BUSHFIRE HAZARD REPORT

For JULIE RICHARDS and
LADO PROPERTY HOLDINGS PTY LTD

52 Richardsons Road, Sandford

August 2020

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1 Introduction

JMG have been engaged by Julie Richards and Lado Property Holdings Pty Ltd to prepare a bushfire hazard assessment for a planning scheme amendment and subsequent subdivision. The subject site is CT 158742/9, PID 3012680. The address of the property is 52 Richardsons Road, Sandford. The author, Adam Smee, is a qualified town planner and is an Accredited Person under Part 4A of the *Fire Service Act 1979*.

The proposed development involves the subdivision of land located within a bushfire-prone area necessitating an assessment against the Bushfire-Prone Areas Code of the *Clarence Interim Planning Scheme 2015*.

This report considers:

- Whether the site is within a bushfire-prone area;
- The characteristics of the site and surrounding land;
- The proposed use and development that may be threatened by bushfire hazard;
- The applicable Bushfire Attack Level (BAL) rating;
- Appropriate bushfire hazard mitigation measures; and
- Compliance with planning requirements pertaining to bushfire hazard.

2 Site Description

The proposed development site is a large parcel of land at the northern edge of the Sandford locality and immediately to the south of the Lauderdale residential area which extends toward Mays Point. The property has an area of approximately 73 ha and incorporates the remnant native forest on the western face of Richardsons Hill, a large area of cleared land to the south, as well as some low-lying land within its western part. Parts of the property have previously been used for sand mining but have since been rehabilitated. The property also includes a smaller cleared area at the crest of Richardsons Hill in the eastern part of the site (please refer to Figure 1).

As noted above, the land to the north of the site is residential land. The land to the east, between the site and the coast, is low density residential land that has been mostly cleared of native vegetation, although there is a band of remnant vegetation above the northern section of Mays Beach. The land to the south and south-east is rural residential land that has also been mostly cleared. There are several windbreaks along property boundaries on this land.

There are smaller, rural living style lots to the south-west of the site which include remnant and introduced vegetation such as pine trees for example. The south-western part of the property envelopes a substantial parcel of land that contains a large antenna array that is owned by the Broadcast Australia. This land almost entirely cleared but includes some remnant trees within its northern part. There is a large saltmarsh to the west and north-west of the site that drains to Ralphs Bay, which is to the south-west of the site, on the opposite side of South Arm Road.

Planning Context

The relevant planning instrument for the assessment of use and development on the site is the *Clarence Interim Planning Scheme 2015* (the Planning Scheme). The vegetated parts of the site are within the Planning Scheme's Environmental Living Zone while the cleared areas are within the Rural Resource Zone. The entire site is subject to the Planning Scheme's Bushfire-Prone Areas overlay. The vegetated part of the site is within the Biodiversity Protection Area overlay.



Figure 1: Aerial view of site (shaded in blue) and surrounding land (source LISTmap, accessed 28 May 2020).

Natural Values

The vegetation upon the site is listed in the TASVEG 3.0 database as predominantly either Eucalyptus amygdalina coastal forest and woodland or Agricultural, urban and exotic vegetation. There is also an area within the western part of the property that is mapped as Coastal grass and herbfield. None of these communities are identified as threatened, however, the Natural Values Assessment[1] (NVA) provided for the proposal identifies a number of communities on the site which are. The NVA identifies Eucalyptus viminalis coastal forest at the eastern and western edges of the forested area on the site. This assessment also identifies Lacustrine herbland and Freshwater aquatic sedgeland and rushland within the low-lying land at the western edge of the property (see page 4 of the NVA). Therefore, care has been taken to minimise impact upon these communities, including impact as a result of proposed bushfire hazard management requirements.

Heritage Values

The site is not listed on the Tasmania Heritage Register nor in the Historic Heritage Code of the Planning Scheme. An Aboriginal Heritage assessment[2] has been provided which confirms that there are no aboriginal heritage sites upon the property.

3 Proposed Use & Development

The proposal is for the property to be rezoned to allow for a residential subdivision to occur, generally within the cleared, non-vegetated parts of the property. Almost all of the forested parts of the property would be given over as public open space (POS) and zoned appropriately. The bulk of the proposed residential lots would be within the cleared area to the south of the proposed POS. However, a band or residential lots is also proposed between the property boundaries and a proposed road that would run along the northern and eastern edges of the POS. The proposed road would connect with the existing terminus of Bayview Road to the north of the site and Richardsons Road to the south. Several Rural Living lots are proposed to the south and west of the residential lots.

[1] Natural Values Assessment, North Barker Ecosystem Services, 24 May 2020.
[2] Aboriginal Heritage Assessment Report, CHMA, 2020.

The proposed residential lots would generally vary in size between 500m^2 and 900m^2 although a number of larger residential lots are proposed. The Rural Living lots proposed would generally vary in size between 2ha and 3.3ha although a larger balance lot of approximately 8.2ha is also proposed. Reticulated services, including a reticulated water supply, would be made available to the proposed lots via extensions to existing infrastructure. A concept subdivision plan is provided in Appendix A.

4 Bushfire Hazard Assessment

The subject site is located within the Planning Scheme's Bushfire-Prone Areas overlay. The proposed subdivision is also within 100m of over 1 ha of contiguous unmanaged vegetation. Therefore, the site is within a 'bushfire prone area' as defined in the Planning Scheme.

The key factors affecting bushfire behaviour are fuel, weather conditions and topography. This section of the report considers these factors in the context of the Australian Standard *AS3959-2018 - Construction of buildings in bushfire-prone areas*, which is required in order to determine compliance with planning and building requirements for bushfire protection.

4.1 Vegetation & Effective Slope

AS 3959-2018 provides categories for classifying vegetation based on structural characteristics. 'Effective Slope' refers to the slope of land underneath bushfire-prone vegetation relative to the subject site. Effective Slope affects a fire's rate of spread and flame length and is accordingly a critical aspect affecting bushfire behaviour. AS3959-2018 refers to five categories of Effective Slope and these have been used for the purpose of this analysis. **Error! Reference source not found.** shows an analysis of the land within 100m of the site. Site visits were conducted upon 26 February 2020 and 28 May 2020.

Given the area of the land proposed for development within different parts of the property, the proposed lots have been divided into groups for the purposes of the following assessment. The lot groupings used in the assessment are detailed in Figure 3.

