

# Bushfire Protection Assessment: Proposed Mixed-use Concept Plan - Culburra Road, West Culburra

---

**Sealark Pty Limited**

---

## DOCUMENT TRACKING

<b>Project Name</b>	Bushfire Protection Assessment: Proposed Mixed-use Concept Plan - Culburra Road, West Culburra
<b>Project Number</b>	19HNG_14878
<b>Project Manager</b>	Rod Rose
<b>Prepared by</b>	Natalie South
<b>Reviewed by</b>	Rod Rose
<b>Approved by</b>	Rod Rose (FPAA BPAD Accredited Practitioner No. BPAD1940-L3)
<b>Status</b>	<b>Final</b>
<b>Version Number</b>	<b>6</b>
<b>Last saved on</b>	<b>12 October 2020</b>

This report should be cited as 'Eco Logical Australia. October 2020. Bushfire Protection Assessment: Proposed Mixed-use Concept Plan - Culburra Road, West Culburra. Prepared for Sealark Pty Limited.'

## ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Allen Price & Scarratts

### *Disclaimer*

*This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and Sealark Pty Limited. The scope of services was defined in consultation with Sealark Pty Limited, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.*

Template 2.8.1

## Contents

<b>1. Property and proposal .....</b>	<b>1</b>
1.1 Description of proposal .....	1
1.2 Zoning .....	3
1.3 Assessment process .....	3
1.4 Bush fire prone land status .....	4
<b>2. Bushfire threat assessment .....</b>	<b>6</b>
<b>3. Bushfire protection measures.....</b>	<b>8</b>
3.1 Asset Protection Zones (APZ).....	8
3.2 APZ maintenance plan .....	8
3.3 Construction standard .....	10
3.4 Access .....	10
3.5 Services – Water, electricity and gas .....	12
3.5.1 Water .....	12
3.5.2 Electricity services .....	12
3.5.3 Gas services.....	12
<b>4. Assessment of environmental issues .....</b>	<b>13</b>
<b>5. Staging .....</b>	<b>13</b>
<b>6. Conclusion .....</b>	<b>18</b>
<b>7. References.....</b>	<b>19</b>
Appendix A – Assessment process .....	20
Appendix B – Access specifications .....	21
Appendix C – Assessment of 2020 Concept Plan against previous GTAs.....	24

## List of Figures

Figure 1: Subdivision layout .....	5
Figure 2: Bushfire hazard assessment and Asset Protection Zones (APZ) .....	7
Figure 3: Residential area staging .....	14
Figure 4: Residential Area Staging.....	15
Figure 5: Industrial Area Staging .....	16
Figure 6: Town Centre Staging .....	17

## List of Tables

Table 1: Subject site summary .....	1
Table 2: Summary of bushfire protection measures assessed.....	3
Table 3: Bushfire hazard assessment and APZ requirements .....	9
Table 4: Components of proposed access compliant with performance criteria .....	11
Table 5: Performance criteria for reticulated water supplies (PBP page 27).....	12
Table 6: Summary of bushfire protection measures assessed.....	18
Table 7: General access requirements (adapted from Table 5.3b of PBP 2019) .....	21
Table 8: Perimeter road requirements (adapted from Table 5.3b of PBP).....	22
Table 9: Non-perimeter road requirements (adapted from Table 5.3b of PBP).....	22

# 1. Property and proposal

**Table 1: Subject site summary**

Street address or property name:	453 Culburra Road		
Suburb, town or locality:	Culburra Beach	Postcode:	2540
Lot/DP no:	Part Lots 5 and 6 DP 1065111		
Local Government Area:	Shoalhaven City Council		
Zoning:	Refer Section 1.2.		
Type of development:	Mixed-use concept plan (Commercial and Residential)		

## 1.1 Description of proposal

The amended Concept Plan for West Culburra Expansion Area (**Figure 1**) has been prepared in response to Section 34 of the Land and Environment Act 1979, which was facilitated by Commissioner Susan Dixon on 14 November 2019.

Prior to the matter being considered by the Land and Environment Court of NSW, a larger development proposal on the site was refused by the Independent Planning Commission on 17 October 2018.

