Planning in Bushfire Prone Areas, December 2015 to the specifications of the Local Government and/or the Department of Fire and Emergency Services (DFES)

Condition 20 also states that:

> A notification, pursuant to section 70A of the Transfer of Land Act 1893 is to be placed on the certificates of title of the proposed lots. Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows:
>
> *The lot(s) is/are subject to a fire management plan.' (Local Government)*

Other conditions which potentially influence the bushfire management plan include:

- Condition 7 Preparation of an urban water management plan;
- Condition 13 Preparation of a landscape management plan; and
- Condition 14 Identification of vegetation on site which is to be retained;

The existing drain will be protected by a 15m wide drainage reserve. Two other drainage reserves will be created being 2.88ha and 0.16ha in size. These will both be revegetated in accordance with the urban water management plan.

The subdivision is subject to an approved structure plan, which is being modified for stage 2 of the development by means of:

a) Defining the building envelopes on each lot. The purpose is to provide greater clarity and certainty for prospective purchasers and decision-makers. Each designated building envelope complies with the required boundary setbacks and Bushfire Attack Level (BAL) setbacks and achieves the required minimum vertical separation distance from the base of the irrigation area of an Alternative Effluent Treatment system and the highest-known water table.

b) Modifying the Building Exclusion Zone to reflect the actual site conditions. This includes the 50-metre setback from the line edge of any natural water body or wetland (sumpland) or native vegetation line or man-made drainage basin. However, the manmade Gavins's Gully Sub-drain is excluded from the 50-metre setback requirement.

The modified structure plan is shown in Figure 6.

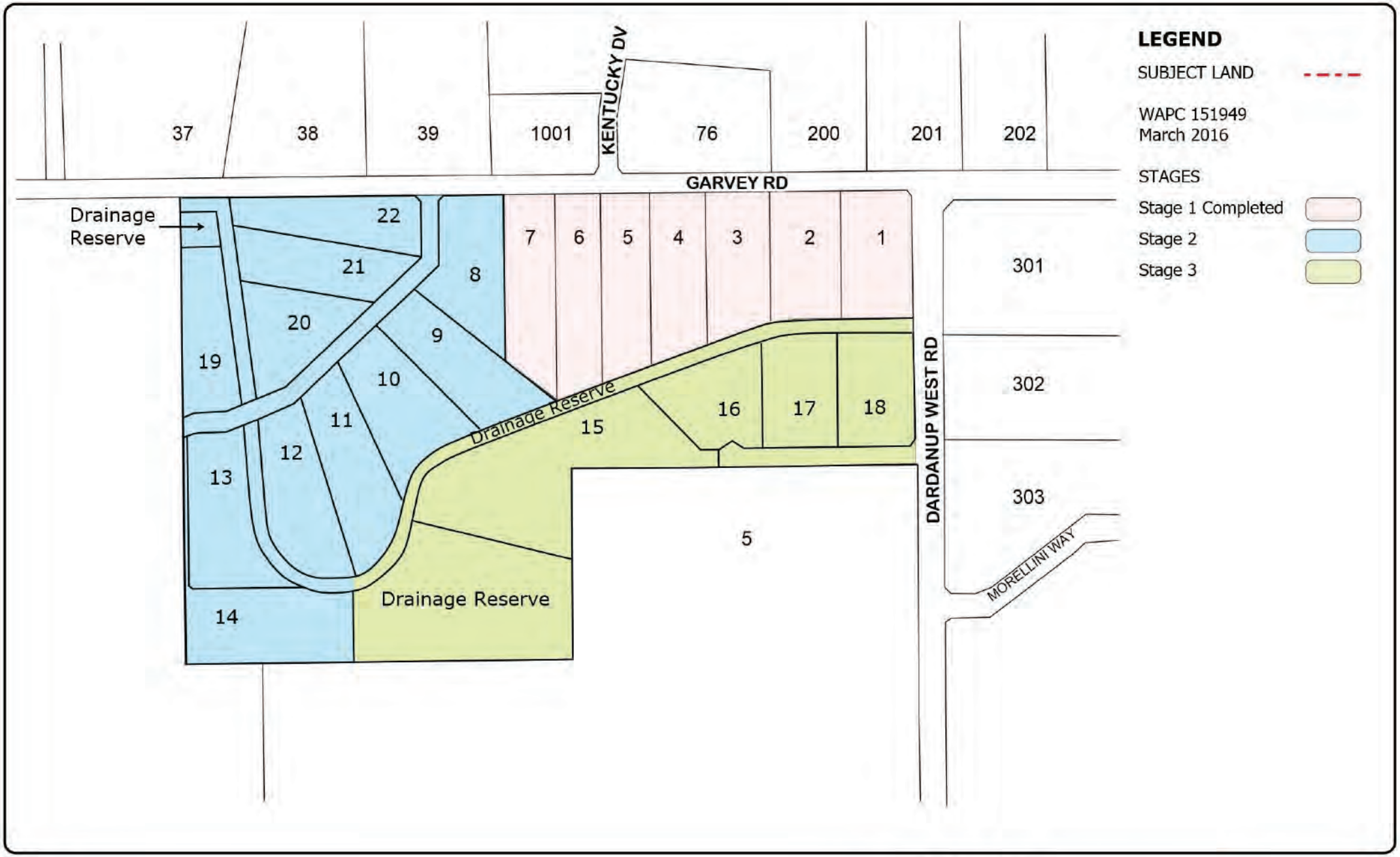

FIGURE 5
PROPOSED SUBDIVISION
Sheet 1 of 2

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019
C	DFES Revisions	09/07/2019