Northern Residential Lots: 1 to 17

The vegetation upon the residential land to the north of the above lots is limited to maintained gardens and lawns surrounding dwellings and other maintained areas such as nature strips. Therefore, this vegetation is classified as low threat in accordance with clause 2.2.3.2(f) of AS 3959-2018. The land to the north of the lots also includes non-vegetated areas such as roads and driveways which are also classified as low threat areas under clause 2.2.3.2(e). There is a band of remnant coastal vegetation further to the north of the residential land. This vegetation is classified as low threat in accordance with clause 2.2.3.2(a) of AS3959:2018 it is greater than 100m from the site.

There is an isolated area of remnant native vegetation to the north-east of the north-eastern corner of the site. This vegetation has an area of over 1ha and would be less than 100m from the lots within the eastern part of the above grouping (i.e. lots 14 to 17). The canopy of the vegetation is relatively open, and it has a foliage cover between 10% and 30%. The few large trees within this area are between 10m and 30m high. Therefore, the vegetation within this area is classified as Class B Woodland. This vegetation would be downslope of lots 16 and 17 with an effective slope between 5° and 10°. The vegetation would be at a similar level as lots 14 and 15. The existing residential area generally to the north of the site would separate lots 14 to 16 from this vegetation.

There is a similar isolated area of Class B Woodland to the east of the above lots. However, the lots would be separated from this area by cleared land surrounding the dwelling at 50 Bayside Drive. This cleared land is classified as Class G Grassland and the above Class B Woodland would be greater than 100m from the northern group of lots. Therefore, the vegetation to the east of

these lots is classified as Class G Grassland. This vegetation would be downslope of the lots with an effective slope between 5° and 10°. Other proposed lots would separate the northern proposed lots from this vegetation.

The area of native vegetation to the south of the above group of lots, which would be retained within the proposed POS lot, is also relatively open. Therefore, this vegetation is also classified as Class B Woodland. The vegetation within 100m of the northern grouping of lots to the south would be upslope.

The vegetation to the west of the proposed northern lots has a higher foliage cover than that to the south and the trees it contains are generally taller. Therefore, the vegetation to the west of these lots is classified as Class A Forest. This vegetation would be downslope of the lots with an effective slope between 5° and 10°.

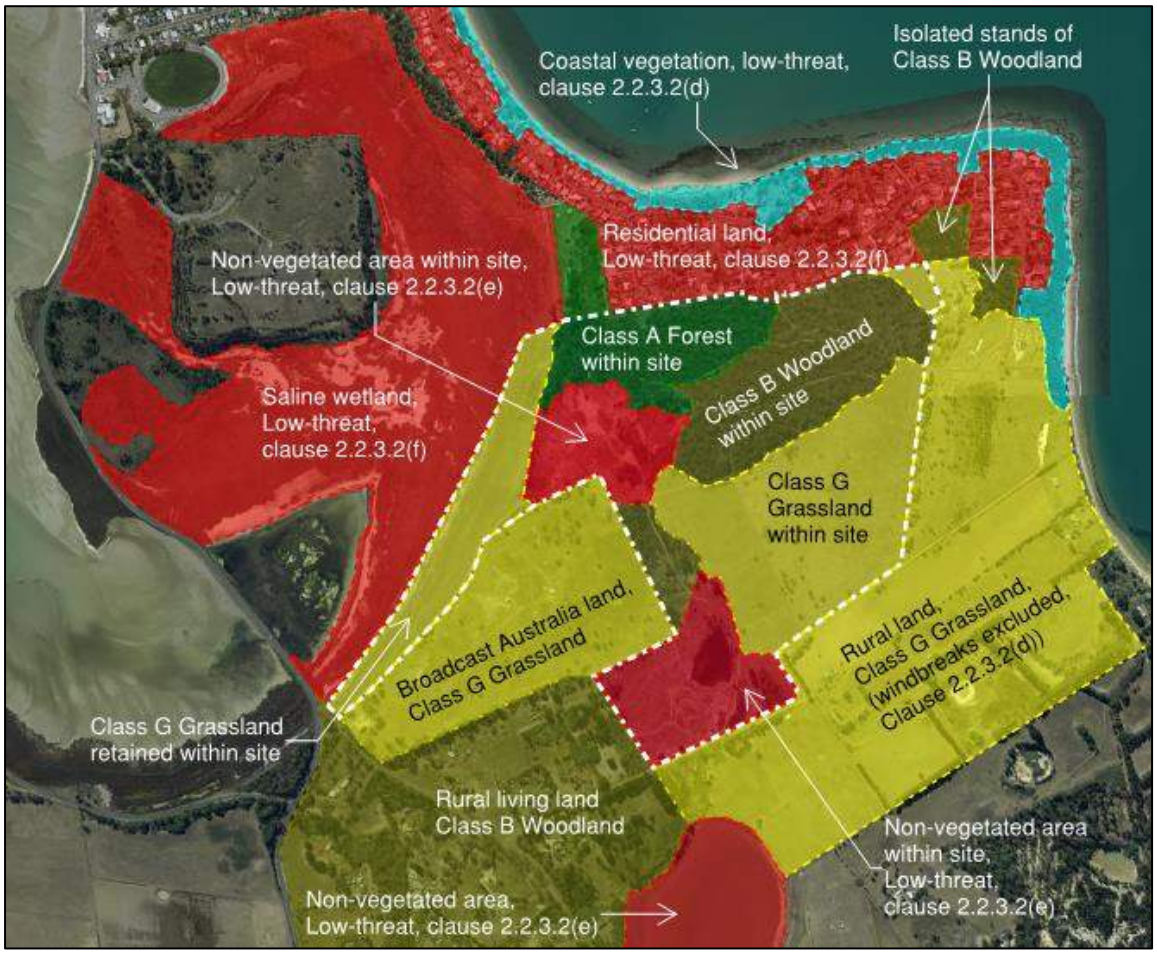


Figure 2: Site Analysis

Eastern Residential Lots: 18 to 34

The lots within the northern part of the above group (Lots 18 to 22) would be within 100m of the isolated area of Class B Woodland to the north-east of the north-eastern corner of the site. All lots except lot 18 would be separated from the woodland by other proposed lots and the area of Class G Grassland surrounding the dwelling on the property at 50 Bayside Drive. Lots 18 to 22 would also be within 100m of the woodland to the east, however, the grassland would also be between these lots and this vegetation.

