



Bushfire Management Plan (Structure Plan)

PARKRIDGE ESTATE

Lot 9004, 9503 & 9504

Peninsula Lakes Drive, Eaton



LUSH FIRE & PLANNING

3 Paterson Rd

Pinjarra WA 6208

0418 954 873

ABN 74 232 678 543



Ref 17-076

Ver C

June 2019

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 9004 Peninsula Lakes Drive		
Suburb:	Eaton	State:	WA
		P/code:	6232
Local government area:	Dardanup		
Description of the planning proposal:	Structure Plan Modifications		
BMP Plan / Reference Number:	17-076	Version:	C
		Date of Issue:	25/06/2019
Client / Business Name:	Parkridge Group 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)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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.)?


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



Date

25/06/2019

This bushfire management plan is prepared for the proposed subdivision and development of the Parkridge Estate at Eaton.

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 demonstrates:

- How the hazard level will be reduced and maintained for the life of the development.
- That compliance with the Bushfire Protection Criteria in the Guidelines can be achieved.

The subject land is located approximately 8km east-north-east of the Bunbury CBD adjacent to the Collie River. It is situated between Eaton Drive and the river. It has an area of an area of 53 hectares and its main topographical feature is the flood plain associated with the Collie River. The principal area of remnant vegetation is located along the river corridor with some small areas extending into the subject land. The site is gently undulating with low gradients of less than 5 degrees.

The development site is approximately 30 hectares in size and situated on the eastern portion of the subject land. There is an additional area of 1.5 hectares immediately adjacent to the Collie River which is elevated and not flood prone.

There are potentially three stages of development with an overall yield of 527 lots with a combination of R20 and R40 densities.

- North stage - 316 lots; and
- South stage - 211 lots.

A local open space reserve being approximately 3.3 hectares will be provided centrally within the Estate and a portion of this will retain the existing vegetation.

The north eastern portion of the development adjacent to the boundary of Lot 3001 will be left as part of the balance lot pending the development of Lot 3001. This is because there will be some common lots crossing the property boundary and is also allows this land to be used as an asset protection zone pending completion of the final subdivision.

An emergency access way will be created through Lot 3001 along the alignment of proposed subdivision road giving secondary access to Eaton Drive.

All of the proposed lots will have a Bushfire Attack Level of BAL-29 rating or less. Two residential cells have a 3m encroachment of BAL-40/FZ on their front boundary. This equates to the minimum development setback under the R-Codes and will be reinforced by the use of a restrictive covenant. The majority of lots in the Estate will have a BAL-12.5 or BAL-Low rating.

The proposed subdivision complies with the objectives of State Planning Policy 3.7 as:

1. It avoids any increase in the threat of bushfire to people, property and infrastructure.

Development with a maximum BAL-29 rating it does not increase the threat of bushfire. The proposed subdivision design does not increase the bushfire threat as it complies with the Bushfire Protection Criteria and provides for the management of vegetation hazards, suitable road access and appropriate separation distances with all proposed lots having a BAL-29 rating or lower.

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.

The bushfire hazard and risks have been identified and assessed in this report.

- 3. The design of the subdivision and the development takes into account bushfire protection requirements and includes specific bushfire protection measures.**

The proposed development complies with the Bushfire Protection Criteria.

- 4. Achieves an appropriate balance between bushfire risk management measures and biodiversity, conservation values, and environmental protection.**

The vegetation on the site which is to be cleared for any development does not have any significant conservation value. The river foreshore and wetlands will be rehabilitated and provision for this has been included in the design and assessment.

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
	9004 9503 9504	404217 50198 50198	Peninsula Lakes Drive
Locality	Eaton	State WA	Postcode 6232
Local Government Area	Dardanup		
Description of the building or works	Residential subdivision		

Report Details

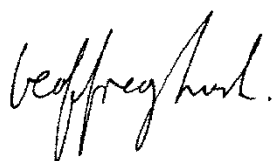
Revision	Date	Job No 17-076
A	29/01/2018	Preliminary
B	14/03/2018	Revised Structure Plan
C	25/06/2019	WAPC Modifications

Practitioner Details

BPAD	Level 2 Practitioner	Accreditation No	27682
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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
25 June 2019
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1.0 PROPOSAL DETAILS

1.1 Introduction

This bushfire management plan is prepared for the proposed subdivision and development of the Parkridge Estate located at Eaton.

The subject land is located approximately 8km east-north-east of the Bunbury CBD adjacent to the Collie River as shown in Figure 1.

The aim of this Report is to reduce the likelihood and consequences of a bushfire within the proposed development. The Report also demonstrates:

- 1) How the hazard level will be reduced and maintained for the life of the development. This will enable the decision-maker to ensure that appropriate bushfire risk management measures are in place to achieve and maintain a low or moderate hazard level.
- 2) That compliance with the Bushfire Protection Criteria in the Guidelines can be achieved.

1.2 Existing Conditions

The subject land has an area of 53 hectares and contains three lots as documented in Table 1. It is irregular in shape with a depth varying between 600 and 880m with a width of approximately 880m.

The site has frontages to multiple roads including Leicester Ramble, Peninsula Lakes Drive, Robusta Road and Eaton Drive. Lot 9504 is a battle axe lot with a 260m long access leg.

External access to the site is provided from Eaton Drive which connects to the Eaton district centre and Forrest Highway. It is also in the process of being extended over the Collie River and connecting into The Boulevard in Treendale.

The existing conditions are shown in Figure 2.

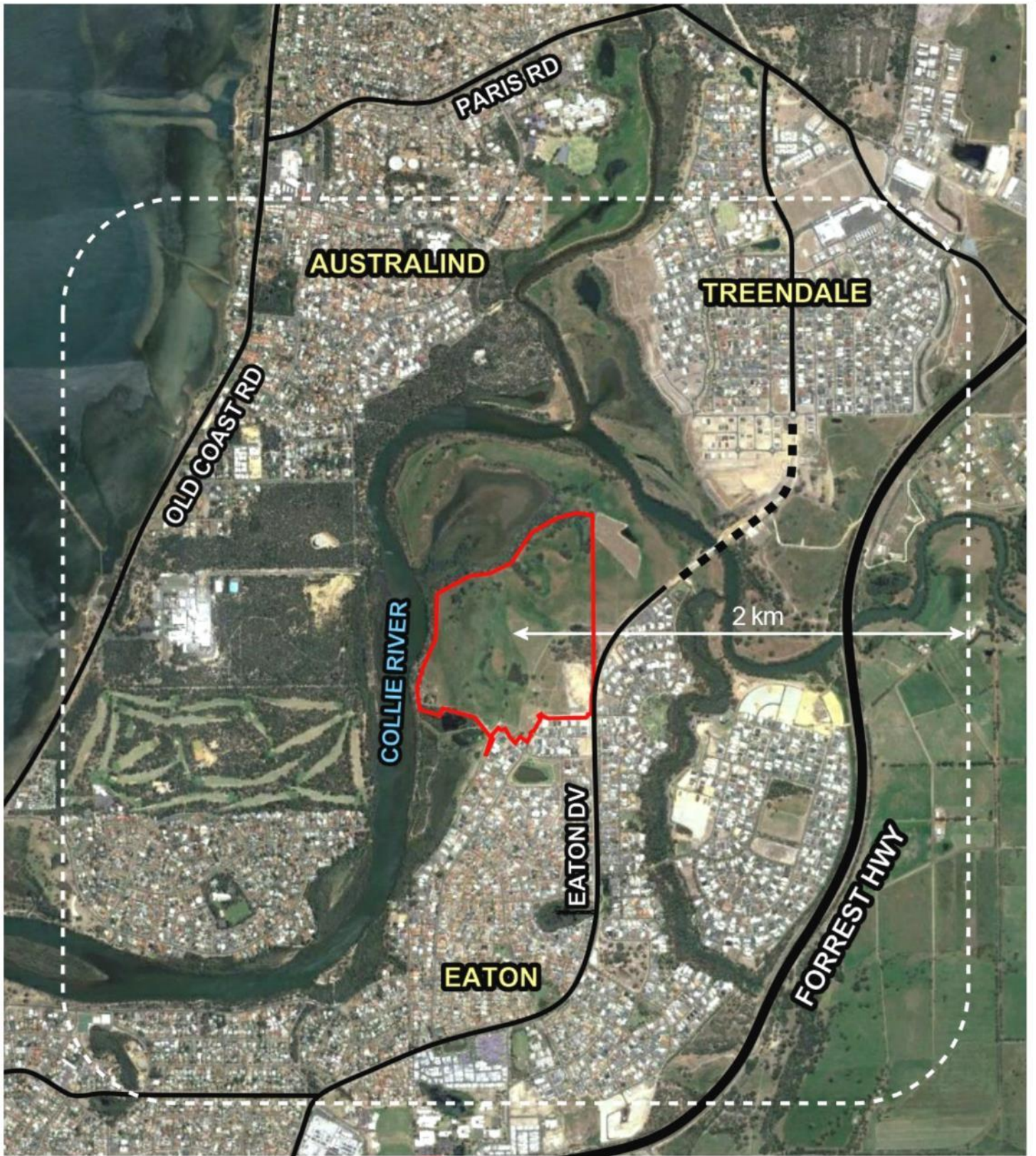
Table 1 Land Details

Lot	Plan	Vol	Folio	Proprietor	Area (ha)
9004	404217	2880	400	Parkridge Group Pty Ltd	33.7650
9503	50198	2632	554	Parkridge Group Pty Ltd	17.1610
9504	50198	2632	555	Lancett Court Pty Ltd	2.2251
					53.1511

The site is vacant and has been used for broad acre farming/grazing with improved pasture. There are remains of several buildings and stock yards in Lot 9504.

The Collie River is situated on the western boundary and portions of the site are flood prone. The land is gently undulating and slopes upwards towards Eaton Drive. Lot 9504 is more elevated than the immediately surrounding area.

The land to the north is also vacant and contains a large wetland and freehold lot. Lot 3001 to the east is vacant but designated for future residential development. The Millbridge residential area is located to the east and Eaton to the south with regional open space areas along the river.