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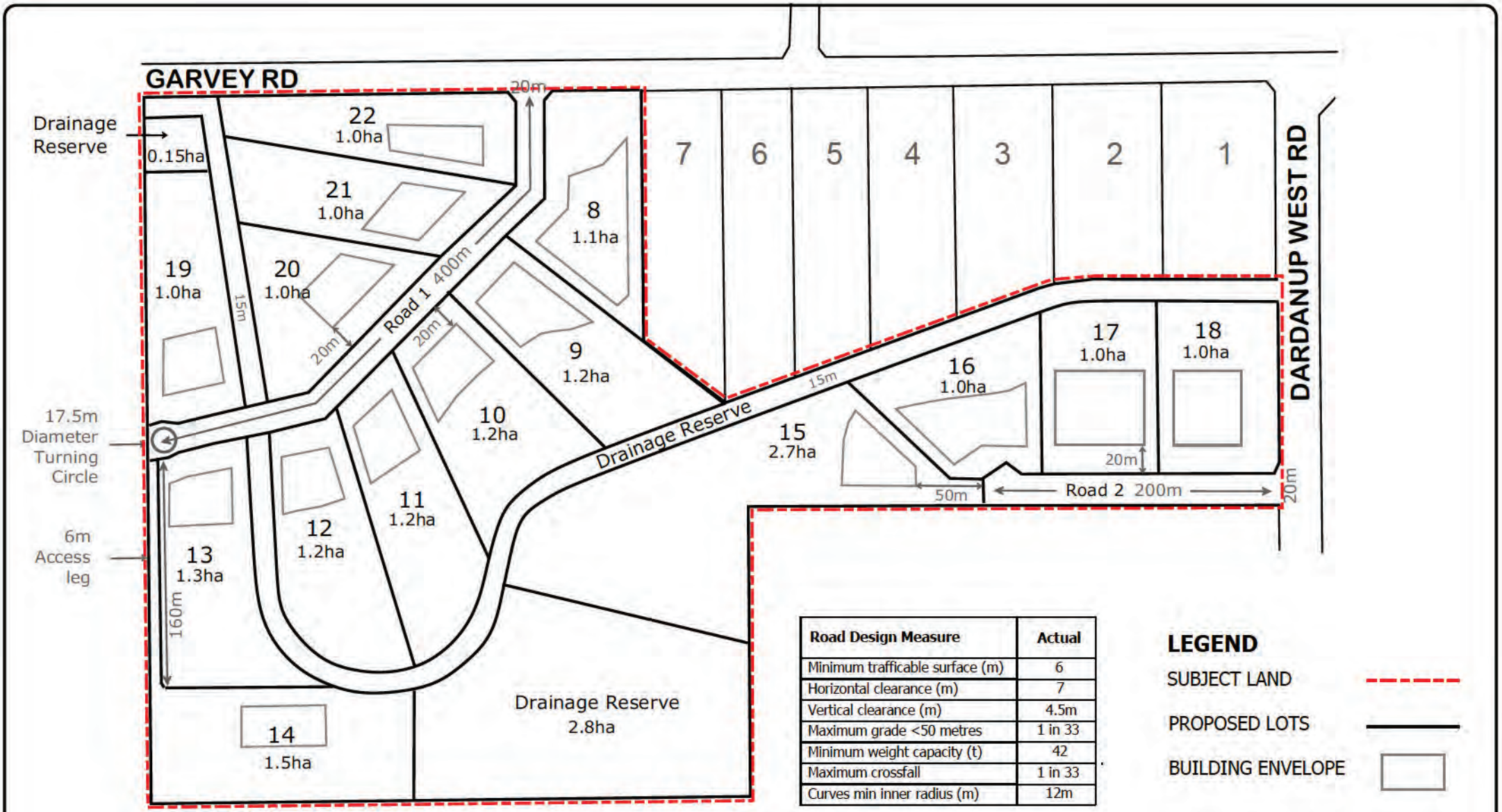

Road Design Measure	Actual
Minimum trafficable surface (m)	6
Horizontal clearance (m)	7
Vertical clearance (m)	4.5m
Maximum grade <50 metres	1 in 33
Minimum weight capacity (t)	42
Maximum crossfall	1 in 33
Curves min inner radius (m)	12m

LEGEND

SUBJECT LAND

PROPOSED LOTS

BUILDING ENVELOPE

FIGURE 5
PROPOSED SUBDIVISION
Sheet 2 of 2

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019
C	DFES Revisions	09/07/2019

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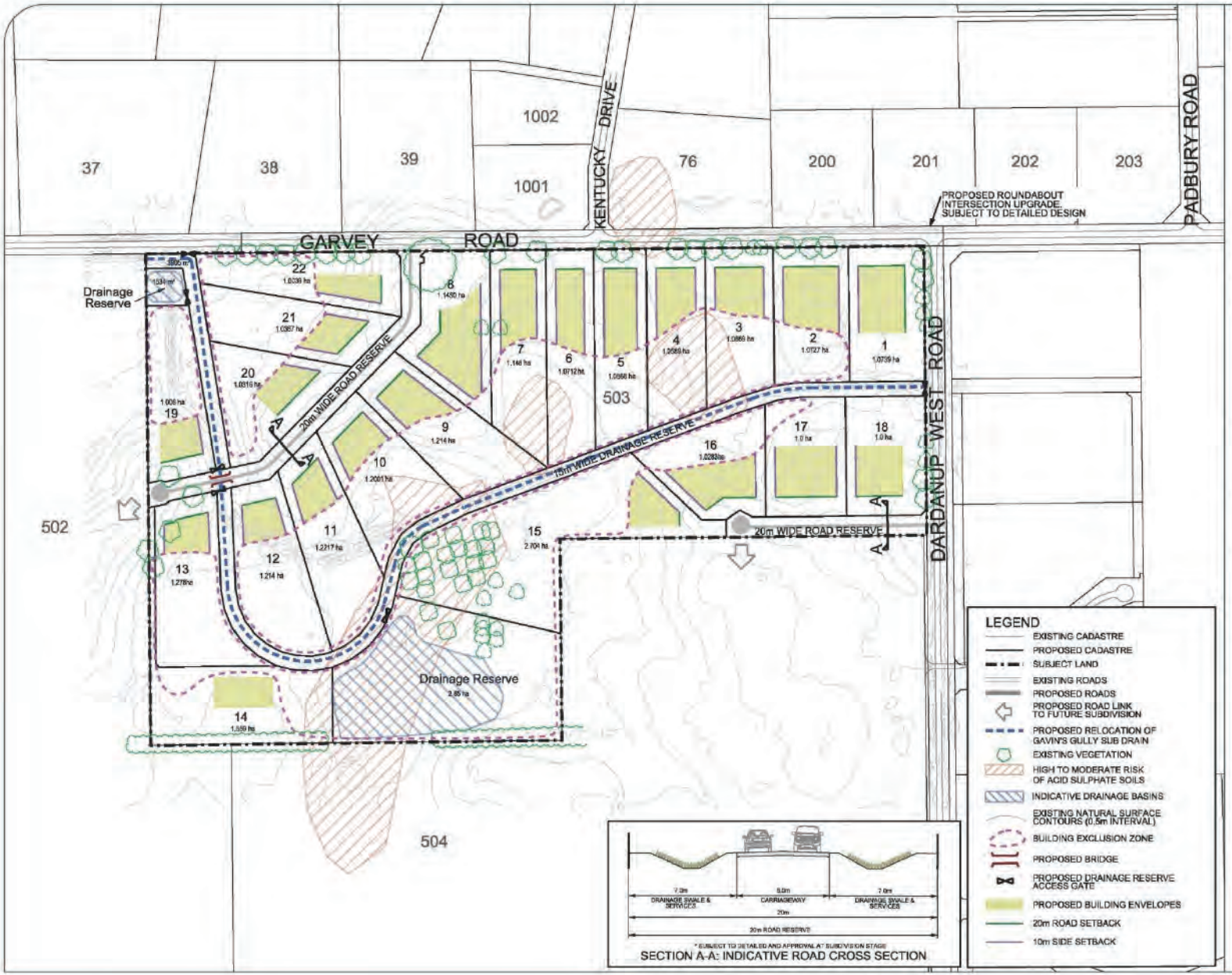