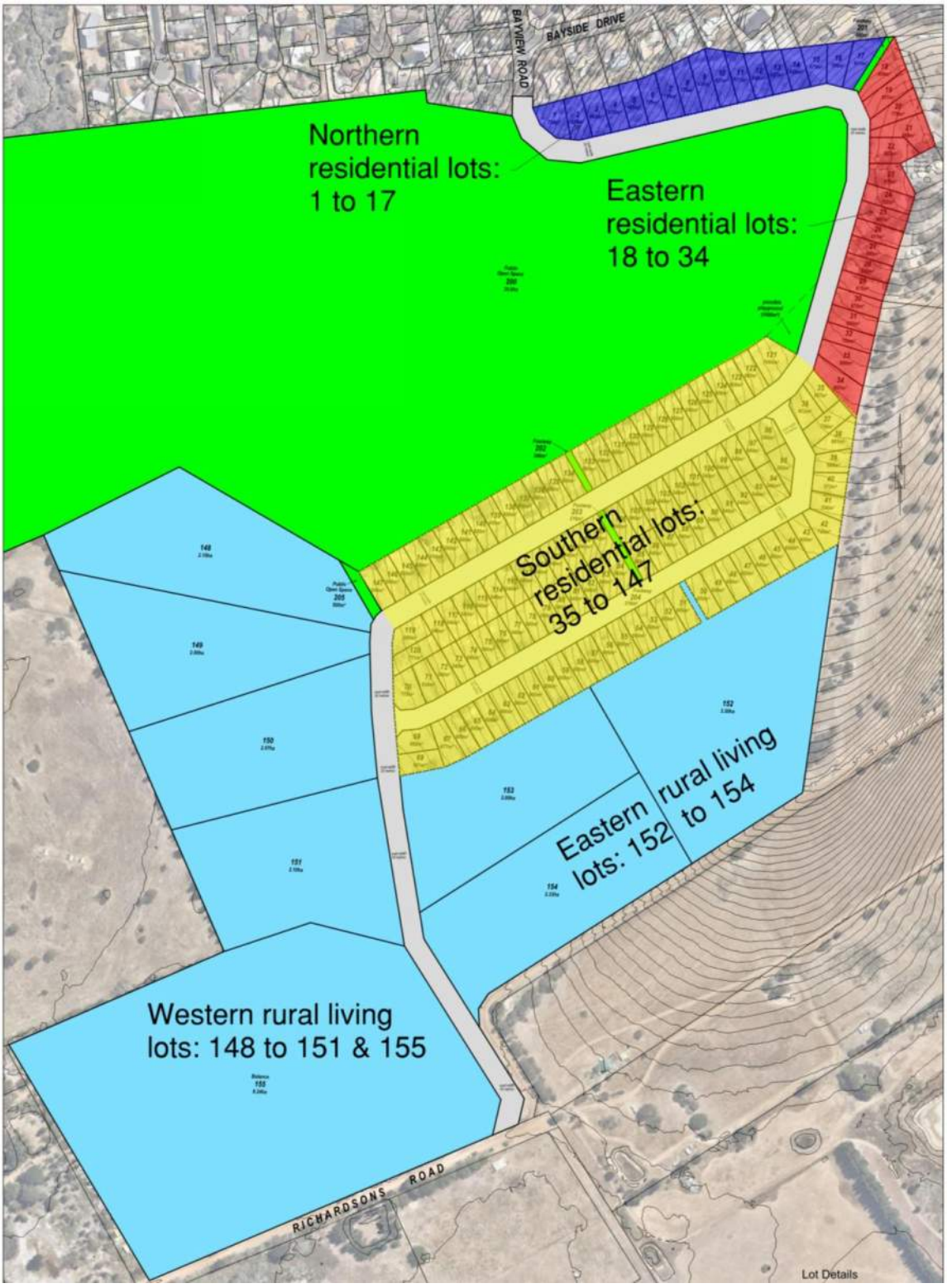


Figure 3: Lot groupings for assessment of vegetation and effective slope.

Eastern Residential Lots: 18 to 34 (continued)

The lots within the southern part of the grouping would be greater than 100m from the Woodland vegetation to the east and north-east. All of the vegetation to the east within 100m of these lots is therefore classified as Class G Grassland. While there are windbreaks and other standing vegetation upon this land, the total average foliage cover is less than 10%. The vegetation to the east of the above lots is therefore consistent with the low open woodland vegetation type, which is within the Class G Grassland classification. The Class G Grassland to the east of the eastern lots is downslope with an effective slope between 5° and 10°.

The proposed eastern lots would be separated from the bushfire prone vegetation to the south by other proposed residential lots. The Class B Woodland that would be retained within the proposed POS would be to the west of the eastern residential lots, and downslope with an effective slope of between 5° and 10°.

Southern Residential Lots: 35 to 147

The Class B Woodland within the proposed POS would be to the north of the proposed southern residential lots. The woodland would also be to the west of the lots within the northern half of this group of lots. This vegetation would be upslope of the lots when to the north and downslope to the west with an effective slope between 5° and 10°. The lots within the southern half of this group would be separated from the area of Class B Woodland within the subject property to the west, by the Class G Grassland that would be retained within the western rural living lots. This grassland vegetation would be downslope of the lots within the southern half of the southern group of lots, with an effective slope between 0° and 5°.

The southern group of lots would be to the north of the Class G Grassland that would be retained within the eastern rural living lots. This vegetation would be downslope of the lots with an effective slope between 0° and 5°.

The easternmost lots within the northern half of the southern group would be above the level of the Class G Grassland to the east of the site. As noted above, this vegetation is downslope with an effective slope between 5° and 10°. The lots within the southern half of the southern group would be level with or below the level of the Class G Grassland to the east that would be retained within the eastern rural living lots.

Eastern Rural Living Lots: 152 to 154

The lots within this group would be separated from the Class B Woodland to the north by the proposed residential lots. The easternmost lot within this group, lot 152, would be above the level of the Class G Grassland to the east. The remaining lots within the group would be downslope of this vegetation. All of the lots within this group would be above the level of the Class G Grassland upon the rural land to the south. The effective slope in this direction is between 0° and 5° for lots 153 and 154 and between 5° and 10° for lot 152. The lots within this group would be separated from the area of Class B Woodland within the subject property to the west, by the Class G Grassland that would be retained within the western rural living lots. This vegetation would be downslope of the lots with an effective slope between 0° and 5°.