LEGEND

- SUBJECT LAND
- MAIN ROAD
- UNDER CONSTRUCTION

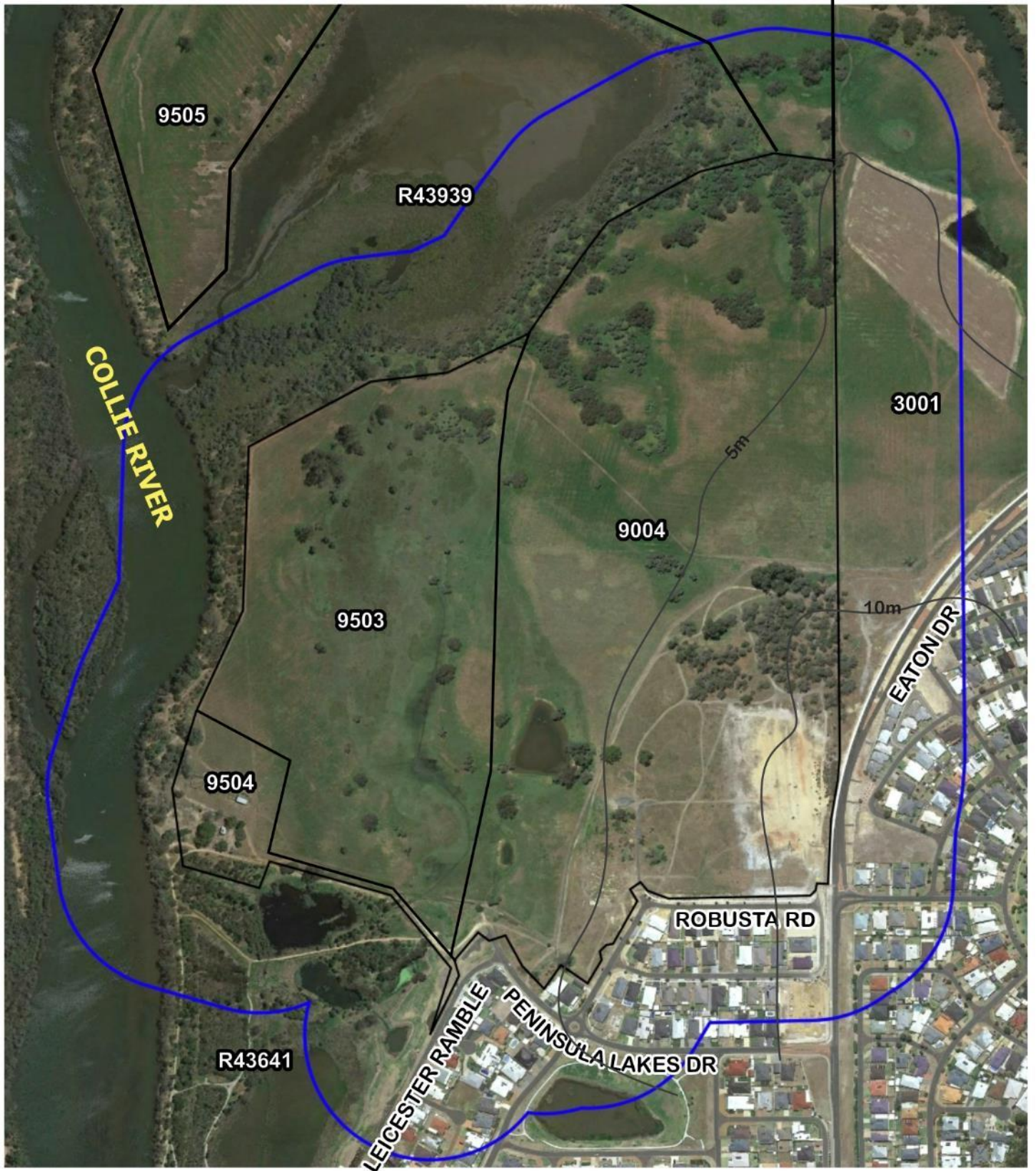
FIGURE 1
LOCATION AND CONTEXT



Job No 17-076

Rev Description
A Preliminary

Date
18/01/2018



LEGEND

- SUBJECT LAND
- 150m BUFFER
- CONTOUR

FIGURE 2
EXISTING CONDITIONS



Job No 17-076

Rev Description
A Preliminary

Date
18/01/2018



1.3 Bushfire Prone Land

Portions of the subject land are shown on the Map of Bush Fire Prone Areas (Figure 3) as being bushfire prone. 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) Amendment Regulations 2015; and
- The application of SPP3.7 Planning in Bushfire Prone Areas.

1.4 Fire Prevention Notice

Council's Fire Prevention Notice stipulates that in all residential zoned land that all flammable material/vegetation (except living trees) must be slashed or grazed to a height that does not exceed 50 millimetres and flammable material must be removed.

In the General Farming zone non irrigated lots are to have bare earth firebreaks of 2 metres width and 4 metres in height which must be maintained within and adjacent to the lot boundary where it adjoins a road and/or rail reserve.

1.5 Proposed Development

The proposed subdivision / development plan is shown in Figure 4 and the development portion of the site is primarily located on the eastern portion of the site and also on lot 9504.

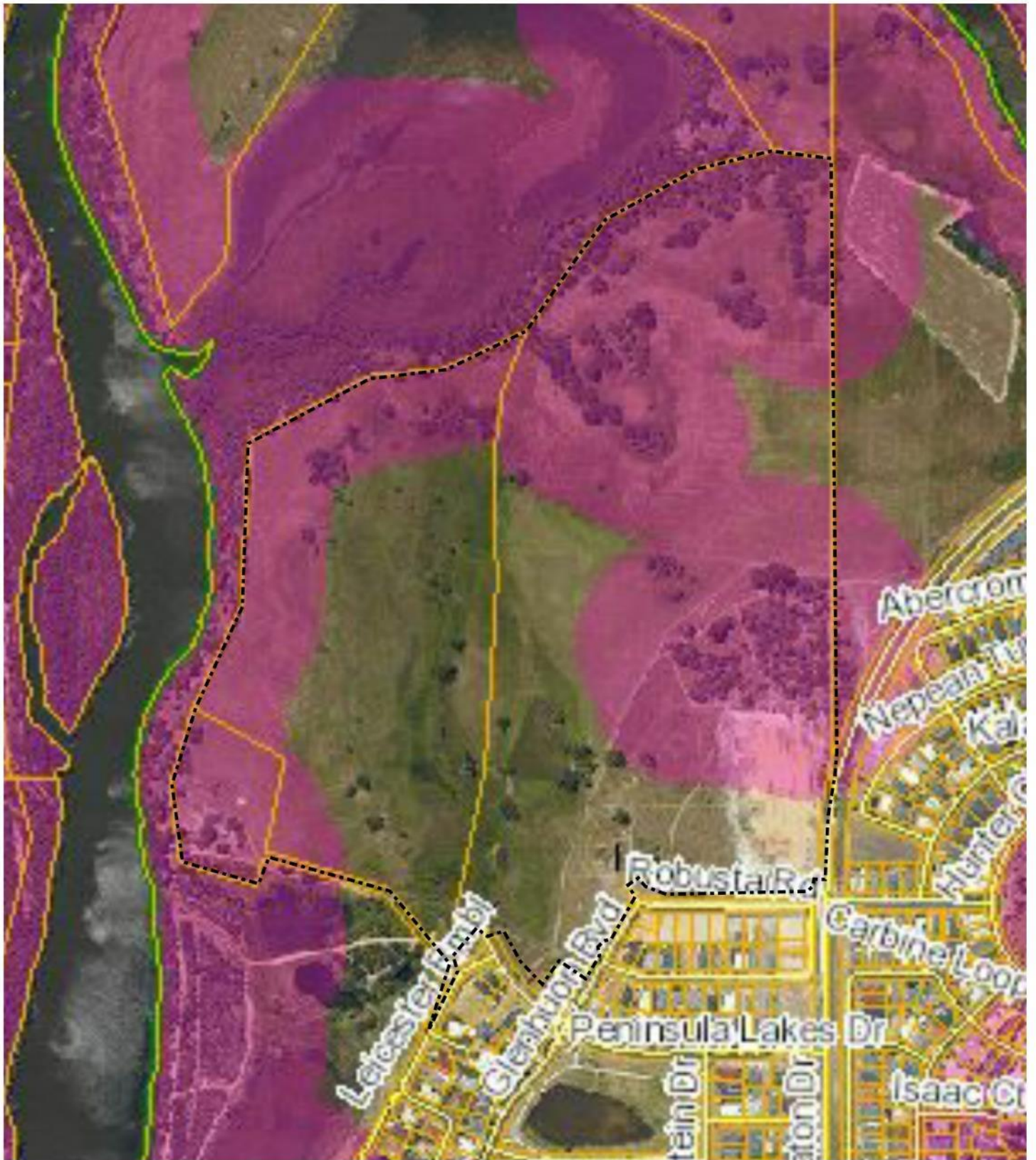
There are potentially three stages of development with an overall yield of 527 lots with a combination of R20 and R40 densities.

- North stage - 316 lots; and
- South stage - 211 lots.

A local open space reserve being approximately 3.3 hectares will be provided centrally within the Estate and a portion of this will retain the existing vegetation. The second area of local open space will be provided around the River Stage lots and will function as a low fuel zone in conjunction with the subdivision road. This reserve will be between 6 and 18m wide.

The north eastern portion of the development adjacent to the boundary of Lot 3001 will be left as part of the balance lot pending the development of Lot 3001. This is because there will be some common lots crossing the property boundary and is also allows this land to be used as an asset protection zone pending completion of the final subdivision.