The larger development proposal was lodged for assessment on 29 April 2010 under Part 3A to Part 4 Division 4.7 of the Environmental Planning and Assessment 1979 (EPA Act) and transitioned to a State Significant Development Application in 2015. This assessment is therefore based upon Planning for Bushfire Protection 2006 and the bushfire assessment processes in place in 2010, with upgrading where possible to comply with *Planning for Bush Fire Protection (PBP) 2019*.

In summary, the amended plan (assessed herein) is a revision of the 2010 development proposal and provides a more environmentally sensitive development. It provides a significant reduction in the size of the development and the number of persons exposed to a bushfire risk. The original development was reviewed by the NSW RFS at various times between 2013 and 2017, **Appendix C** addressed how the modified Concept Plan meets those conditions/recommendations. The following summarises the changes within the modified Concept Plan; it has development in three main precincts, being:

### Town Centre Expansion

- New sportsground/maintained open space area and medium density land.
- Associated clubhouse/amenities on the western side of field and associated parking.
- Medium Density Residential and Integrated Housing located on land zoned 3(f) - (Business "F" (Village) Zone)) and the unzoned land along Culburra Rd. This makes use of the limited opportunity to develop vacant residential living closer to the township centre.
- Defines the likely road network and connection to the existing town centre for the land zoned 3(f) - (Business "F" (Village) Zone)).
- 12 mixed use lots, 45 integrated housing lots and 3 commercial lots.
- Shared pedestrian path/cycleway in the foreshore and road reserves which connects new residential to town centre.

- The revised Concept Plan also outlines proposed stormwater treatments to support this land use which includes some road reserve widths to cater for Water Sensitive Urban Design (WSUD) treatment measures.

### **Industrial Centre Expansion land**

- 13 Industrial lots.
- Defined access arrangements and integration with the existing industrial land area.
- A short section of the proposed industrial road is located within the Lake Wollumboola catchment but this area will be designed to drain to the Crookhaven River catchment.
- The road network provides a secondary bushfire emergency egress for the residential area to the west.

### **New Residential land west of Culburra Sewerage Treatment Plant**

- Reduction in residential lots west of the Culburra Sewerage Treatment Plant from approximately 600 lots to 244 lots.
- A small number of the residential allotments to the south-east are proposed on land zoned 4(a) Industrial Zone.
- Generous road reserve widths now cater for WSUD treatment measures.
- An increase in stormwater treatment devices within land zoned for residential use.
- Foreshore reserve width between residential allotments and the Mean High Water Mark (MHWM) has been increased to be more than 100m at all locations along the foreshore.
- Redesign of the road and maintained open space network which facilitates requirements for bushfire asset protection zones, stormwater treatment and provision of key recreational assets. Note - these maintained open space areas are proposed to be irrigated from the proposed stormwater detention basins.
- Relocation of the “entry roundabout” (approximately 30 m west of the previous location) which forms an entry feature to the Culburra Beach town and the new residential area.
- Shared pedestrian path/cycleway in the foreshore and road reserves which connects new residential to town centre.
- Realignment of the perimeter road to the edge of the water catchment ridgeline that separates Crookhaven River and Lake Woollumboola. This makes efficient use of available residential zoned land in proximity to the entry road / roundabout.
- Reduction in the number of gravity sewerage pumping stations from two to one (due to the decrease in the extent of the development).
- Revised secondary bushfire emergency egress located along the southern boundary of Culburra Sewerage Treatment Plant between residential and industrial zones.
- The sportsground has been moved out of the Lake Woollumboola catchment and is now adjacent to the town centre.
- Public Reserve between the residential and the industrial land (to act as a visual buffer) and will contain water quality devices and an emergency bushfire egress route.

## 1.2 Zoning

It should be noted that the Application is to be assessed under Shoalhaven Local Environmental Plan (SLEP) 1985 as SLEP 2014 was still under preparation at time of lodgement. Under SLEP 2014, part of the site is zoned in accordance with this instrument and part of the site is zoned as a Deferred Matter (deferring to SLEP 1985 zones). Hence, the revised Concept Plan identifies land zones from both SLEPs, although assessment is made against SLEP 1985.