NOTES:
At subdivision stage, the Local Government shall request the Western Australia Planning Commission impose the following (but not limited to) as conditions of approval:

1. Section 70A notification on title advising land owners that all dwellings shall be constructed to have a minimum finished floor level of 500mm above the nearest adjoining road level or 600mm above natural ground level, whichever is the greater, as determined by a licensed surveyor;
2. Section 70A notification on title advising land owners that the area is subject to seasonal mosquito infestation;
3. Section 70A notification on title advising land owners that the area may be subject to seasonal inundation;
4. Preparation and implementation of a landscaping plan;
5. Preparation and implementation of an acid sulphate soils management plan;
6. No more than 1 dwelling is permitted per lot.
7. All buildings, structures and on-site effluent disposal systems on each lot shall conform to the minimum setbacks as follows:
   - 20 metres from any road;
   - 50 metres from line edge of any natural water body or wetland (sumpland) or native vegetation line or man-made drainage basin (excluding Gavins's Gully Sub-drain);
   - 10 metres from all side boundaries;
   - Be outside of all "Building Exclusion Zones"as identified on the endorsed Structure Plan Amendment No. 1.
8. Stormwater is to be managed in accordance with the Decision process for stormwater management in WA (DoW 2009) and the Stormwater management manual for Western Australia (DoW 2004-2007).
   Compliance with this may be achieved through provision of engineering drawings and specifications.
9. Section 70A notification on title advising land owners that they may be impacted by noise levels above the normal assigned level for night time but within the bounds of the noise regulation 17 approved.
10. Drainage Reserve to be fenced and provided with access gates at the intersection of the reserve and the proposed road reserve, Garvey Road and Dardanup West Road.
11. Bridge over drainage reserve to be installed at the time of subdivision, at the subdividers cost to the satisfaction of the Shire of Dardanup.
12. A Fire Management Plan is to be prepared and implemented to the satisfaction of the Shire of Dardanup and the Department of Fire of Emergency Services.
13. Section 70A notification on title advising landowners there is to be a minimum vertical separation distance of 500mm from the base of the irrigation area of an Alternative Effluent Treatment System to the highest-known water table. Approval shall be sought from Shire of Dardanup prior to installation of an effluent disposal system.
14. The 2.88ha Drainage Reserve shall be revegetated with locally endemic wetland species to the specifications of the Department of Biodiversity, Conservation and Attractions (Parks and Wildlife Branch) to the satisfaction of the Shire of Dardanup.
15. The Groundwater Depth Investigation Report (TME 2014) is to be updated prior to subdivision to take into account available long-term data to the specifications of Department of Water and Environment Regulation.
16. As a condition of subdivision, the drainage reserve is to be shown on the diagram or plan of survey as a reserve for drainage and vested in the Crown under Section 152 of the Planning and Development Act 2005, such land to be provided free of cost and without payment of compensation by the Crown.

FIGURE 6
STRUCTURE PLAN

Ref No 18-075

Rev	Description	Date
A	Preliminary	23/05/2019

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2.0 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation Modification and Clearing

There is no proposed clearing of any remnant vegetation.

2.2 Re-vegetation / Landscape Plans

The two drainage reserves will be revegetated as prescribed in the Urban Water Management Plan, to support the long term function of the wetland system.

Revegetation will include the use of local native species which are capable of withstanding periods of inundation.

3.0 BUSHFIRE ASSESSMENT RESULTS

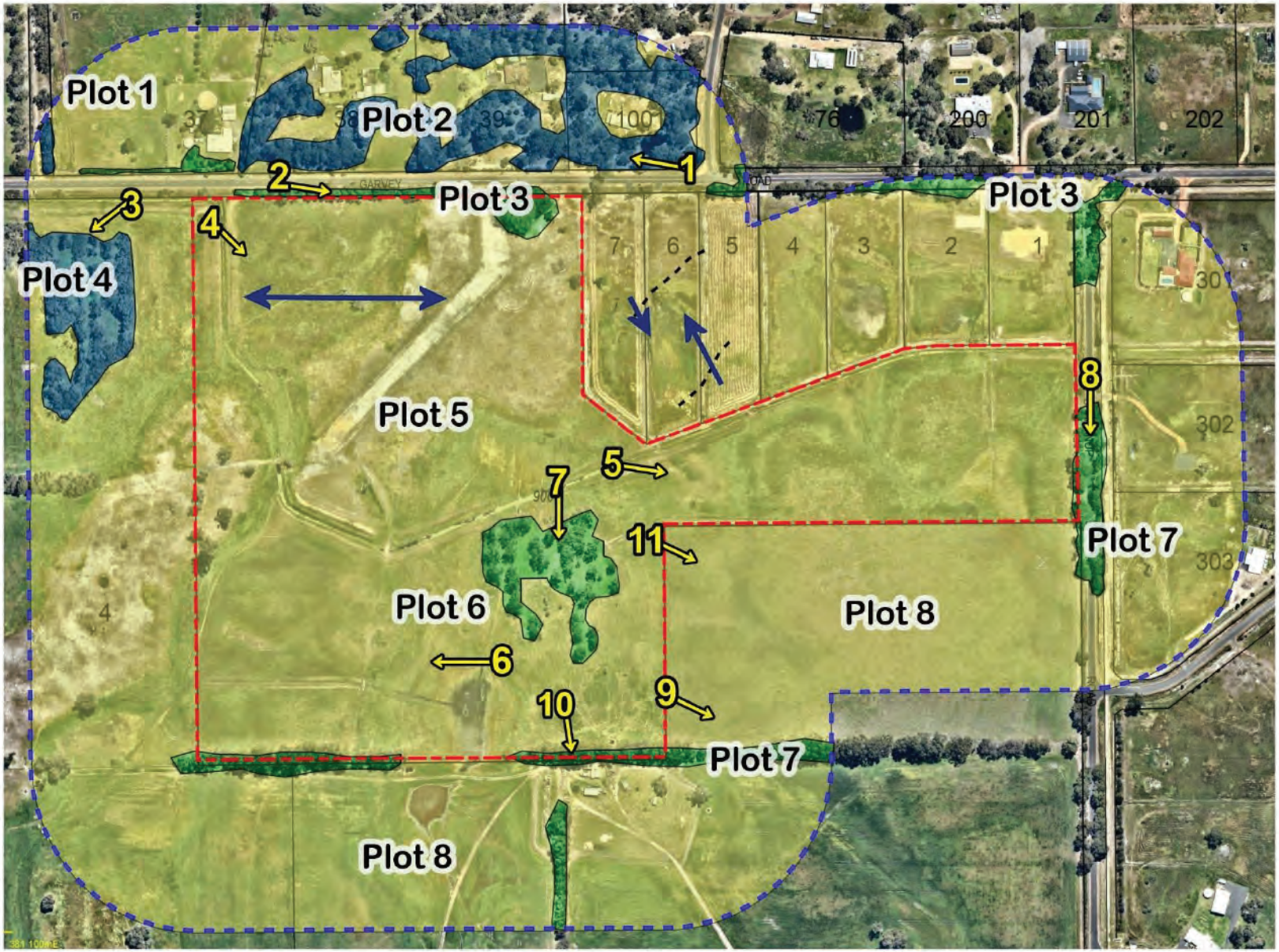
3.1 Assessment Inputs - Vegetation Classification