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



LEGEND

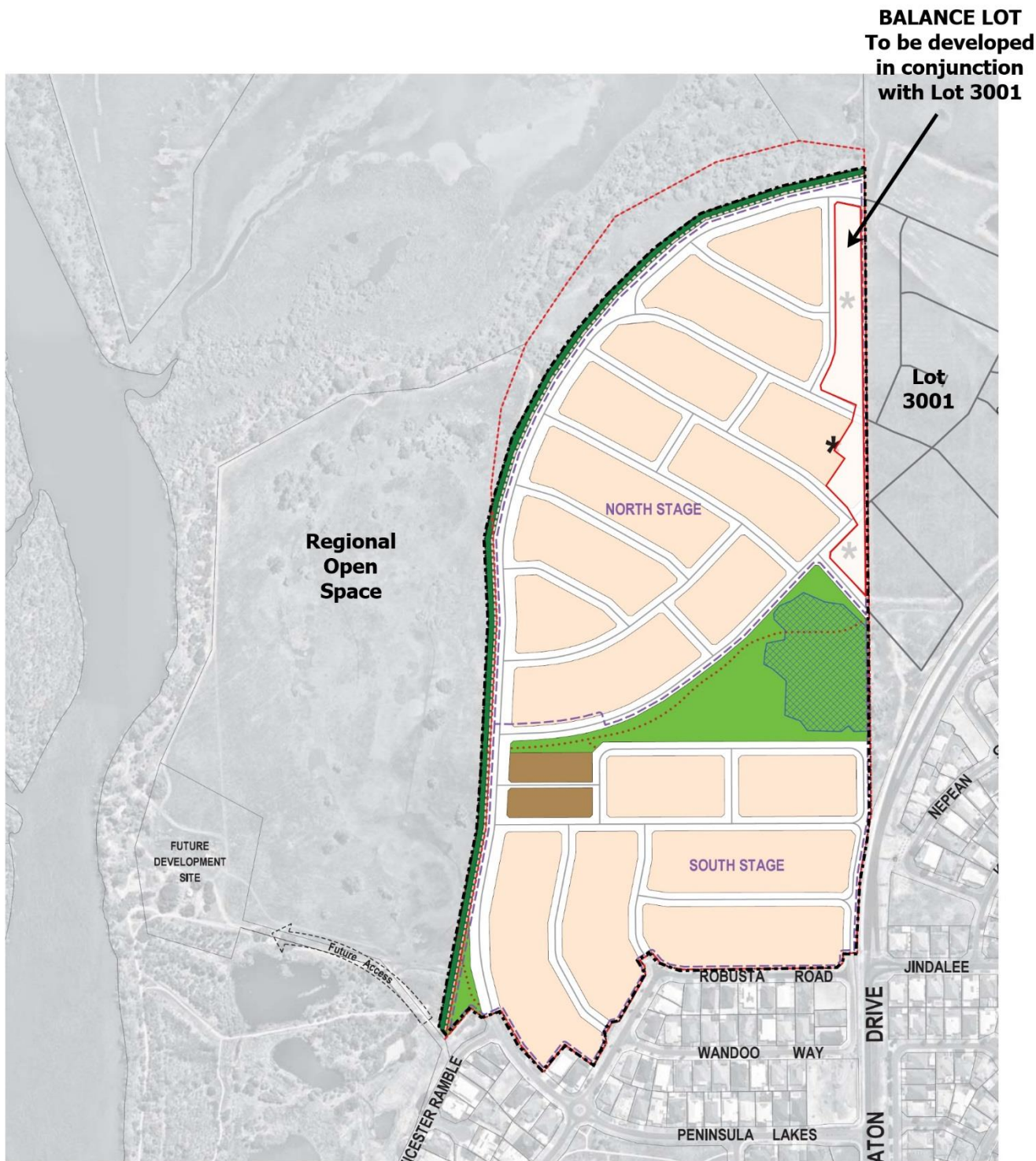
- SUBJECT LAND
- BUSHFIRE PRONE LAND

FIGURE 3
BUSHFIRE PRONE LAND



Job No 17-076
Rev A Description Preliminary

Date 01/02/2018



LEGEND

- | | | | |
|--|-------------------------|--|---------------------------|
| | EXISTING CADASTRE | | LOT BOUNDARY |
| | STRUCTURE PLAN BOUNDARY | | PUBLIC OPEN SPACE |
| | STAGE BOUNDARY | | REGIONAL OPEN SPACE |
| | RESIDENTIAL - R20 | | LOCAL ROADS |
| | RESIDENTIAL - R40 | | PATHWAY - SHARED PATHS |
| | | | PROPOSED PLAYING FIELD |
| | | | VEGETATION TO BE RETAINED |

FIGURE 4
PROPOSED STRUCTURE PLAN



Job No 17-076

Rev	Description
A	Preliminary
B	Rev Design
C	WAPC Mods

Date
01/02/2018
14/03/2018
10/06/2019



2.0 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation Modification and Clearing

Clearing within parts of the development area will occur for the construction of the subdivision as shown in Figure 5.

2.2 Re-vegetation / Landscape Plans

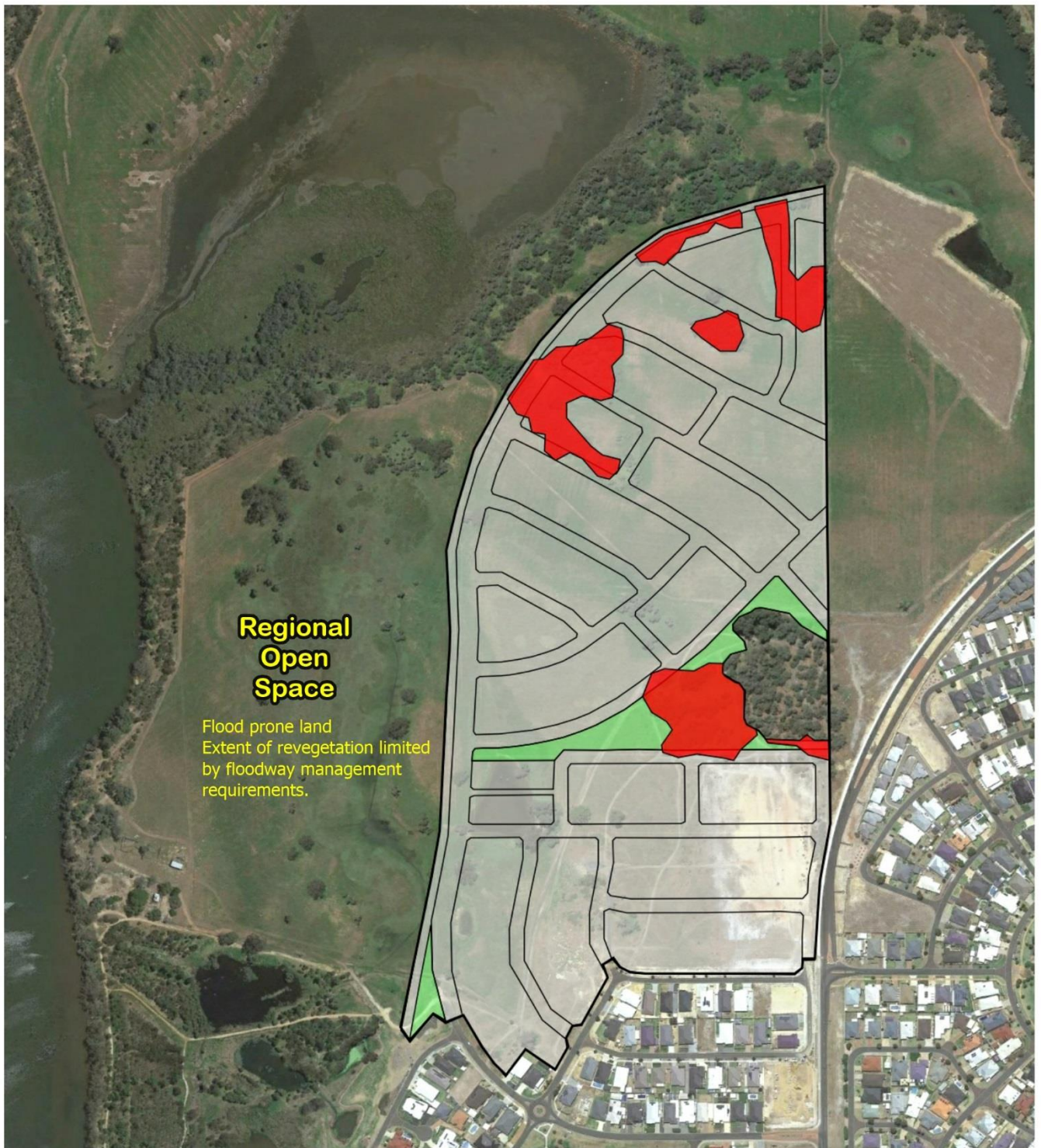
The Local Open Space Areas is proposed to be developed and maintained as a managed reserve. Except for the retained vegetation shown in Figure 4 the balance of the reserve will be landscaped as Excluded Low Threat Vegetation. Further information regarding this is provided in Section 4.3.

The Regional Open Space is expected to be subject to a foreshore management plan which will address and potential revegetation. The extent and nature of this revegetation and its management have not been determined. However, this is likely to be restricted as the Regional Open Space contains the active floodway for the Collie River. Advice from the Department of Environment (2004) and The Department of Water (2011) is contained in Appendix 1 and confirms that there cannot be any obstruction within the floodway.

At present time the majority of the Regional Open Space is improved pasture with some relatively small areas of remnant trees as shown in Figures 2 and 6. Naturally occurring revegetation especially from eucalyptus suckers, will be slow to occur due to the established grassland.

The proposed subdivision design includes a boundary road adjacent to the ROS that is 21m wide. This will ensure that no matter vegetation is within the Regional Open Space the nearby lots will still have a maximum BAL-29 rating as shown in Figures 8 and 9.

The central Local Open Space Area is proposed to be developed and managed as Low Threat Vegetation by the Shire of Dardanup. This will be subject to the approval of a landscaping and management plan.