Western Rural Living Lots: 148 to 151 and 155

Lots 149 to 151 within this group would contain an area of Class B Woodland. This vegetation would be within the western parts of the lots. Building areas would be established within the eastern parts of each lot to ensure adequate separation from this vegetation and to allow for its retention. Lot 155 would have Class B Woodland within the rural living land to the south-west and Class G Grassland within the Broadcast Australia land to the north-west. This lot is at a similar level or even slightly below the level of this adjacent land. Lots 151 and 155 would be to the west of the Class G Grassland retained within the eastern rural living lots. These lots would be below the level of this vegetation. The remaining lots within this group would be to the west of the proposed southern residential lots and therefore separated from bushfire prone vegetation to the east. With the exception of lot 148, all of the lots within the western rural living lot group would be separated from the Class B Woodland to the north by other lots within the group. A

building area would be created within lot 148 to ensure adequate separation from this vegetation, which is either above or level the land within this lot.

4.2 Required Separation

This section sets out the required separation distances from bushfire-prone vegetation to achieve the required BAL.

Table 1 - Required Minimum Separation - *Northern Residential Lots: 1 to 17*

Direction from site:	North	North-East	East	South	West
Vegetation Type:	Low-threat	Class B Woodland	Class G Grassland	Class B Woodland	Class A Forest
Relationship to site:	Downslope			Upslope	Downslope
Effective Slope	N/A	>5° to 10°	>5° to 10°	N/A	>5° to 10°
Minimum Separation Distance:	>100m	Lot 17: 23m Lots 1 to 16: >32m	>22m	22m*	Lot 1: 34m* Lots 2 to 17: >46m*
Assessed BAL:	BAL-LOW	Lot 17: BAL19 Lots 1 to 16: BAL12.5	BAL12.5	BAL12.5	Lot 1: BAL19 Lots 2 to 17: BAL12.5
Proposed BAL:	**Lots 1 and 17: BAL19** **Lots 2 to 16: BAL12.5**				
Separation Distance required:	Establish and maintain HMA to property boundary				

Notes: *including proposed subdivision road.

Table 2 - Required Minimum Separation - *Eastern Residential Lots: 18 to 34*

Direction from site:	North	North-East	East	South	West
Vegetation Type:	Low-threat	Class B Woodland	Class G Grassland	Low-threat	Class B Woodland
Relationship to site:	Lots 18 to 22: Downslope Lots 23 to 34: Upslope	Downslope			
Effective Slope	N/A	>5° to 10°	>5° to 10°	N/A	>5° to 10°
Minimum Separation Distance:	>100m	Lot 18: 23m Lots 19 to 34: >32m	13m	>100m	23m*
Assessed BAL:	BAL-LOW	Lot 18: BAL19 Lots 19 to 34: BAL12.5	BAL19	BAL-LOW	BAL19
Proposed BAL:	**BAL19**				
Separation Distance required:	Establish and maintain HMA to property boundary				

Notes: *including proposed subdivision road.

Table 3 - Required Minimum Separation - *Southern Residential Lots: 35 to 147*

Direction from site:	North	East	South	West
Vegetation Type:	Class B Woodland	Class G Grassland	Class G Grassland	Lots 35 to 47, 84 to 111, & 121 to 147: Class B Woodland
				Lots 48 to 83 & 112 to 120: Class G Grassland
Relationship to site:	Upslope	Lots 35 to 43: Downslope All other lots: Upslope	Downslope	Downslope
Effective Slope	N/A	Lots 35 to 43: >5° to 10° All other lots: N/A	0°to 5°	Lots 35 to 47, 84 to 111, & 121 to 147: >5° to 10°
				Lots 48 to 83 & 112 to 120: 0°to 5°
Minimum Separation Distance:	Lots 121 to 147: 15m All other lots: >22m	Lot 35 & lots 37 to 43: 13m All other lots: >19m	Lots 42 to 67 & lot 69: 11m All other lots: >16m	Lots 121 to 147: 23m^ Lots 35 to 47 & 84 to 111: >32m
				Lots 48 to 83 & 112 to 120: >16m*
Assessed BAL:	Lots 121 to 147: BAL19 All other lots: BAL12.5	Lot 35 & lots 37 to 43: BAL19 All other lots: BAL12.5	Lots 42 to 67 & lot 69: BAL19 All other lots: BAL12.5	Lots 121 to 147: BAL19 All other lots: BAL12.5
Proposed BAL:	**Lots 35, lots 37 to 67, lot 69, & lots 121 to 147: BAL19** **All other lots: BAL12.5**			
Separation Distance required:	Establish and maintain HMA to property boundary			

Notes: *including proposed subdivision road, ^including 5m wide fire trail.

Table 4 - Required Minimum Separation – *Eastern Rural Living Lots: 152 to 154*

Direction from site:	North	East	South	West
Vegetation Type:	Low-threat	Class G Grassland		
Relationship to site:	Upslope	Lot 152: Downslope Lots 153 & 154: Upslope	Downslope	
Effective Slope	N/A	Lot 152: >5° to 10° Lots 153 & 154: N/A	Lot 152: >5° to 10° Lots 153 & 154: 0°to 5°	0°to 5°
Separation Distance:	14m	Lot 152: 19m Lots 153 & 154: 14m	Lot 152: 19m Lots 153 & 154: 16m	16m
Assessed BAL:	BAL12.5	BAL12.5	BAL12.5	BAL12.5
Proposed BAL:	**BAL12.5**			
Separation Distance required:	14m	Lot 152: 19m Lots 153 & 154: 14m	Lot 152: 19m Lots 153 & 154: 16m	16m

Table 5 - Required Minimum Separation - *Western Rural Living Lots: 148 to 151*

Direction from site:	North	East	South	West
Vegetation Type:	Lot 148: Class B Woodland All other lots: Class G Grassland	Lot 151: Class G Grassland All other lots: Low-threat	Class G Grassland	Class B Woodland
Relationship to site:	Upslope		Downslope	
Effective Slope	0°	0°	0°to 5°	0°to 5°
Separation Distance:	Lot 148: 22m All other lots: 14m	Lot 151: 20m* All other lots: >100m	All lots: >16m	All lots: 26m
Assessed BAL:	BAL12.5	Lot 151: BAL12.5 All other lots: BAL-LOW	BAL12.5	BAL12.5
Proposed BAL:	**BAL12.5**			
Separation Distance required:	Lot 148: 22m All other lots: 14m	Lot 148: 22m^ All other lots: 14m	16m	26m

Notes: *including proposed subdivision road, ^given the bushfire prone vegetation to the north.