The classification of the vegetation on and adjacent to the site is shown in Figure 7 and the following photographs.

The classification is based upon AS3959 and considers The Visual Guide for Bushfire Risk Assessment in Western Australia (WAPC 2016). The details of the vegetation plots are summarised in Table 2 below.

Table 2 Vegetation Classification

Plot No	Classification	Height	Foliage Cover	Slope	Comment
1	Grassland	>100mm	100%	Flat	This is the grassland areas associated with the rural residential development. Typically, being the paddock areas around the house.
2	Forest	18m	80%	Flat	This is non homogenous vegetation associated with the rural residential lots. It contains a mixture of species and densities.
3	Woodland	16m	50%	Flat	Narrow road side verge vegetation Marri or Jarrah and some Melaleuca.
4	Forest	10m	60%	Flat	1.1ha area of planted non local gum trees.
5	Grassland	>100mm	100%	Flat	Pasture within the balance of the subject land.
6	Woodland	16m	30%	Flat	Non local planted gum trees less than 1ha and lower foliage coverage than Plot 4.
7	Woodland	15m	80%	Flat	Narrow roadside vegetation consisting of Marri and Jarrah with grassland. Includes windbreak along the southern boundary.
8	Grassland	>100mm	100%	Flat	Pasture in adjacent land.



LEGEND

SUBJECT LAND

VEGETATION ASSESSMENT AREA (150m from boundary of the subject land)

UPSLOPE

PHOTO POINTS

VEGETATION CLASSIFICATION

A FOREST

B WOODLAND

G GRASSLAND

Location Details:	Lot 9000 Garvey Road Dardanup West
Assessment Date:	10/05/2017
Prepared by:	G Lush
Accreditation Level:	Level 2
Accreditation Number:	BPAD 27682
Accreditation Expiry Date:	February 2020
Date of Aerial Photo:	October 2018

FIGURE 7
VEGETATION CLASSIFICATIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019

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Photo No 1 **Plot No 2**

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed non homogenous vegetation within existing rural residential lots. Predominantly Marri Jarrah to 18m height, more than 50% canopy coverage.

Photo No 2 **Plot No 3**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Mixed non homogenous vegetation within existing rural residential lots. Predominantly Marri Jarrah to 18m height, more than 50% canopy coverage.

Photo No 3 **Plot No 4**

Vegetation Classification

Class A Forest - Low open forest A-04

Description

Non local planted Eucalypts to 10m height with more than 60% foliage coverage. Continuous foliage from ground.

Photo No 4 **Plot No 5**

Vegetation Classification
Class G Grassland – Sown pasture
G-26

Description
Development site - grazing pasture.

Photo No 5 **Plot No 5**

Vegetation Classification
Class G Grassland – Sown pasture
G-26

Description
Development site - grazing pasture.

Photo No 6 **Plot No 5**

Vegetation Classification
Class G Grassland – Sown pasture
G-26

Description
Development site - grazing pasture.

Photo No 7 **Plot No 6**

Vegetation Classification

Class G Grassland – Sown pasture G-26

Description

Development site - grazing pasture.

Photo No 8 **Plot No 7**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Narrow roadside vegetation consisting of Marri and Jarrah to 18m with grassland understorey. Foliage coverage varies to 30%.

Photo No 9 **Plot No 7**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Windbreak along southern boundary contiguous to grassland Plot 8.

Photo No 10 **Plot No 7**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Windbreak along southern boundary contiguous to grassland Plot 8.

Photo No 11 **Plot No 8**

Vegetation Classification

Class G Grassland – Dense sown pasture G-25

Description

Pasture in adjoining property.

3.2 Assessment Outputs - BAL Contour Map

The modified vegetation classifications for the developed site are shown in Figure 8 and these relate to:

- The developed lots managing the grassland areas within each as low threat vegetation;
- The developed lots in stage 1 managing the grassland areas within each as low threat vegetation; and
- Revegetation of the two drainage reserves.

A BAL Contour Map is shown in Figure 9 and the setbacks and BAL ratings for each lot are documented in Table 3.