LEGEND

- SUBJECT LAND
- PROPOSED VEGETATION CLEARING
- LOCAL POS SUBJECT TO LANDSCAPE AND MANAGEMENT PLAN

FIGURE 5
VEGETATION MODIFICATION



Job No 17-076

Rev	Description	Date
A	Preliminary	01/02/2018
B	Rev Design	14/03/2018
C	WAPC Mods	10/06/2019



3.0 BUSHFIRE ASSESSMENT RESULTS

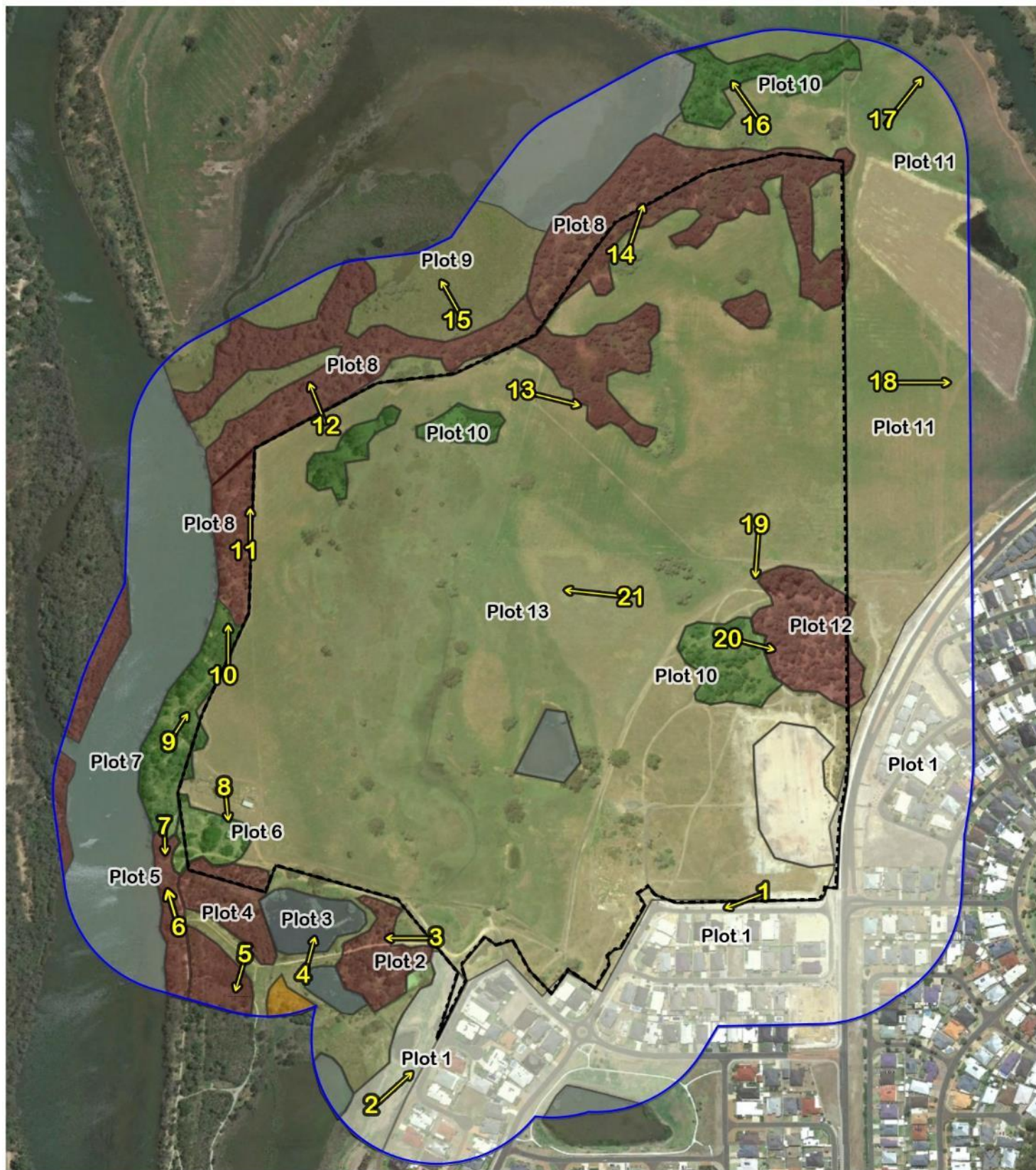
3.1 Assessment Inputs

3.1.1 Existing Vegetation Classifications

The classification of the vegetation on and adjacent to the site is shown in Figure 6 and the photographs on the following pages. The classification is based upon AS3959 and also takes into account The Visual Guide for Bushfire Risk Assessment in Western Australia (WAPC 2016). The details of the vegetation plots are summarised in Table 2.

Table 2 Existing Vegetation Classifications

Plot No	Applied Vegetation Classification	Slope Under Vegetation	Comment
1	Excludable - 2.2.3.2(e) Non Vegetated Areas	Flat	Adjacent subdivision and residential development. This includes the managed public open space reserve adjacent to the development.
2	Class A Forest - Low open forest A-04	Flat	Wetland revegetation predominantly Melaleuca
3	Excludable - 2.2.3.2(e) Non Vegetated Areas	Flat	Wetland with standing water.
4	Class A Forest - Open forest A-03	Flat	Eucalyptus revegetation on regional open space
5	Class A Forest - Open forest A-03	5 - 8 deg	Linear vegetation along the riverbank foreshore.
6	Class B Woodland - Woodland B-05	0 - 3 deg	Old homestead site with introduced species.
7	Class B Woodland - Woodland B-05	0 -5 deg	Linear vegetation along the riverbank foreshore. Will potentially become forest.
8	Class A Forest - Open forest A-03	0-5 deg	Linear vegetation along the riverbank and wetland foreshore areas.
9	Class G Grassland - Tussock Moorland	Flat	Wetland vegetation.
10	Class B Woodland - Woodland B-05	0-5 deg	Woodland areas within the site with grazed understorey.
11	Class G Grassland – Tussock grassland G-22	0-5 deg	Grassland in adjacent land used for grazing.
12	Class A Forest - Open forest A-03	Upslope	Peppermint and Eucalyptus forest between 10 and 20m in height.
13	Class G Grassland – Sown pasture G-26	Undulating	Grassland, pasture within the development site.



LEGEND

SUBJECT LAND
 ASSESSMENT AREA
 (150m from the
 external boundary
 of the subject land)
 VEGETATION PLOTS
 PHOTO POINT



VEGETATION CLASS

A FOREST
 B WOODLAND
 D SCRUB
 G GRASSLAND
 WATER
 EXCLUDED
 2.2.3.2 (e) & (f)



Location Details: Lots 9004, 9503, 9504
 Peninsula Lakes Dr
 Eaton
 Assessment Date: 11/01/2018
 Prepared by: G Lush
 Accreditation Level: Level 2
 Accreditation Number: BPAD 27682
 Accreditation Expiry Date: February 2019
 Date of Aerial: Nov 2017

FIGURE 6
VEGETATION CLASSIFICATIONS



Job No 17-076
 Rev Description Date
 A Preliminary 01/02/2018
 B Rev Design 14/03/2018



Parkridge Estate Eaton

Photo No 1 **Plot No 1**

Vegetation Classification

Excludable - 2.2.3.2(e) Non Vegetated Areas

Description

Residential development adjacent to the site.



Photo No 2 **Plot No 1**

Vegetation Classification

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description

Managed parkland POS adjacent to the site



Photo No 3 **Plot No 2**

Vegetation Classification

Class A Forest - Low open forest A-04

Description

Predominantly Melaleuca to 10m with heavy understorey, grass and some shrubland. Foliage cover greater than 50%



Photo No 4 **Plot No 3**

Vegetation Classification

Excludable - 2.2.3.2(e) Non Vegetated Areas

Description

Wetland adjacent to the site.



Photo No 5 **Plot No 4**

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed species with predominantly juvenile Eucalypts to 10m and will be taller when mature. Dense foliage and understorey with heavy fuel load.



Photo No 6 **Plot No 5**

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed species along the riverbank with Melaleuca, Peppermints and Eucalypts. Some open patches but generally more than 30% foliage coverage. Thick grass understorey, scrub and heavy fuel loads greater than 15tpa.



Photo No 7 **Plot No 5**

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed species along the riverbank with Melaleuca, Peppermints and Eucalypts. Some open patches but generally more than 30% foliage coverage. Thick grass understorey, scrub and heavy fuel loads greater than 15tpa.



Photo No 8 **Plot No 6**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Mixed introduced species and some native around the old homestead site.



Photo No 9 **Plot No 7**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Mixed species, Eucalypts and Acacia with less than 30% foliage coverage and open understorey predominantly grassland with moderate fuel load. With revegetation this area is likely to continue to regenerate as forest.



Photo No 10 Plot No 7

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Mixed species, Eucalypts and Acacia with less than 30% foliage coverage and open understorey predominantly grassland with moderate fuel load.

With revegetation this area is likely to continue to regenerate as forest.



Photo No 11 Plot No 8

Vegetation Classification

Class A Forest - Open forest A-03

Description

Revegetation along foreshore area. Mixed vegetation being Eucalypts on elevated areas and Melaleuca in the lower areas. Heavy grass understorey.



Photo No 12 Plot No 8

Vegetation Classification

Class A Forest - Open forest A-03

Description

Eucalypts on the foreshore slope. Trees to 18m height with more than 30% foliage coverage. Heavy grass understorey with fallen timber.



Photo No 13 **Plot No 8**

Vegetation Classification

Class A Forest - Low open forest A-04

Description

Eucalypts on the foreshore slope. Trees to 18m height with more than 30% foliage coverage. Heavy grass understorey with fallen timber.



Photo No 14 **Plot No 8**

Vegetation Classification

Class A Forest - Open forest A-03

Description

Eucalypts on the foreshore slope. Trees to 18m height with more than 30% foliage coverage. Heavy grass understorey with fallen timber.



Photo No 15 **Plot No 9**

Vegetation Classification

Class G Grassland - Tussock Moorland

Description

Tussock grassland to 0.75m associated with the wetland areas



Photo No 16 **Plot No 10**

Vegetation Classification

Class B Woodland - Woodland B-05

Description

Woodland areas associated with grazing land. Trees to 18m height with less than 30% foliage coverage, open canopy and understorey.