In accordance with SLEP 1985 and as shown on the revised Concept Plan (Figure 1), the following land use zonings apply to each of the 3 precincts:

- Town Centre Expansion (Business, Residential & Recreation land)
- 3(f) – Business (Village) Zone
- 5(a) – Special Use Zone – Community Use
- 7(a) - Environmental Conservation Zone
- Industrial Centre Expansion (Industrial land)
- 4(a) – Industrial (General) Zone
- New Residential Area (Residential & Recreation land)
- 2(c) – Residential (Living Area) Zone
- 4(a) – Industrial (General) Zone
- 5(c) – Special Uses (Reservation) – High School
- 7(a) - Environmental Conservation Zone

## 1.3 Assessment process

The proposal was assessed in accord with Section 100B of the *Rural Fires Act 1997* and ‘Planning for Bush Fire Protection 2006’ (RFS 2006), herein referred to as PBP (See **Appendix A** for a summary of the assessment process).

Assessment included a review of background documentation, design team consultation, GIS analysis and previous bushfire assessments undertaken on the site (ELA 2013).

Additionally, a performance-based solution was developed using the new version of Planning for Bush Fire Protection (PBP 2019) to determine the Asset Protection Zones (APZ) and address access requirements within the proposed development.

**Table 2** identifies the bushfire protection measures assessed and whether these involved acceptable or performance solutions.

**Table 2: Summary of bushfire protection measures assessed**

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
Construction standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.3
Access	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.4
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Gas and electrical supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5

## 1.4 Bush fire prone land status

The subdivision includes land classified as bush fire prone on the Shoalhaven City Council's bush fire prone land (BFPL) map<sup>1</sup>.

<https://www.planningportal.nsw.gov.au/find-a-property>

---

<sup>1</sup> <https://www.planningportal.nsw.gov.au/find-a-property>



## 2. Bushfire threat assessment

**Figure 2** shows the effective slope and predominant vegetation on transect lines representing the highest bushfire threat potentially posed to the subdivision from various directions.

The effective slope has been determined from 2 m contour data. The predominant vegetation has been determined from vegetation mapping prepared by Eco Logical Australia (ELA 2017).

Bushfire prone vegetation surrounding the subject development is a mix of Dry Sclerophyll Forest and Wet Sclerophyll Forest which both fall classified as 'forest' vegetation within PBP. Extensive areas of mangrove occur to the north of the subdivision.

The slopes are gentle over the entire site and within the PBP slope classes of 'all upslopes and flat land' and '>0-5° downslope'.

**Figure 2** and **Table 3** show the data from the vegetation and slope assessment. Where required additional information is provided within Table 3 on why and how the slope and vegetation has been calculated.

The site is located within the Local Government Area (LGA) of Shoalhaven City Council and which is classified as having a Fire Danger Index (FDI) of 100 under PBP.