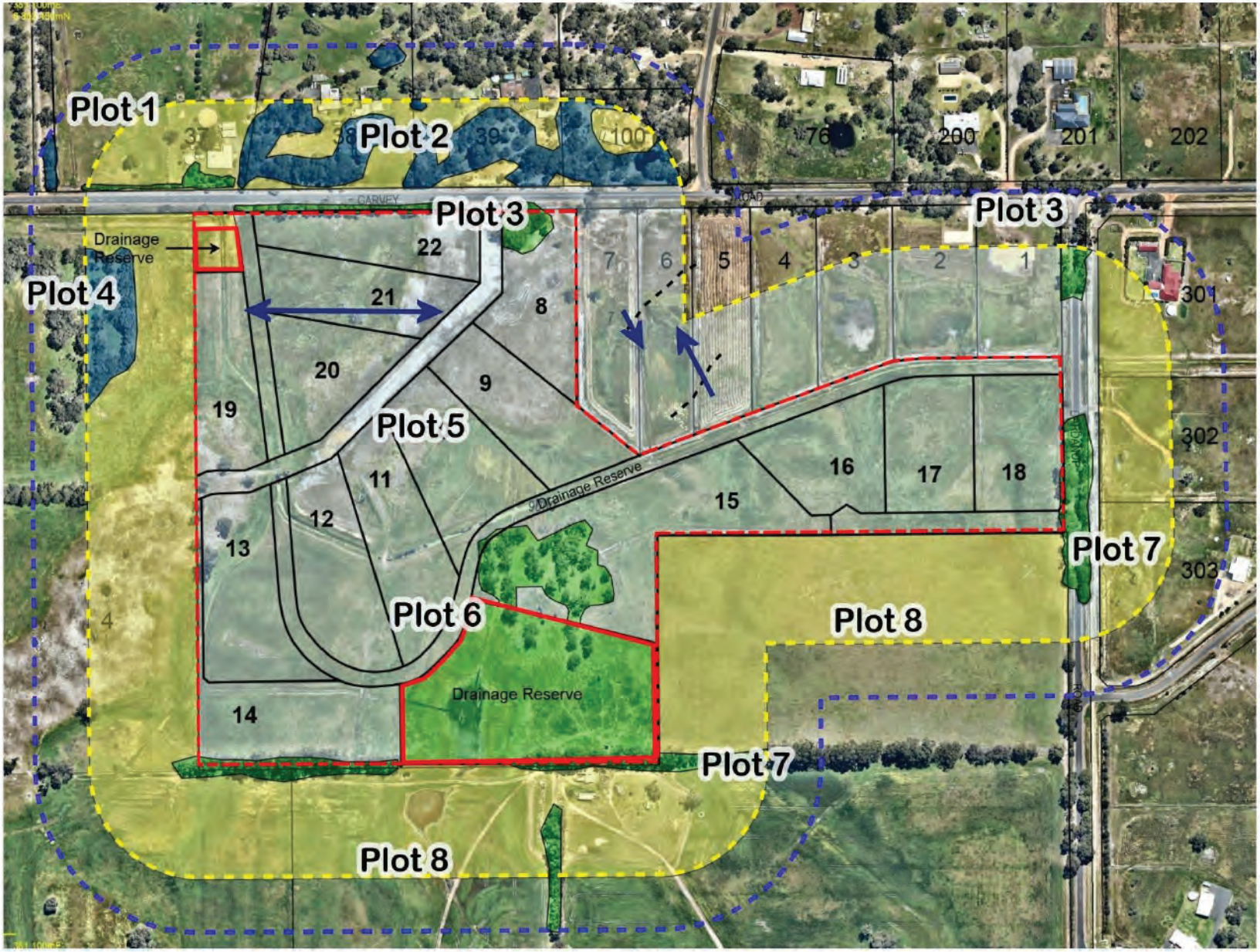
A BAL Contour Map is a plan of the subject lot/s illustrating the potential radiant heat impacts and associated indicative BAL ratings in reference to any classified vegetation remaining within 100 metres of the assessment area after the development is completed.

For the purpose of the BAL Assessments indicative building envelopes have been used as described in Section 1.6. The BAL Contour Map and Table 3 confirm that all of the proposed lots have sufficient areas with a BAL-29 or lower rating.

It is noted that the BAL ratings documented in Table 3 apply to the nearest point of the designated building envelope. In many instances where the dwelling is located in other portions of the building envelope a lower BAL rating will apply.

Table 3 BAL Ratings

Lot Number	Vegetation Plot (1)	Vegetation Classification	Effective Slope	Separation Distance (2)	BAL Rating
8	3	B Woodland	Flat	15m	BAL-29
9	3	B Woodland	Flat	88m	BAL-12.5
10	6	B Woodland	Flat	70m	BAL-12.5
11	6	B Woodland	Flat	80m	BAL-12.5
12	6	B Woodland	Flat	>100m	BAL-Low
13	8	G Grassland	Flat	17m	BAL-12.5
14	7	B Woodland	Flat	20m	BAL-19
15	8	G Grassland	Flat	17m	BAL-12.5
16	8	G Grassland	Flat	46m	BAL-12.5
17	8	G Grassland	Flat	39m	BAL-12.5
18	7	B Woodland	Flat	17m	BAL-29
19	8	G Grassland	Flat	10m	BAL-29
20	8	G Grassland	Flat	85m	BAL-Low
21	3	B Woodland	Flat	55m	BAL-12.5
22	3	B Woodland	Flat	45m	BAL-29
Notes (1) (2)	The selected vegetation plot is the plot with the highest BAL rating. The separation distance is measured to the nearest point of the proposed building envelope.				



LEGEND

SUBJECT LAND

VEGETATION ASSESSMENT AREA (150m from boundary of the subject land)

BAL CONTOUR ASSESSMENT AREA (100m from boundary of the subject land)

REVEGETATION AREA

VEGETATION CLASSIFICATION

- A FOREST
- B WOODLAND
- G GRASSLAND
- AREA MODIFIED TO LOW THREAT STATE

Location Details:	Lot 9000 Garvey Road Dardanup West
Assessment Date:	10/05/2017
Prepared by:	G Lush
Accreditation Level:	Level 2
Accreditation Number:	BPAD 27682
Accreditation Expiry Date:	February 2020
Date of Aerial Photo:	October 2018