Photo No 17 **Plot No 11**

Vegetation Classification

Class G Grassland – Tussock grassland G-22

Description

Unmanaged grassland previously used for grazing adjacent to the site.



Photo No 18 **Plot No 11**

Vegetation Classification

Class G Grassland – Tussock grassland G-22

Description

Unmanaged grassland previously used for grazing adjacent to the site.



Photo No 19 Plot No 12

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed Eucalypts and Peppermints to 20m in height with foliage coverage of 60%. Peppermints have continuous foliage from ground. Some scrub understorey but generally heavy weeds and fuel loads.



Photo No 20 Plot No 12

Vegetation Classification

Class A Forest - Open forest A-03

Description

Mixed Eucalypts and Peppermints to 20m in height with foliage coverage of 60%. Peppermints have continuous foliage from ground. Some scrub understorey but generally heavy weeds and fuel loads.



Photo No 20 Plot No 13

Vegetation Classification

Class G Grassland – Sown pasture G-26

Description

Grazing land within the site, pasture less than 300mm.



3.2 Assessment Outputs

3.2.1 BAL Contour Map

Figure 7 shows the proposed modified vegetation plots with the associated vegetation plots being documented in Table 3. The modifications include a 3m wide firebreak being located on the boundary of the Regional Open Space.

A BAL Contour Map is shown in Figure 8 and this 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.

Figure 9 shows the proposed cross sections and associated BAL setbacks for each major development interface.

Table 3 Modified Vegetation Plots

Plot No	Applied Vegetation Classification	Effective Slope	Comment
A	Managed land	Flat & Upslope	Adjacent subdivision and residential development.
B	Class G Grassland	Flat & Upslope	Grassland area associated with tracks and cleared portions of the foreshore reserve.
C	Class A Forest	Flat	Predominantly Melaleuca to 10m with heavy understorey, grass and some shrubland.
D	Class G Grassland	>0-5	Grassland, pasture within the Regional Open Space. Any revegetation is likely to be restricted as this is the active floodway for the Collie River.
E	Class B Woodland	>0-5	Woodland areas within the site with grazed understorey.
F	Class A Forest	>0-5	Trees to 18m height with more than 30% foliage coverage.
G	Class B Woodland	>0-5	Woodland areas within the site with grazed understorey.
H	Class G Grassland	>0-5	Grassland in adjacent vacant undeveloped land used for grazing.
I	Class A Forest	Upslope	Peppermint and Eucalyptus forest between 10 and 20m in height.
J	Managed land	>0 - 5	Developed parkland to be managed by the Council.

Parkridge Estate Eaton

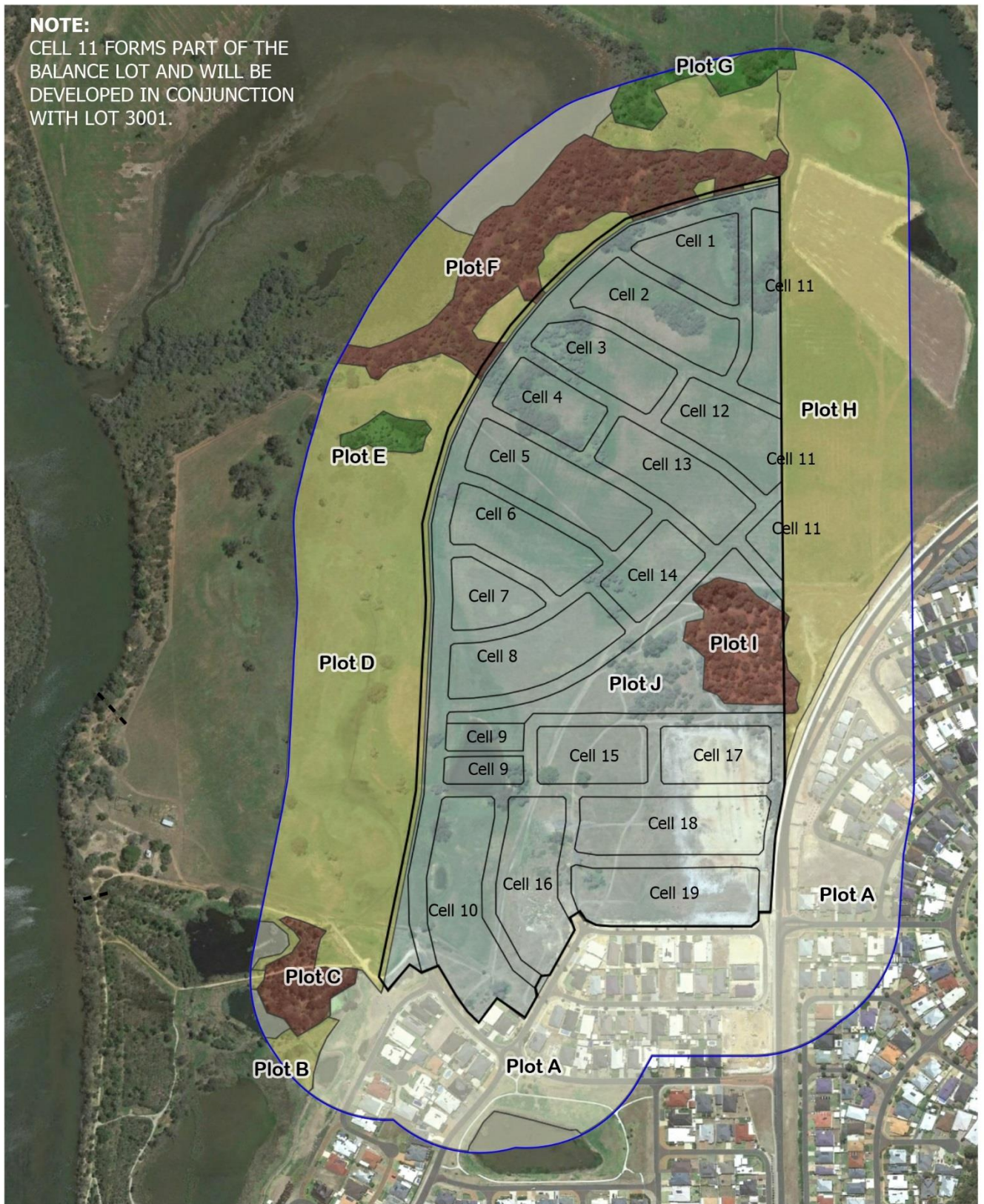
The BAL ratings for the individual lots are documented in Table 4. As there is no detailed lot design the subdivision has been divided into residential cells based upon the proposed road network. It is also noted that Cell 11 is part of the balance lot which will be the final stage and developed in conjunction with the adjacent Lot 3001.

Cells 1 & 4 have a 3m encroachment of BAL-40 which corresponds to the minimum development setback. This would also apply to any of the cells adjacent to the Regional Open Space where any revegetation might occur and is classified as Class A Forest; notwithstanding the presumption against revegetation obstructing the floodway.

Table 4 Lot BAL Classifications

Cell Number (Face)	Plot No (1)	Vegetation Classification	Effective Slope	Separation Distance (2)	BAL Rating at Boundary	BAL 29 Setback (3)
1 (N)	F	A Forest	>0-5m	24m	BAL-40	3m
2 (W)	F	A Forest	>0-5m	30m	BAL-29	
3 (W)	F	A Forest	>0-5m	27m	BAL-29	
4 (W)	F	A Forest	>0-5m	24m	BAL-40	3m
5 (NW)	F	A Forest	>0-5m	27m	BAL-19	
6 (W)	D	G Grassland	>0-5m	27m	BAL-12.5	
7 (W)	D	G Grassland	>0-5m	27m	BAL-12.5	
8 (W)	D	G Grassland	>0-5m	27m	BAL-12.5	
9 (W)	D	G Grassland	>0-5m	27m	BAL-12.5	
10 (W)	D	G Grassland	>0-5m	27m	BAL-12.5	
11	Part of the balance lot acting as low fuel zone.					
12 (E)	E	G Grassland	Upslope	12m	BAL-19	
13 (E)	E	G Grassland	Upslope	17m	BAL-12.5	
14 (SE)	I	A Forest	Upslope	21m	BAL-29	
15 (NE)	I	A Forest	Upslope	80m	BAL-12.5	
16 (NE)	E	G Grassland	>0-5m	>100m	BAL-Low	
17 (W)	I	A Forest	Upslope	25m	BAL-29	
18 (NE)	H	G Grassland	Upslope	26m	BAL-12.5	
19 (NW)	H	G Grassland	Upslope	>50m	BAL-Low	
Notes	(1) The selected vegetation plot is the plot with the highest BAL rating. (2) The separation distance is measured to the nearest point on the lot boundary. (3) Refers to the setback within the relevant cell where a BAL-29					

NOTE:
CELL 11 FORMS PART OF THE
BALANCE LOT AND WILL BE
DEVELOPED IN CONJUNCTION
WITH LOT 3001.