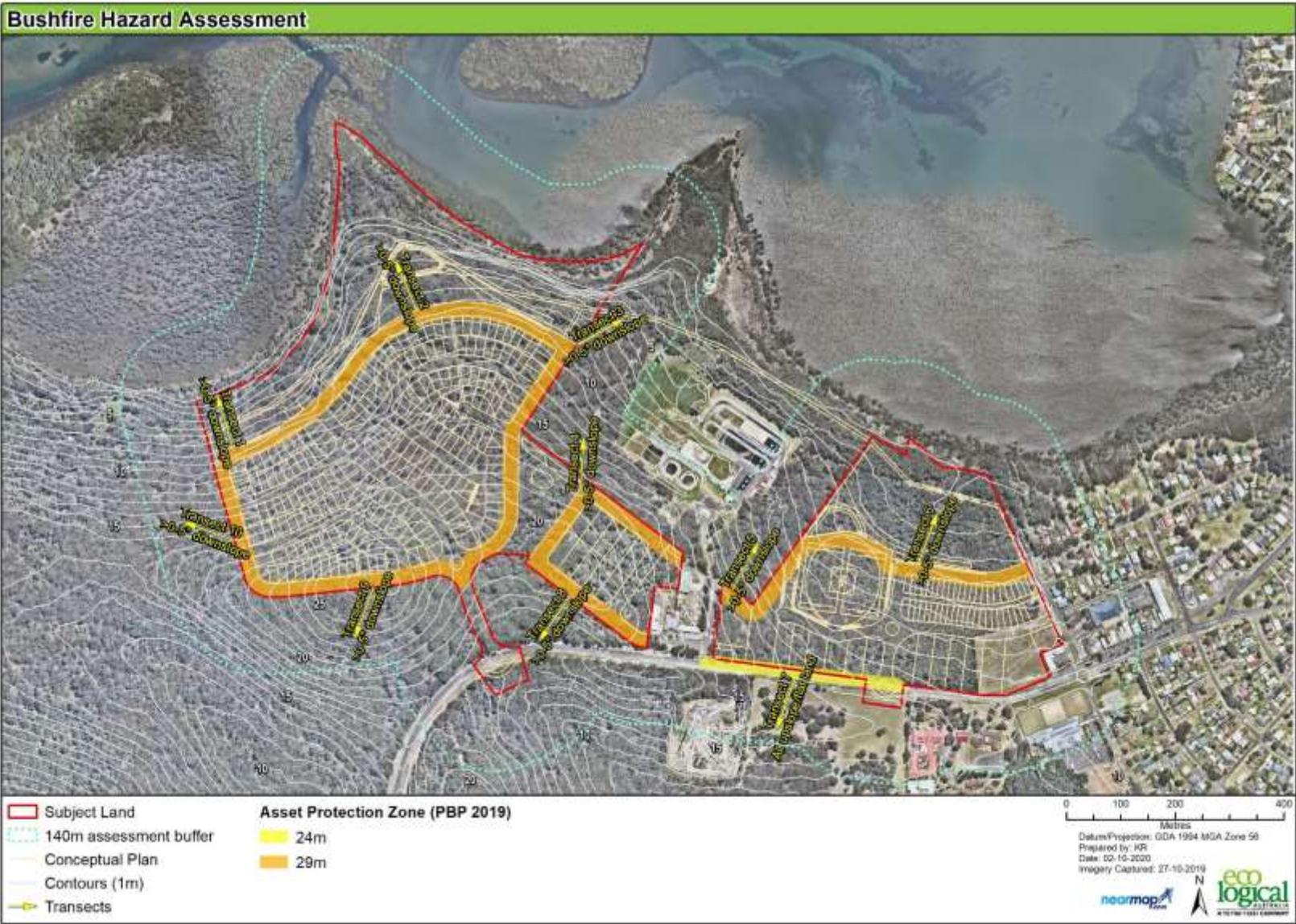


Figure 2: Bushfire hazard assessment and Asset Protection Zones (APZ)

## 3. Bushfire protection measures

### 3.1 Asset Protection Zones (APZ)

**Table 3** shows the dimensions of the Asset Protection Zones (APZ) required in each of the transect line directions; and where relevant, information on how the APZ is to be provided is included. The footprint of the required APZ is also shown in **Figure 2**.

### 3.2 APZ maintenance plan

Where the APZ is to be established (including temporary APZ) within the development are to be managed to Inner Protection Area (IPA) standards under PBP as follows:

- No tree or tree canopy is to occur within 2 m of the future building rooflines;
- The presence of a few shrubs or trees in the APZ is acceptable provided they:
  - Are well spread out and do not form a continuous canopy;
  - Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
  - Are located far enough away from the building so that they will not ignite future buildings by direct flame contact or radiant heat emission.
- Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species;
- A minimal ground fuel is to be maintained to include less than 4 tonnes per hectare of fine fuel (fine fuel means ANY dead or living vegetation of <6 mm in diameter e.g. twigs less than a pencil in thickness. 4 t/ha is equivalent to a 1 cm thick layer of leaf litter); and
- Any structures storing combustible materials such as firewood (e.g. sheds) must be sealed to prevent entry of burning debris.