Table 6 - Required Minimum Separation – *Western Rural Living Lots: Lot 155*

Direction from site:	North-East	South-East	South-West	North-West
Vegetation Type:	Class G Grassland		Class B Woodland	Class G Grassland
Relationship to site:	Upslope	Level	Upslope	
Effective Slope	N/A	N/A	N/A	N/A
Separation Distance:	14m	14m	22m	14m
Assessed BAL:	BAL12.5	BAL12.5	BAL12.5	BAL12.5
Proposed BAL:	**BAL12.5**			
Separation Distance required:	14m	14m	22m	14m

5 Bushfire Protection Measures

During a bushfire event, a number of bushfire attack mechanisms may threaten buildings and occupants, including:

- Radiant heat;
- Direct flame contact;
- Ember attack; and
- Wind.

A range of bushfire protection measures are recommended to improve the resilience of the proposed development and achieve a tolerable level of residual risk for occupants. The protection measures outlined in this section have been consolidated in a Bushfire Hazard Management Plan (BHMP - see Appendix B).

Additional measures to reduce improve resilience are also recommended but are at the discretion of the developer and future developers within the subdivision.

5.1 Hazard Management Areas

The Hazard Management Area ('HMA') refers to land that is managed in a minimum fuel condition so as to reduce the potential exposure of habitable buildings and occupants to radiant heat and flames and to provide defendable space. The effectiveness of the hazard management areas is reliant on ongoing maintenance by landowners.

The minimum extents of the Hazard Management Area are demonstrated on the BHMP. All proposed lots must be maintained as a HMA. Management prescriptions are provided in Table 2.

Table 2 – Hazard Management Area Prescriptions

Within 10m of habitable buildings	• No storage of flammable materials (e.g. firewood); • Avoid locating flammable garden materials near vulnerable building elements such as glazed windows/doors, decks and eaves (e.g. non-fire-retardant plants and combustible mulches); • Non-flammable features such as paths, driveways and paved areas are encouraged around habitable buildings.
Trees within HMA	• Maintain canopy separation of approximately 2.0m; • Ensure no branches overhang habitable buildings; • Remove tree branches within 2.0m of ground level below; • Locate any new tree plantings 1.5 x their mature height from house; • Avoid planting trees with loose, stringy or ribbon bark.
Understory vegetation within HMA	• Maintain grass cover at <100mm; • Maintain shrubs to <2.0m height; • Shrubs to be maintained in clumps so as to not form contiguous vegetation (i.e. clumps up to 10sqm in area, separated from each other by at least 10m); • Avoid locating shrubs directly underneath trees; • Periodically remove dead leaves, bark and branches from underneath trees and around habitable buildings.

5.2 Construction Standards

Future habitable buildings located within the specified building areas and provided with the requisite hazard management areas are to be designed and constructed to a minimum of BAL19 standard under AS3959-2018. The minimum setbacks from bushfire-prone vegetation are demonstrated on the BHMP. It is noted that the BAL for non-exposed facades of future development may be reduced to BAL12.5 if in accordance with clause 3.5 of AS3959-2018. A lower BAL overall rating may be possible for future development subject to a separate assessment and certification of a specific building design.

5.3 Optional Protection Measures

The following recommendations are not specifically regulated under any planning or building standards at present hence do not form part of the Bushfire Hazard Management Plan. If implemented however, they will improve bushfire protection for future occupants.

Electrical Infrastructure

Overhead power lines are a common source of unplanned fires, particularly during high wind conditions. Where practicable, electricity connections to properties should be provided underground to remove this potential fire source.

Building Design

Building configuration can be used to improve building resilience. It is recommended that future developers of buildings within the subdivision consider adopting the following design features:

- Simple roof shapes with roof pitch at 18° or greater, to reduce the potential for ember accumulation. This measure ought to be combined with non-combustible gutter guards to prevent accumulation within guttering;
- Simple building shapes are preferable, as they reduce opportunity for embers and debris to be trapped against the building within re-entrant corners;
- Keep walls as low as possible. Large expansive walls present greater surface area to wind turbulence and to radiant heat;
- Slab-on-ground construction is generally more resilient than suspended slab construction.

6 Planning Requirements

6.1 Clarence Interim Planning Scheme 2015

As noted earlier in the report, the site is within a bushfire-prone area. The proposed subdivision must therefore comply with the relevant provisions within the Planning Scheme's Bushfire-Prone Areas Code is addressed in Table 4.

E1.6.1.1 Subdivision: Provision of hazard management areas

The attached preliminary BHMPs provides building areas and associated hazard management areas for each lot adequate to accommodate BAL-19 or BAL12.5 rated development. The proposal therefore complies with A1 (b).

***E1.6.1.2** Subdivision: Public access*

The BHMPs shows the layout of the access that will facilitate firefighter access to fire hydrants and buildings. The proposed road complies with Table E2 of the Bushfire-Prone Areas Code. The BHMP is therefore compliant with A1(b).

***E1.6.1.3** Subdivision: Provision of water supply for fire fighting purposes*

Fire hydrants will be provided within 120 m of all parts of the building areas upon the lots, consistent with the minimum requirements. The proposal is therefore compliant with A1(b).

7 Conclusion & Recommendations

The proposed subdivision site is located in a bushfire-prone area. The attached Bushfire Hazard Management Plan prepared for the subdivision outlines the required protection measures for the proposed lots including hazard management areas, building siting and construction, access, and water supply standards. Protection measures will reduce bushfire risk to future residents, developments and to firefighters, as outlined in this report and the associated bushfire hazard management plan. The Bushfire Hazard Management Plan is certified as compliant with the Bushfire-Prone Areas Code.

Future developers of all proposed lots may rely on this report in support of their building permit applications to demonstrate compliance with the prevailing Building Regulations, insofar as they relate to bushfire protection.