LEGEND

- DEVELOPMENT AREA
- ASSESSMENT AREA (150m from the external Boundary of the subject land)
- VEGETATION PLOTS
- PROPOSED CADASTRE

- VEGETATION CLASS
- A FOREST
 - G GRASSLAND
 - AREA TO BE MODIFIED TO LOW THREAT STATE
 - EXCLUDED AS PER 2.2.3.2(e)

Location Details: Lots 9004, 9503, 9504 Peninsula Lakes Dr Eaton
 Assessment Date: 11/01/2018
 Prepared by: G Lush
 Accreditation Level: Level 2
 Accreditation Number: BPAD 27682
 Accreditation Expiry Date: February 2020
 Date of Aerial: Nov 2017

NOTE CELL 11 FORMS PART OF THE BALANCE LOT

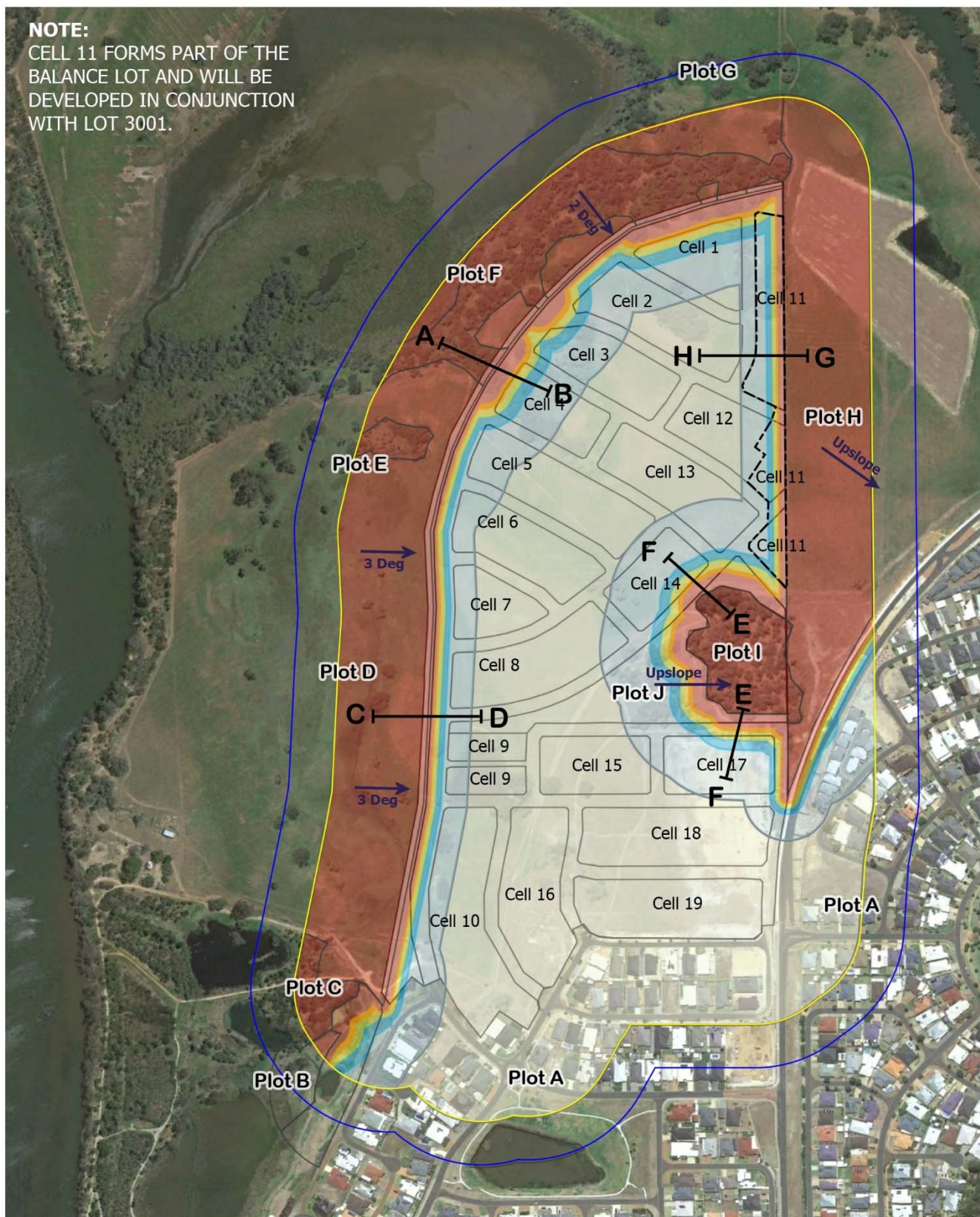
FIGURE 7
MODIFIED VEGETATION
CLASSIFICATIONS



Job No 17-076
 Rev Description Date
 A Preliminary 01/02/2018
 B Rev Design 14/03/2018
 C WAPC Mods 10/06/2019

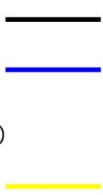


NOTE:
CELL 11 FORMS PART OF THE
BALANCE LOT AND WILL BE
DEVELOPED IN CONJUNCTION
WITH LOT 3001.



LEGEND

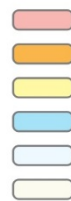
DEVELOPMENT AREA
VEGETATION ASSESSMENT AREA (150m from the external boundary of the subject site)
BAL CONTOUR ASSESSMENT AREA (100m from the external boundary of the subject site)



PROPOSED CADASTRE
VEGETATION PLOT
CROSS SECTIONS (See Figure 9)
A I ——— B

INDICATIVE BUSHFIRE ATTACK LEVELS

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



Location Details: Lots 9004, 9503, 9504 Peninsula Lakes Dr Eaton
Assessment Date: 11/01/2018
Prepared by: G Lush
Accreditation Level: Level 2
Accreditation Number: BPAD 27682
Accreditation Expiry Date: February 2020
Date of Aerial: Nov 2017

FIGURE 8
BAL CONTOUR MAP



Job No 17-076

Rev	Description	Date
A	Preliminary	01/02/2018
B	Rev Design	14/03/2018
C	WAPC Mods	10/06/2019



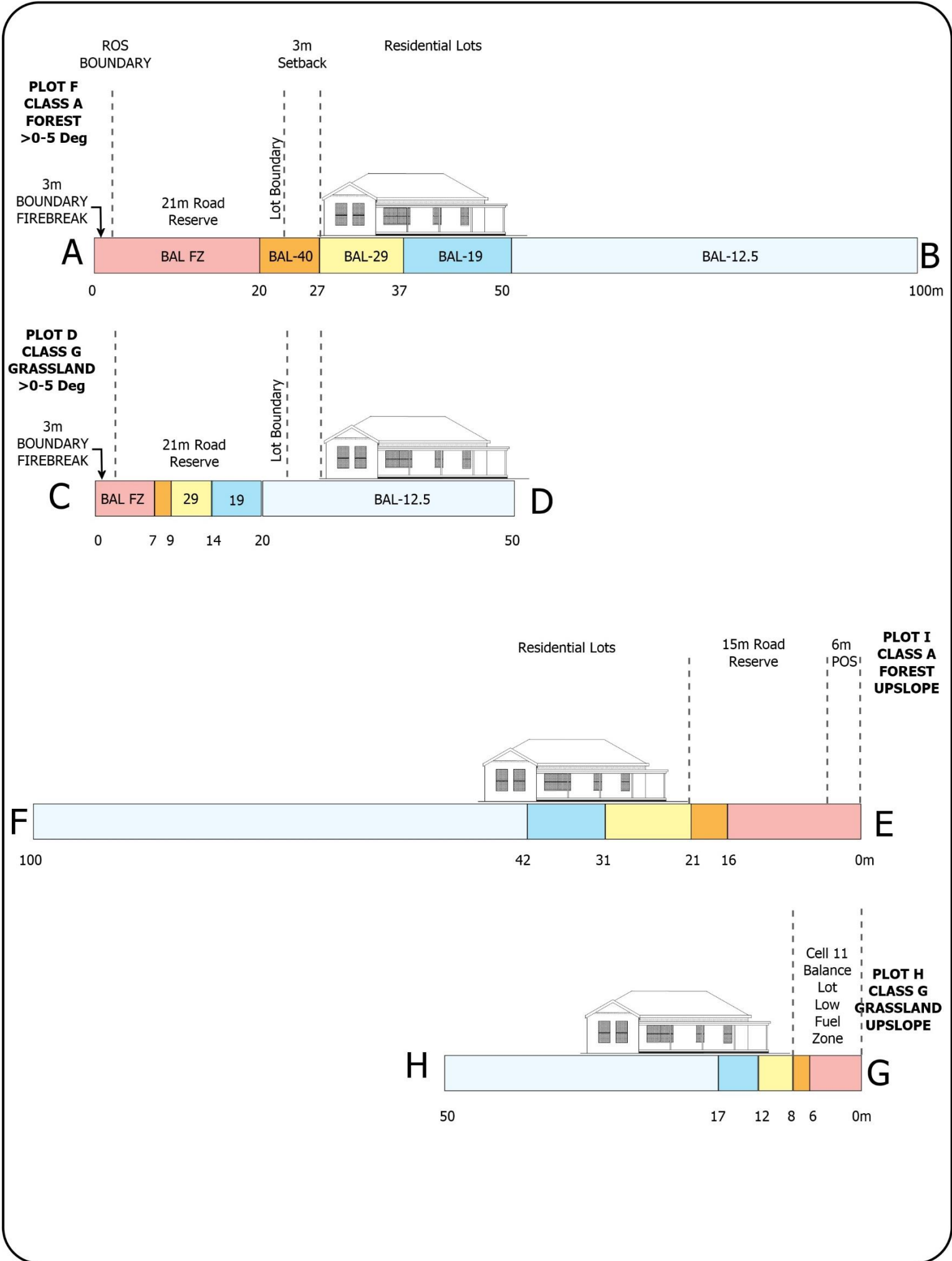


FIGURE 9
BAL CONTOUR CROSS SECTIONS



Job No 17-076

Rev	Description	Date
A	Preliminary	01/02/2018
B	Rev Design	14/03/2018
C	WAPC Mods	10/06/2019



4.0 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

4.1 Locality

Figure 1 shows the existing conditions for the locality around the subject land. The most significant bushfire hazard will be the Regional Open Space. The proposed road network and the bridge over the Collie River provide excellent district access in multiple directions.