FIGURE 8
MODIFIED VEGETATION

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019

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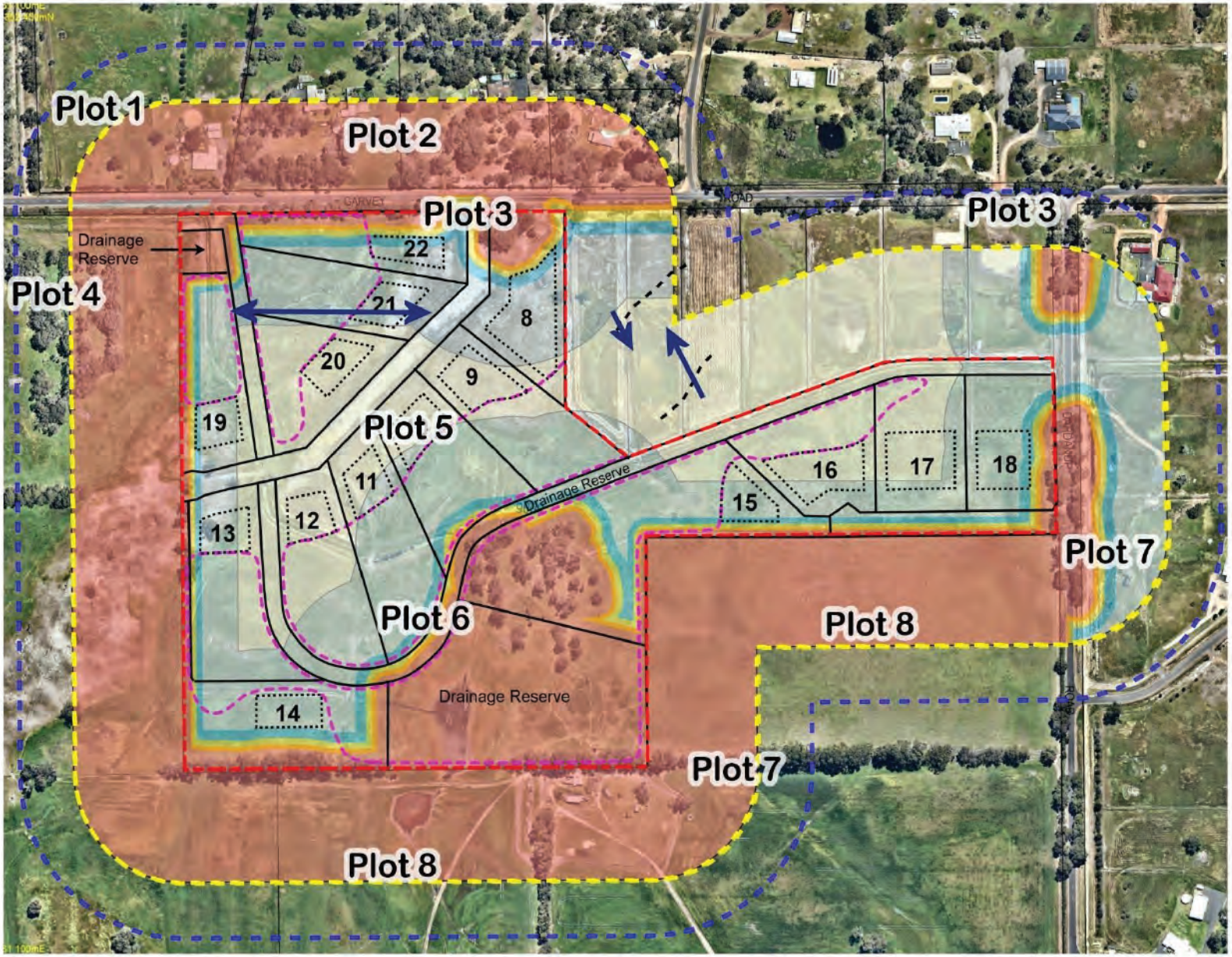

LEGEND

SUBJECT LAND

BAL CONTOUR ASSESSMENT AREA (100m from the external boundary of the subject site)

PROPOSED LOTS

INDICATIVE BUILDING ENVELOPES

BUILDING EXCLUSION AREAS

INDICATIVE BAL/ RATING

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-Low

Location Details:	Lot 9000 Garvey Road Dardanup
Assessment Date:	10/05/2017
Prepared by:	G Lush
Accreditation Level:	Level 2
Accreditation Number:	BPAD 27682
Accreditation Expiry Date:	February 2020
Date of Aerial Photo:	October 2018

FIGURE 9
BAL CONTOUR MAP

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019

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4.0 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The context of the site to the surrounding district is shown in Figure 1. The site is located at the southern end of the Dardanup Small Holdings area.

The locality is generally semi cleared land used for broad acre grazing and rural residential development.

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 primary bushfire hazard is from a fast moving grass fire which can still have the potential to be a destructive fire threatening life and property. The likelihood of this 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. The proposed development is introducing substantial values (property and people) which must be protected from the risk posed by the potential bushfire hazard.

The second bushfire hazard issue is that Road 1 is a dead end road being 400m in length which in accordance with the approved structure plan is to extend through the adjoining Lot 4. The creation of this road has already been approved under the existing subdivision approval.

5.0 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA

5.1 Compliance Table

In formulating the proposed mitigation measures regard has been given 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 requirements in the Bushfire Protection Criteria and the proposed mitigation strategies are summarised in Table 3 and shown spatially in Figure 10.

5.2 Additional Management Strategies

5.2.1 Individual Water Supply

The provision of and maintenance of reliable water supplies is essential in fire control and a suitable water supply must be readily available and accessible to Fire Appliances at all times.

While there will be a strategic water tank for fire fighting located at the West Dardanup bushfire station, the fire protection of lots will be improved by having an additional water supply for each dwelling. This should be a minimum of 10,000L with a non electric pump and appropriate fittings as follows:

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.

5.2.2 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.

5.2.3 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.