APPENDIX A

Subdivision Plan

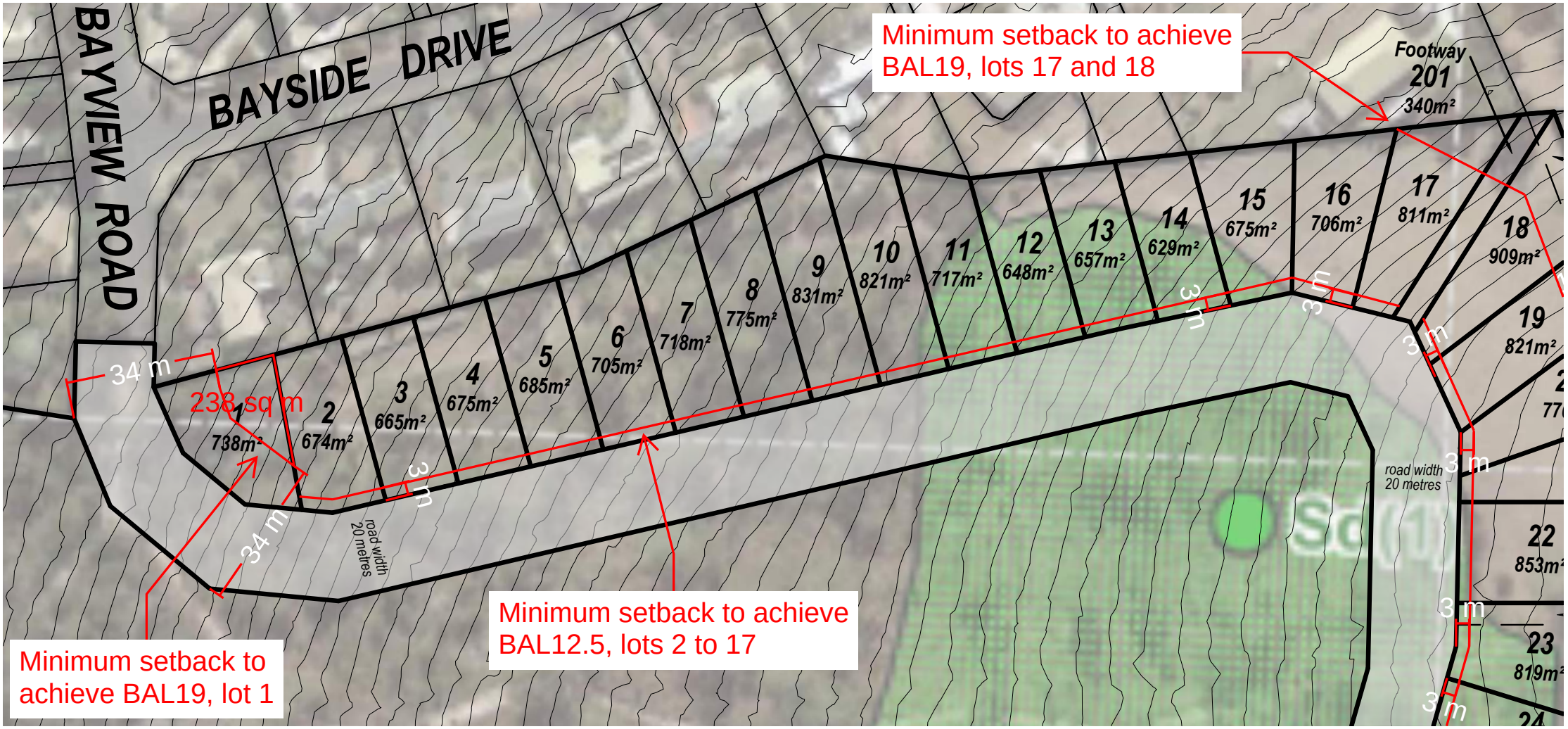
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APPENDIX B

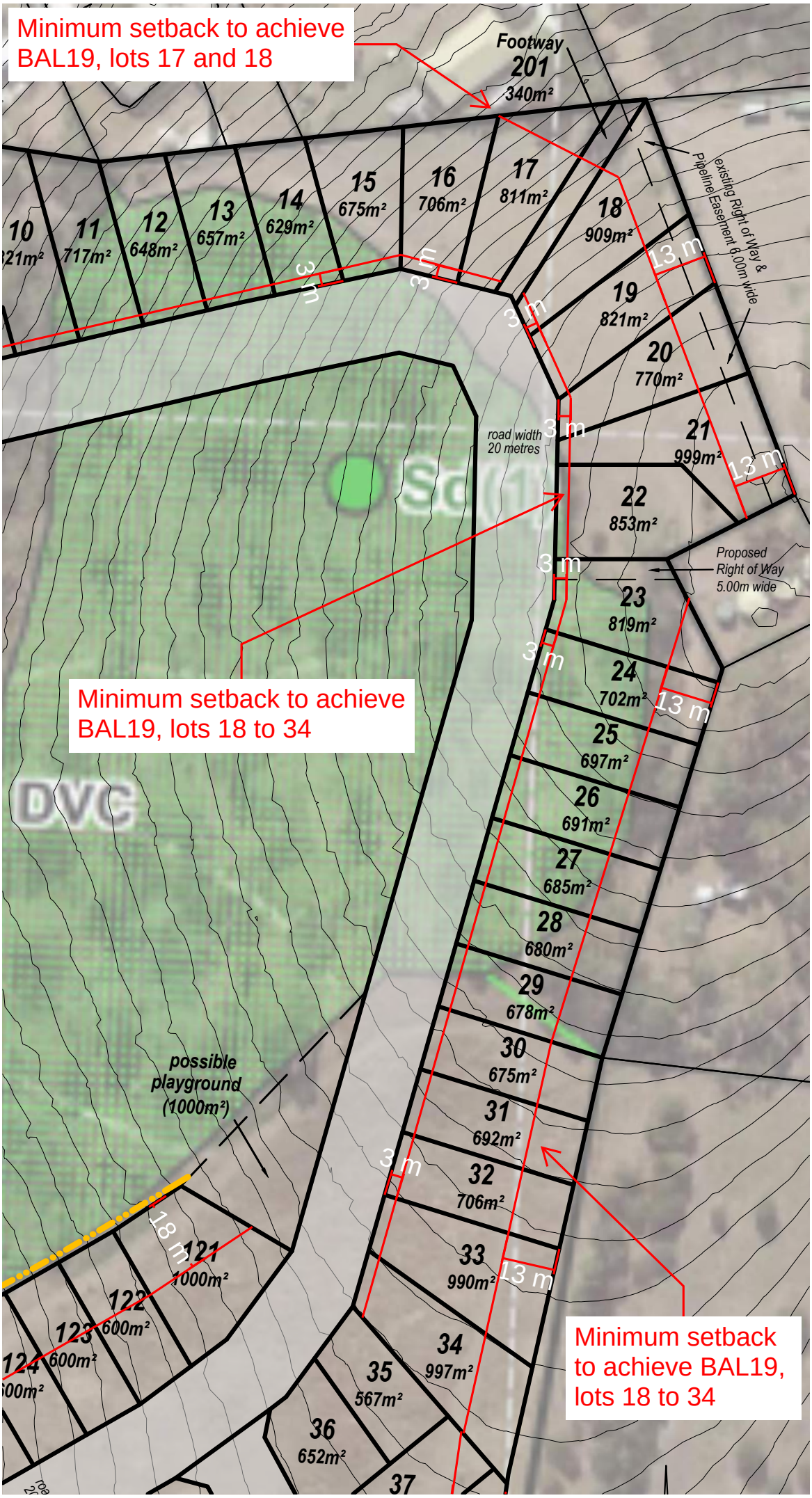
Preliminary Bushfire Hazard Management Plans