The bushfire hazard issues are shown in Figure 10 and the issue numbers are referenced as follows:

1. Development interface with the Regional Open Space. There is a presumption against any substantial revegetation which might affect the function of the floodway. It is unknown if this would prevent small areas of vegetation, of any classification, occurring in selected areas. Even if these are less than 2,500sqm in size they would still be classified where they adjoin the balance of the grassland vegetation in the balance of the ROS. This interface will be managed by providing an 21m wide boundary subdivision road, noting that there will also be a 3m boundary firebreak within the POS.
2. Grassland interface with Lot 3001. This affects the north eastern portion of the site and once Lot 3001 is developed then there not be any adjacent vegetation hazard. At present there is grassland vegetation on Lot 3001 and the setback for a BAL-29 rating of the lots is 8m. This interface will be managed by leaving this area as part of the balance lot pending the development of Lot 3001. This area will then be maintained as an asset protection zone so that no portion of the adjoining lots have a BAL-40 or BAL-FZ rating.
3. The proposed local open space will contain an area of remnant vegetation. As this is greater than 1 hectare in size it is classified as being a bushfire hazard. The management plan for the reserve will include some minor clearing to ensure that there are appropriate development setbacks.
4. Eaton Drive provides district road access in two different directions. The bridge over the Collie River links into The Boulevard in the Treendale Estate.
5. The principal local access to the subject land is from Peninsula Lakes Drive with secondary access from Leichester Ramble.
6. There is restricted access to Eaton Drive from Robusta Road the area north of this.
7. In order to provide two access roads, it will be necessary to have a temporary emergency access way connecting through Lot 3001 to Eaton Drive pending the development of Lot 3001.

4.2 Local Open Space

As indicated in Section 2.2 the Local Open Space Area reserve is proposed to be partially developed and managed as low threat vegetation by the Shire of Dardanup.

This would be subject to a landscaping plan approved by Council with the landscaping established by the developer and maintained for two years as prescribed by Model Subdivision Condition R4 which states that:

Arrangements being made for the proposed public open space to be developed by the landowner/ applicant to a minimum standard and maintained for two summers through the implementation of an approved landscape plan providing for the development and maintenance of the proposed public open space in accordance with the requirements of Liveable Neighbourhoods and to the specifications of the local government. (Local Government)

This condition is imposed in accordance with the requirements of Liveable Neighbourhoods Element 4. It is further reinforced in Section 6.3.3.2 of the Local Government Guidelines for

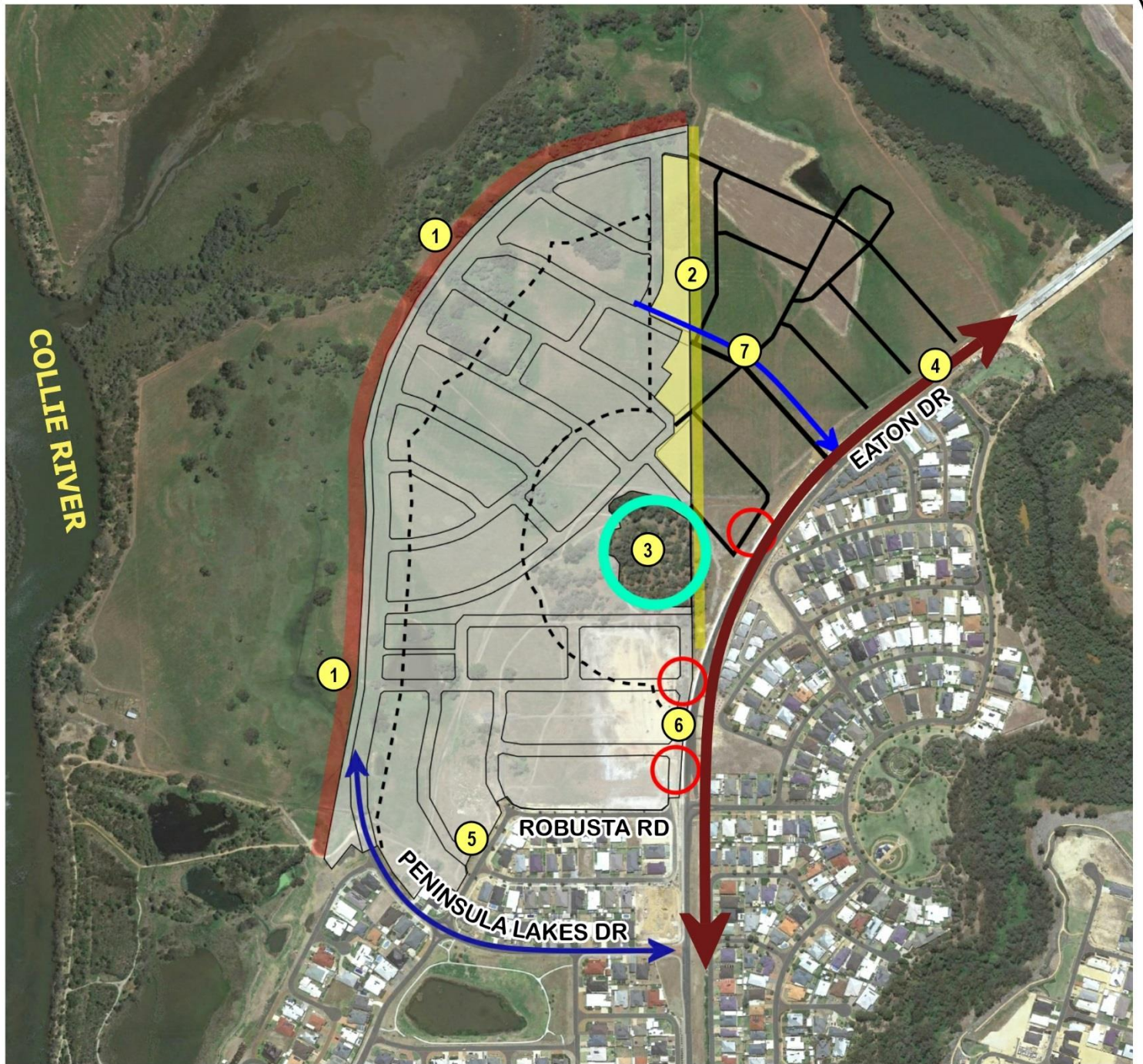
Parkridge Estate Eaton

Subdivisional Development (2) which set out the standard requirements for the development of public open space including:

- a) The preparation of a management plan;
- b) A long-term maintenance agreement based on the management plan being entered into by the developer with the Local Government as part of the approval.
- c) A landscape maintenance and watering period of at least two summer periods to ensure full establishment, which includes a maintenance bond.

Further justification of this assumption can be provided by including the approval of the landscape and maintenance plans by Council as part of the requirements for clearance of the subdivision conditions associated with this bushfire management plan.

2 Department of Planning Lands and Heritage (2017) Local Government Guidelines for Subdivisional Development



LEGEND













DEVELOPMENT AREA		DISTRICT ACCESS	
REGIONAL OPEN SPACE INTERFACE		PRINCIPAL SITE ACCESS	
GRASSLAND INTERFACE LOT 3001		TEMPORARY SECONDARY ACCESS	
BALANCE LOT BUFFER		ACCESS RESTRICTION	
REGIONAL OPEN SPACE REVEGETATION		ISSUE NO (REFER TO TEXT)	
LOCAL OPEN SPACE VEGETATION			
BAL LOW SETBACK			

FIGURE 10
BUSHFIRE HAZARD ISSUES



Job No 17-076		
Rev	Description	Date
A	Preliminary	01/02/2018
B	Rev Design	14/03/2018
C	WAPC Mods	10/06/2019



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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 4 and shown spatially in Figure 11.