Table 4 BPC Compliance

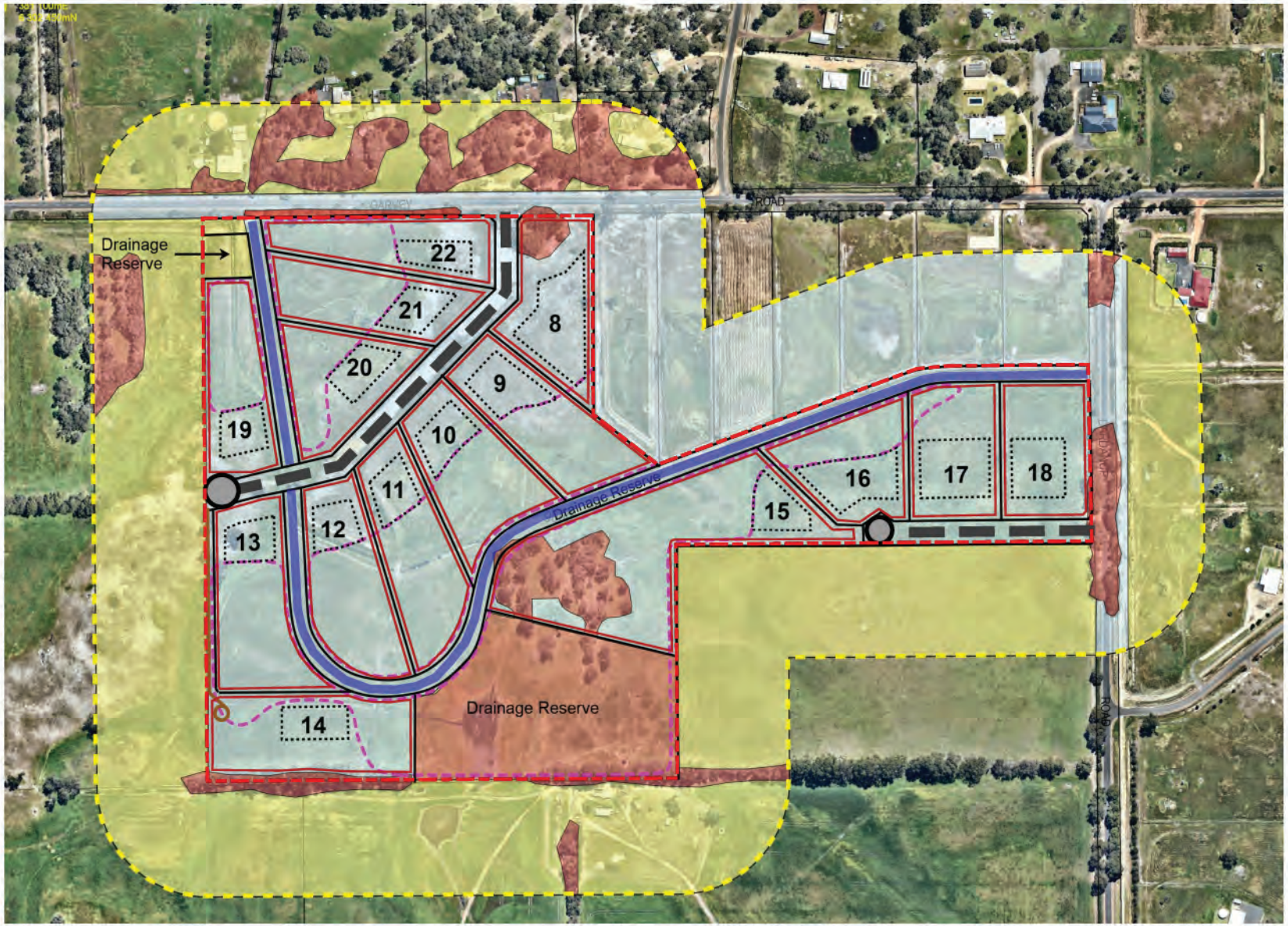
Bushfire Protection Criteria	Ref	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed Bushfire Management Strategies
Element 1: Location	**A1.1**	**Development location**	Yes	The developed land will have either a moderate or low bushfire hazard level with all the building envelopes having a BAL-29 or lower rating. This is because the subject land is cleared pasture (grassland) with other hazard vegetation being located on the adjoining land.
Element 2: Siting and design	**A2.1**	**Asset protection zone (APZ)**	Yes	The lots are all large enough to contain the APZ within their own boundaries. While these are to be the minimum distance required to achieve a BAL-29 rating, it is noted that Council's Fire Prevention Order requires that any fire hazards on properties must be slashed to a height of no more than 50mm and flammable material must be removed.
Element 3: Vehicular access	**A3.1**	**Two access routes**	Yes	Garvey Road and Dardanup West Road provide access in two directions.
	A3.2	**Public road**	N/A	Not Applicable as A3.3 applies
	A3.3	**Cul-de-sac (including a dead-end-road)**		
		Table 6 Column 2		
		• Min 6m trafficable surface	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a 6m trafficable surface.
		• Min 6m horizontal clearance	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a 20m horizontal clearance as there is no tree planting on the verge.
		• Maximum grade <50m of 1:10	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a maximum gradient of 1:33.

Bushfire Protection Criteria	Ref	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed Bushfire Management Strategies
		• Min weight capacity 15 tons	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a minimum weight capacity of 42 tonnes.
		• Min cross fall 1:33	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a minimum crossfall of 1:33
		• 8.5m inner curve radius	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has an inner curve radius of 12m
		Maximum length 200m or 600m with EAW but no more than 8 lots.	Yes Conditional	Road 2 is 200m in length. Road No 1 is 400m in length extending to the western boundary of the site, servicing ten lots. Subdivision approval 151949 was issued in March 2016 without consideration of the Bushfire Protection Criteria. Condition 1 of the subdivision approval specifically provides for the construction of this road. Although Road 1 will not comply with the BPC it is not practical to construct a road through the adjacent land along the alignment shown in the structure plan. This would be approximately 1km in length. Enforcement of this provision would prevent the subdivision from occurring and is a defacto refusal. This is contrary to well established planning law as the application of the subdivision condition cannot prevent or contradict the principal approval.
		Turn around requirements	Yes	The road design as approved by the Shire of Dardanup pursuant to Condition 1 of the subdivision approval (WAPC Ref 151949) has a 17.5m diameter cul-de-sac head.
	A3.4	**Battle-axe**		
		To be avoided in bushfire prone areas unless no alternative	Yes	There is one battle axe being lot 14 which will have a 6m wide access leg being 167m in length. There is no other option for this lot because of the external lot boundary to the south and

Bushfire Protection Criteria	Ref	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed Bushfire Management Strategies
				the position of the proposed 15m wide drainage reserve to the east prevent access from other directions.
		Maximum length 600m	Yes	The battle axe leg is 160m in length as shown on the subdivision plan.
		Minimum width 6m	Yes	The battle axe leg is 6m wide as shown on the subdivision plan.
		Table 6 Column 3		
		• Min 4m trafficable surface	Yes	The battel axe leg will be constructed with a 4m trafficable surface as part of the development approval for a dwelling on Lot 14.
		• Min 6m horizontal clearance	Yes	The battel axe leg will be required to maintain a 6m horizontal clearance as part of the development approval for a dwelling on Lot 14.
		• 4.5m vertical clearance to vegetation	Yes	The battel axe leg will be required to maintain a 4.5m vertical clearance as part of the development approval for a dwelling on Lot 14.
		• Maximum grade <50m of 1:10	Yes	The battle axe leg is located on flat land with a gradient of less than 1:20
		• Min weight capacity 15 tons	Yes	The battel axe leg will be required to maintain a 15 ton min weight capacity as part of the development approval for a dwelling on Lot 14.
		• Min cross fall 1:33	Yes	The battel axe leg will be required to maintain a 4.5m vertical clearance as part of the development approval for a dwelling on Lot 14.
		• 8.5m inner curve radius	Yes	The battel axe leg will be required to maintain a 4.5m vertical clearance as part of the development approval for a dwelling on Lot 14.
	A3.5	**Private driveway longer than 50m.**		The designated building envelopes are setback 20m from the front lot boundary with the exception of: • Lot 14 which is 200m; and

Bushfire Protection Criteria	Ref	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed Bushfire Management Strategies
				• Lot 15 which is 50m. The building envelopes are generally 30m deep and more than 30m wide. Hence a driveway may be more than 50m in length depending upon the location of the dwelling and the cross over.
		Table 6 Column 3		
		• Min 4m trafficable surface	Yes	The driveway will be required to have a 4m trafficable surface as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		• Min 6m horizontal clearance		The driveway will be required to have a 6m horizontal clearance to any vegetation as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		• 6m vertical clearance to vegetation		The driveway will be required to have a 4.5m vertical clearance to any vegetation as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		• Maximum grade <50m of 1:10		The driveways are located on flat land with a gradient of less than 1:20
		• Min weight capacity 15 tons		The driveway will be required to have a minimum weight capacity 15 tons as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		• Min cross fall 1:33		The driveway will be required to have a minimum cross fall of 1:33 as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		• 8.5m inner curve radius	Yes	The driveway will be required to have a minimum inner curve radius of 8.5m as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		Passing bays every 200m	Yes	A passing will be required as part of the development approval for a dwelling on Lot 14