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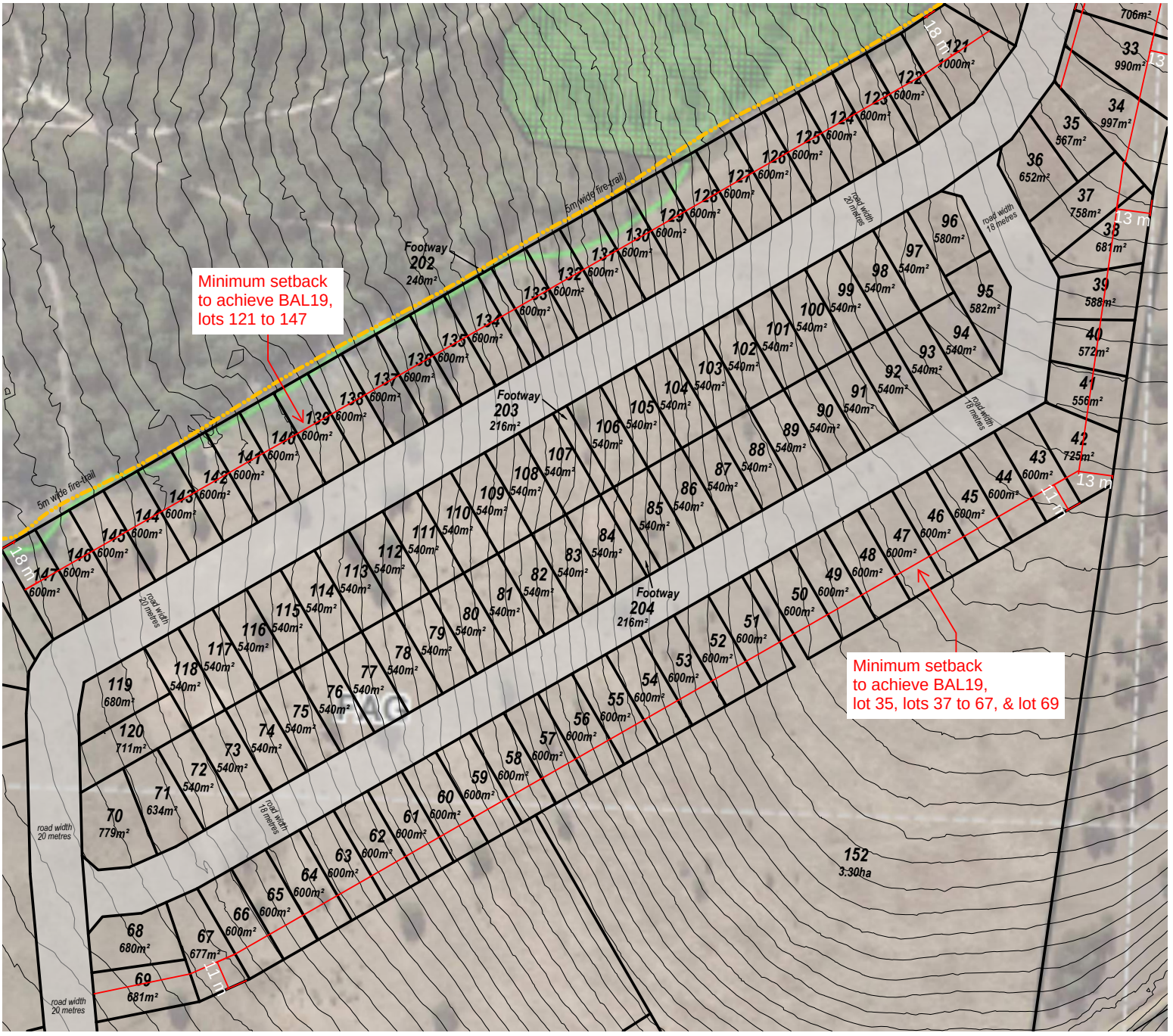
Preliminary BHMP 1: Northern Residential Lots: 1 to 17