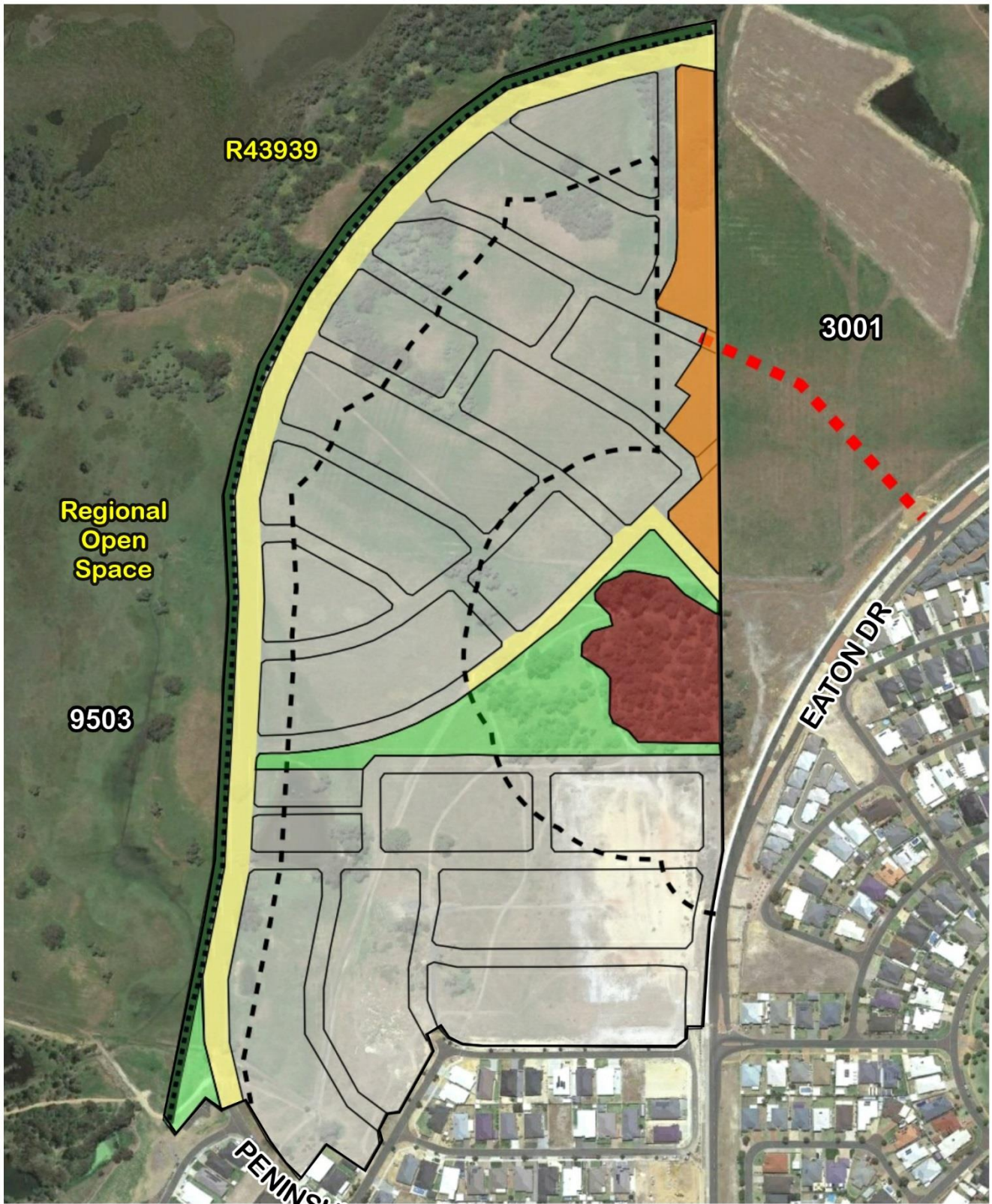
Table 5 Bushfire Protection Criteria

Bushfire protection criteria	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location	Yes	The proposed lots will have a BAL-29 or lower rating. This is subject to lots opposite the ROS having a 3m front development setback. This will be reinforced by the use of a restrictive covenant to prevent development within any area with a BAL-40/FZ rating. Based upon the existing vegetation this will only apply to Cells 1 and 4. It may apply to other cells in the event of any revegetation being classified as Forest.
Element 2: Siting and design	A2.1 Asset protection zone (APZ)	Yes	The lots are not large enough to contain the APZ within their own boundaries. Generally, for the "first row" of dwellings adjacent to the hazard areas the APZ will be provided within the development setback from the front boundary combined with the 18m wide road reserve and in some instance portions of the Local Open Space. This complies with the Guidelines which state on page 63 of the BPC that the APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context.
Element 3: Vehicular access	A3.1 Two access routes A3.2 Public road	Yes Yes	A temporary access connection to Eaton Drive will be required. The subdivision roads will be constructed in accordance with the Local Government Guidelines (3) for Subdivisional Development

³ Department of Planning Lands and Heritage (2017) Local Government Guidelines for Subdivisional Development

Parkridge Estate Eaton

Bushfire protection criteria	Method of Compliance Acceptable solutions / Performance based solution	Compliance	Proposed bushfire management strategies
			which meet required specifications for bushfire access.
	A3.3 Cul-de-sac (including a dead-end-road)	N/A	There are no cul-de-sacs in the development.
	A3.4 Battle-axe	N/A	There are no battle axe lots.
	A3.5 Private driveway longer than 50m is to meet detailed requirements contained within the Guidelines.	N/A	There are no lots more than 50m deep.
	A3.6 Emergency access way (EAW)	Yes	The proposed EAW will be approximately 200m in length and located on the alignment of a future subdivision road. The agreement of the owner of Lot 3001.
	A3.7 Fire service access routes (FSAR)	N/A	There are no proposed FSARs
	A3.8 Firebreak width	N/A	All lots are less than 0.5ha in size.
Element 4: Water	A4.1 Reticulated areas	Yes	The subdivision will be serviced with fire hydrants in accordance with the required specification. A plan of the hydrants will be submitted to Council and DFES as part of the subdivision clearance.
	A4.2 Non-reticulated areas	N/A	Not applicable
	A4.3 Individual lots within non-reticulated areas.	Yes	Not applicable



LEGEND

DEVELOPMENT AREA	———	REGIONAL OPEN SPACE	———
BUSHFIRE PRONE LOTS	- - - - -	3m FIREBREAK	- - - - -
RETAINED BUSHLAND	■	LOW THREAT VEGETATION	■
EMERGENCY ACCESS WAY, 6m WIDE WITH GATES AT EACH END & SIGNAGE	- - - - -	ASSET PROTECTION ZONE	■
		LOCAL OPEN SPACE	■
		BALANCE LOT	■

NOTES

- Vegetation in the Asset Protection Zone and designated Regional Open Spacer is to comply with Schedule 1 Element 2 of the Guidelines noting that:
- Trees >5m in height are to be setback a minimum distance of 6m from the building with no branches overhanging the roof;
 - Shrubs <5m in height are to be setback a minimum distance of 3m from the building and not planted in clumps greater than 5sqm; and
 - Grass is to be maintained at less than 100mm in height.

FIGURE 11
SPATIAL MITIGATION MEASURES



Job No 17-076

Rev	Description	Date
A	Preliminary	01/02/2018
B	Rev Design	14/03/2018
C	WAPC Mods	10/06/2019



5.2 Additional Management Strategies

5.2.1 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.

5.2.2 Staging

The development of the estate will have staged construction. In the event that the subdivision is staged then it is necessary to ensure that appropriate interim measures are provided. These may include:

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

For any proposed stage of the subdivision a statement and plan of the proposed interim fire management measures will be submitted and approved by the Shire as an adjunct to Figure 11.

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 6.

Table 6 Implementation

No	MANAGEMENT ACTION	TIMING
1.0 Developer Prior to Issue of Titles		
1.1	Construction of subdivision roads to standards outlined in the BMP to ensure safe access and egress.	Subdivision
1.2	A restrictive covenant to the benefit of the local government, pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of the land within areas that have been assessed as BAL-40 or BAL-Flame Zone.	Subdivision
1.3	Maintaining the balance area Cell 11 as low threat vegetation pending the development of Lot 3001.	Subdivision
1.4	Obtaining the agreement of the owner of Lot 3001 for the proposed emergency access way.	Subdivision
1.5	Construction of the emergency access way with associated gates and signage.	Subdivision
1.6	A plan demonstrating the location and capacity of fire the fire hydrants shall be submitted to the Shire of Dardanup and DFES.	Subdivision
1.7	Preparation and approval of the landscape and maintenance plans by Council for the areas of Local Open Space. These are to address the proposed vegetation modification, separation areas, fuel loads and weed management and specifications contained in Schedule 1 Standards for Asset Protection Zones.	Subdivision
1.8	Preparing a notification be included on the certificate of titles for the lots shown on Figure 11 as being bushfire prone advising that the land is subject to a Bushfire Management Plan.	Subdivision
2.0 Developer Prior to Sale		
2.1	Providing prospective residents with a summary of this BMP.	
3.0 Landowner Prior to Occupancy		
3.1	Ensuring that any application for a building permit for a dwelling is to include an individual BAL assessment to confirm that sufficient land has been cleared to provide for BAL-29 setbacks.	Development
4.0 Landowners Ongoing		
4.1	Undertaking regular maintenance of their property in preparation for the annual fire season.	Ongoing
4.2	Ensuring that all fire mitigation measures shall be completed by the date prescribed in Council's Firebreak Order.	Ongoing

5.0 Local Government Ongoing Management		
5.1	Ensuring Building Permit Applications and Development Applications are compliant with the building and land use planning provisions.	Ongoing
5.2	Maintenance of the designated areas of Local Open Space as low threat vegetation in accordance with the approved management plans.	Ongoing
5.3	Enforce compliance with its annual firebreak notice.	Ongoing
6.0 Lot 9503		
6.1	Provision and maintenance of the 3.0m boundary firebreak	Ongoing

Appendix 1 Floodway Advice



Department of Environment

SPARE COPY RETURN

68

Your ref:

Our ref: 2373

Enquiries: Rick Bretnall

Direct tel: 9278 0542

Mr Sean Wilson
WAPC - Land Asset Management
Albert Facey House
469 Wellington Street
PERTH WA 6000

CLIENT I.D.	15P00200
DATE/TITLE	2004 09.
CLASSIFY	

Dear Sean

LOT 4 EATON DRIVE EATON

I refer to your enquiry dated 23 September 2004.

The Department of Environment in carrying out its role in floodplain management provides advice and recommends guidelines for development on floodplains with the object of minimising flood risk and damage. The following guiding principles are used in assessing proposed development on the floodplain:

- Proposed development should not detrimentally impact on flooding.
- Proposed development has adequate flood protection from a 100 year ARI flow.

The Collie River Flood Study shows that the area is affected by flooding during major river flows with the 100 year ARI flood level estimated to be 3.70 m AHD. Our floodplain management strategy for the area is:

- Proposed development (ie, filling, building, etc) that is located outside of the floodway is considered acceptable with respect to major flooding. However, a minimum habitable floor level of 4.20 m AHD is recommended to ensure adequate flood protection.
- Proposed development (ie, filling, building, etc) that is located within the floodway and is considered obstructive to major flows is not acceptable as it would increase flood levels upstream. No new dwellings are acceptable in the floodway.

Please note that a failure to properly adhere to these recommendations will result in a greater exposure to risks of flood damage.

Yours faithfully

Rick Bretnall

Rick Bretnall
A/SUPERVISING ENGINEER, SURFACE WATER HYDROLOGY
24 September 2004

rbre959

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www.wrc.wa.gov.au



Government of Western Australia
Department of Water



looking after all our water needs

Your ref:
Our ref: WT8751
Parkridge_floodway.docx
Enquiries: Simon Rodgers (ph:6364 6923)

Mr Thurston Saulsman
Director, Parkridge Group Pty Ltd
PO Box 8357
Angelo Street
SOUTH PERTH 6151

Dear Thurston

Collie River Floodway : Parkridge Estate Eaton

I refer to your letter dated 26 October 2011 and our meeting at the Department of Water on 23 September.

Our records indicate that we provided floodplain management advice on 14 August 2007 to your consultant (Ian Cocker at TME, refer to attachment) that stated:

"Scenario 3A, minor island extension was the preferred choice but the hydraulic modelling should also include what may be proposed in the floodway (ie, possible oval, golf course, etc) so that a master plan is developed for the entire area."

As discussed at our meeting, perimeter security fencing surrounding a proposed oval would not be considered acceptable with regard to major flooding. An alternative fencing option that includes only fencing aligned parallel to the flow may be considered as part of the master plan for the area.

For further information please contact me on 6364 6923.

Yours sincerely

Simon Rodgers
Supervising Engineer, Floodplain Management
10 November 2011