Bushfire Protection Criteria	Ref	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed Bushfire Management Strategies
		Turn around areas	Yes	The driveway will be required to have a truck turn around area with a diameter of 17.5m within the vicinity of the house as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
		Bridge, culverts 15 ton	N/A	Not applicable
		All weather surface	Yes	The driveway will be required to have an all weather surface being either compacted gravel, limestone or sealed as part of the development approval for a dwelling on any lot where the driveway is more than 50m in length.
	A3.6	**Emergency access way (EAW)**	N/A	There is no proposed EAW
	A3.7	**Fire service access routes (FSAR)**	N/A	There is no proposed FSAR
	A3.8	**Firebreaks** Lots greater than 0.5 to have 3m boundary firebreak or as prescribed by local firebreak notice	Yes	All lots are greater than 0.5ha in area and will have a 3m boundary firebreak and comply with the Shire's Fire prevention Order.
Element 4: Water	**A4.1**	**Reticulated areas**	N/A	Not applicable
	A4.2	**Non-reticulated areas**		
		Min 50,000L tank per 25 lots		A 50,000L water tank has been provided at the West Dardanup bushfire station which is 450m from the site.
		Located no more than 2kms to furthest house site		Lot 15 is the furthest lot from the tank being 1.8kms by road from the West Dardanup bushfire station.
		Hardstand turnaround within 3m	Yes	The water tank has an adjacent hardstand area.
		Vested to local government	Yes	The tank is located on a crown reserve
	A4.3	**A4.3 Individual lots within non-reticulated areas.** 10,000L tank.	N/A	See Section 5.2.1 which recommends that each dwelling have a 10,000L water supply as an additional management strategy.



LEGEND

- SUBJECT LAND
- 100m BUFFER
- SUBDIVISION ROAD
- 17.5m TURNING CIRCLE
- INDICATIVE BUILDING ENVELOPES
- BUILDING EXCLUSION AREA
- HAZARD VEGETATION
  - FOREST/WOODLAND
  - GRASSLAND
- LOW THREAT VEGETATION ASSET PROTECTION ZONE
- 3m BOUNDARY FIREBREAK
- 6m BATTLE AXE LEG DRIVEWAY AND TURNNING CIRCLE
- DISTRICT DRAINAGE

REFER TO SHEET 2 FOR REQUIREMENTS

FIGURE 10
SPATIAL MEASURES
(SHEET 1 OF 2)

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

N

Ref No 18-075

Rev	Description	Date
A	Preliminary	12/11/2018
B	Building Ex	12/03/2019

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REQUIREMENTS

Asset Protection Zone (APZ)
Vegetation in the APZ is to comply with Schedule 1 Element 2 of the Guidelines as follows:

- 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 $5m^2$ 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.

Water Supply
Each dwelling is to provide a 10,000L static water supply tank 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.

REQUIREMENTS

Driveways Longer than 50m
The driveway access is to be suitable for a fire truck with a minimal 4m trafficable surface. A turn around will be provided near the dwelling and a hardstand areas to provide access to the water tank. Any access gate installed along the driveway, shall have a minimum width of 3.6m.

Battle Axe Leg
The battle leg is to be minimum with of 6m and constructed as a driveway.

2018/2019 Fire Prevention Order
Install protection measures by he 30 November and maintained until the 26 April.

Firebreaks
A 3.0m wide mineral earth firebreak is to be provided around the property boundaries.

AS3959 Construction Standards
The proposed dwellings are to be sited so as to have a maximum BAL-29 rating.

Maintenance
Installation and upkeep of the asset protection zone, firebreaks, water supply and the driveway are the responsibly of the landowner. The measures listed above shall be implemented prior to the occupation of the dwelling and shall continue to be maintained in perpetuity.

FIGURE 10
SPATIAL MEASURES
(SHEET 2 OF 2)

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

N

Ref No 18-075

Rev	Description	Date
A	Preliminary	17/12/2018

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6.0 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The management of the risk posed by bushfires is a shared responsibility between landowners, government and industry. These responsibilities are summarised in Table 5.

Table 5 Implementation

No	MANAGEMENT ACTION	TIMING
1.0 Developer Prior to Issue of Titles		
1.1	Construction of the subdivision road and turning circle for Road 1.	Subdivision
1.2	Preparing a notification be included on the certificate of titles advising that the land is subject to a Bushfire Management Plan.	Subdivision
1.3	Construction of the 6m wide battle axe leg to Lot 14.	Subdivision
2.0 Developer Prior to Sale of Lots		
2.1	Providing prospective residents with a summary of this BMP	Subdivision
3.0 Landowner Prior to Occupancy		
3.1	Siting dwellings so as to have a maximum BAL-29 rating.	Development
3.2	Undertaking a BAL assessment for a building permit for a dwelling to confirm that sufficient land has been cleared to provide for BAL-29 setbacks.	Development
3.3	Maintaining the vegetation within the BAL setback as an asset protection zone / low threat vegetation/low fuel zone as defined in Clause 2.2.3.2 of AS3959.	Ongoing
3.4	That any new dwelling is to provide an asset protection zone of sufficient width to achieve a BAL-29 rating.	Development
3.5	Where a driveway is more than 50m in length it shall be designed and constructed as follows: a) Minimum 4m trafficable surface; b) Minimum 6m horizontal clearance to any vegetation; c) Minimum 4.5m vertical clearance to vegetation; d) Maximum grade <50m of 1:10; e) Minimum weight capacity 15 tons; f) Minimum cross fall 1:33; g) Have a 17.5m diameter turning circle in proximity to the dwelling; and h) Any access gates shall be a minimum width of 3.6m.	Development
3.6	Providing a 20m passing bay for the driveway to Lot 14.	Development
3.7	Providing a 10,000L static water supply tank 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.	Development

4.0 Landowner Ongoing		
4.1	Providing and maintaining a 3m wide boundary firebreak.	Ongoing
4.2	Undertaking regular maintenance of their property in preparation for the annual fire season.	Ongoing
4.3	Ensuring that all fire mitigation measures shall be completed by the date prescribed in Council's Fire Prevention Order.	Ongoing
5.0 Local Government		
5.1	Ensuring compliance with building and land use planning provisions.	Ongoing
5.2	Maintenance of the static water supply for firefighting.	Ongoing
5.3	Ensuring compliance with its annual Fire Prevention Order.	Ongoing