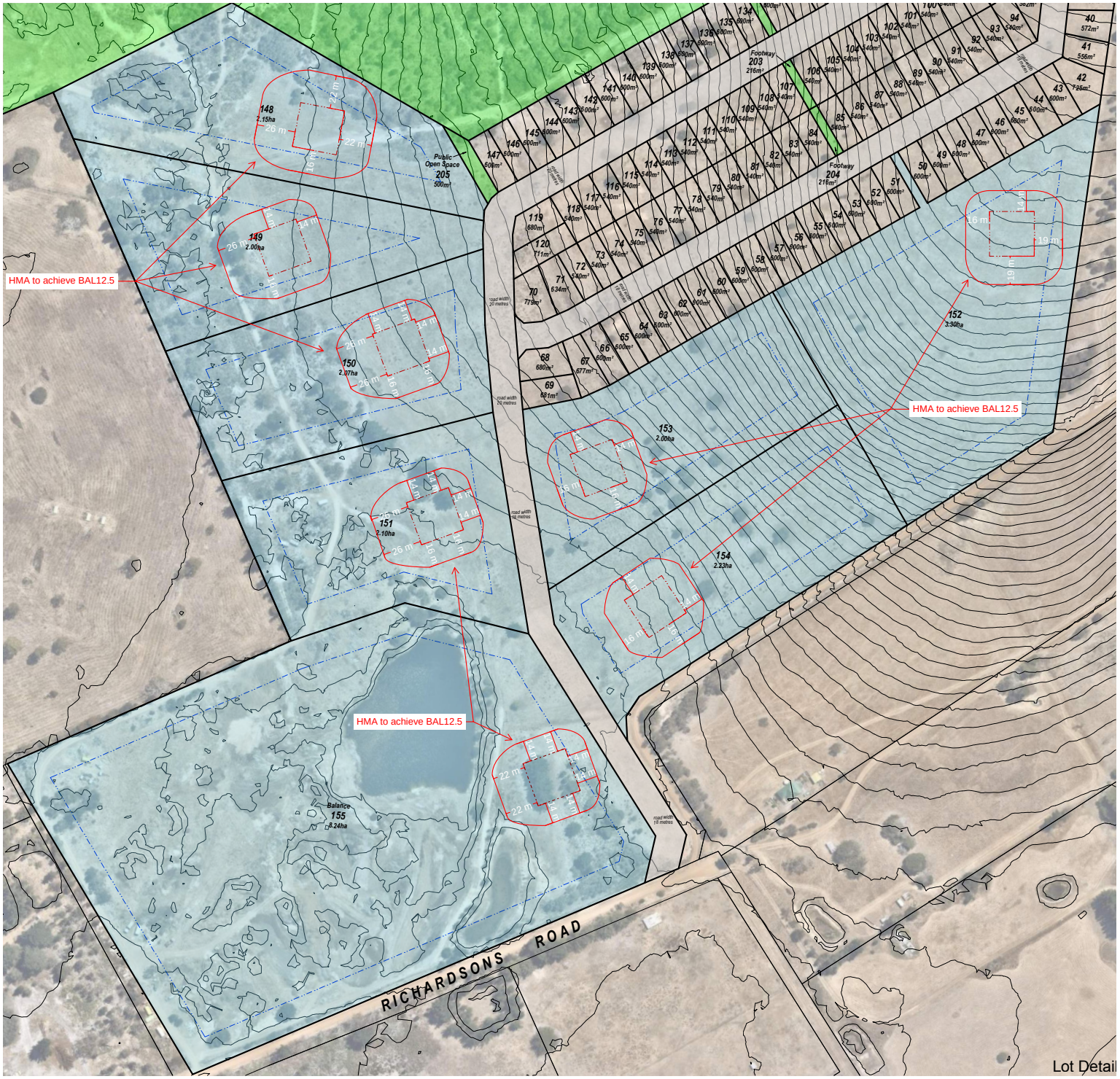
Preliminary BHMP 2: Eastern Residential Lots: 18 to 34

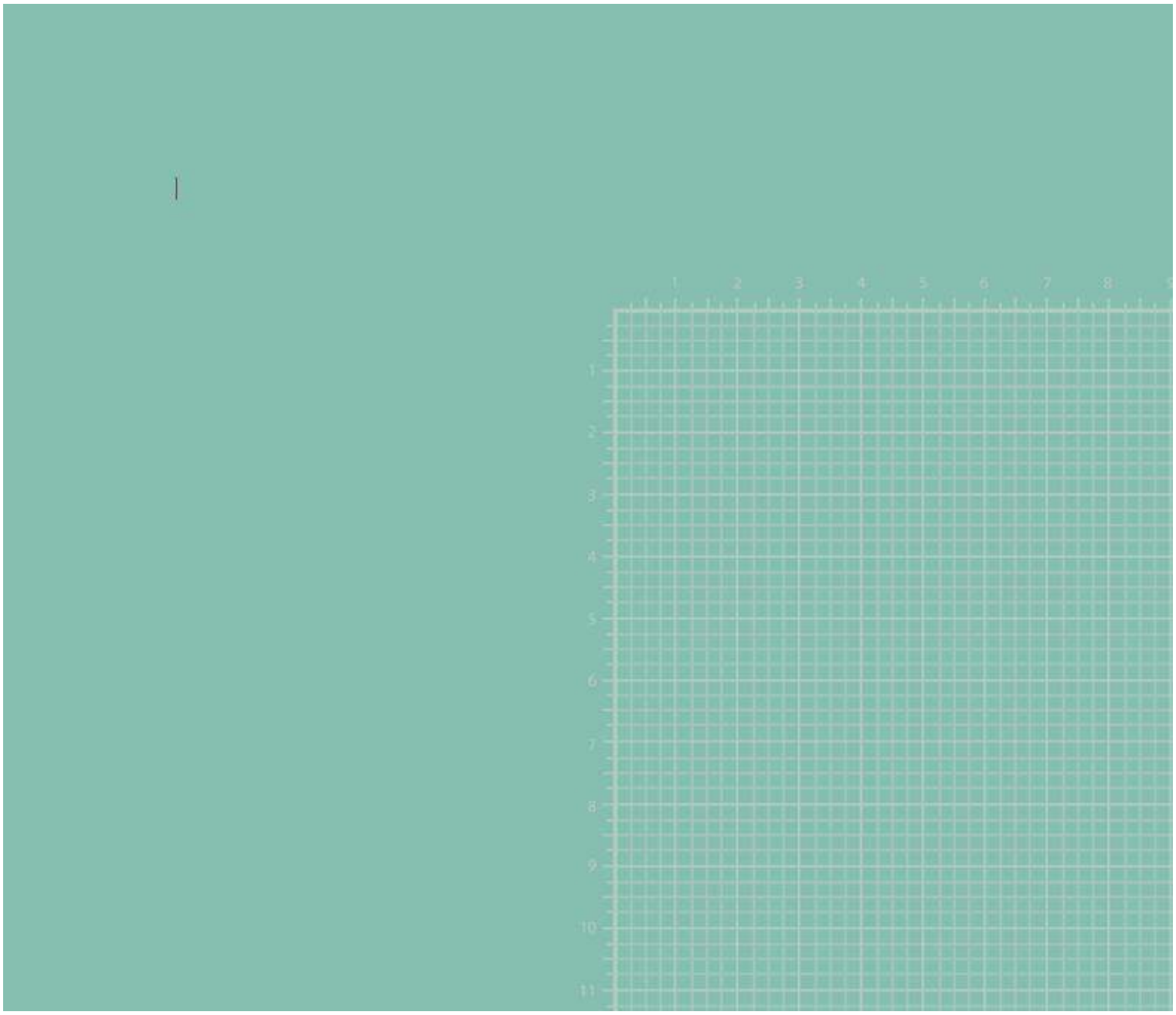


Preliminary BHMP 3: Southern Residential Lots: 35 to 147



Preliminary BHMP 4: Rural Living Lots: 148 to Lot 155





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