Further details on APZ implementation and management can be found on the NSW RFS website including:

[https://www.rfs.nsw.gov.au/\\_data/assets/pdf\\_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf](https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf).

There are five (5) public reserves proposed within the development, these will be managed to IPA standards by Shoalhaven City Council.

**Table 3: Bushfire hazard assessment and APZ requirements**

Direction from development boundary	Transect (see Figure 2)	Slope	Vegetation	PBP 2019 required APZ	Available APZ	Comment
North-west	1	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	APZ provided by road reserve and building setback.
North-west	2	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	As above
North-west	3	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	As above
North	4	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	As above
North	5	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	APZ provided within Lots 304 and 314
North-east	6	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	APZ provided by road reserve and building setbacks.
South	7	All upslopes and flat land	Forest	24 m	≥24 m	APZ provided by Culburra Road and rear building setback.
South	8	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	APZ provided by road reserve and building setback.
South-west	9	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	As above
West	10	Downslope >0 to 5 degrees	Forest	29 m	≥29 m	As above

### 3.3 Construction standard

The Bushfire Attack Level (BAL) for future buildings within the proposed subdivision will be determined at the individual dwelling Complying Development Certificate (CDC) or Development Application (DA) stage, however, a maximum of BAL-29 is provided by the subdivision design for all dwellings, commercial and industrial buildings using PBP 2019 fuel loads.

### 3.4 Access

Public road access to the subdivision is via various points along Culburra Road and Canal Street East as shown in **Figure 1**.

Public road access to the western residential precinct is via an entry point off Culburra Road with an alternate egress provided by an emergency use (only) firetrail connecting with a proposed road within the industrial estate and further east with Strathstone Street.

The access to western residential precinct does not meet the acceptable solutions under PBP and has been assessed as a performance solution. The performance solution has been proposed to avoid the fire trail being a 'short-cut' to Culburra when the best functional road design is to have all day-to-day traffic on the proposed single public access.

The performance solution provides two additional alternative egress routes should the single public access fail. Firstly, the public access road off Culburra Road provides 3 lanes (1-lane entry and 2-lane exit) to facilitate egress from the site in the event of emergency.

The second emergency access option is an alternate egress via a 4-6 m wide (trafficable surface) emergency (only) non-public road connecting the residential area with a proposed road within the industrial estate and further east with Strathstone Street. This emergency (only) egress will be gated and ideally locked at either end with gate keys given to all local emergency responders (and others as required). That part of the emergency (only) egress which connects with Strathstone Street via part Lot 2 DP 836137 is secured by an easement under an 88b instrument for DP 1222449.

**Figure 1** and **Figure 2** show the access within the subdivision. The performance criteria and acceptable solutions are shown in **Table 7**, along with comment on the subdivision design compliance or otherwise. All access within the subdivision meets the acceptable solutions within PBP 2019, except those identified in **Table 4** and discussed above.

All dead end roads are less than 200 m and will incorporate a minimum 12 metres outer radius turning circle, and be clearly sign posted as a dead end;

**Table 4: Components of proposed access compliant with performance criteria**

Access Type	Description	Performance criteria	Comments
Access (1) - Public Roads	Main access road	Firefighting vehicles are provided with safe, all-weather access to structures.	The western residential precinct provides: - 3 lane public access (1-lane entry and 2-lane exit); - One emergency only (non-public) road.
Access (1) - Public Roads	Dead end roads	Firefighting vehicles are provided with safe, all-weather access to structures.	There are 2 dead ends roads proposed within the subdivision. Both dead end roads will incorporate a minimum 12 metres outer radius turning circle, and be clearly sign posted as a dead end.

### 3.5 Services – Water, electricity and gas

#### 3.5.1 Water

The proposal will be serviced by a reticulated water supply. **Table 5** identifies the acceptable solution requirements of Section 4.1.3 of PBP for which the proposal is compliant with, subject to the following specifications:

**Table 5: Performance criteria for reticulated water supplies (PBP page 27)**

Performance Criteria	Acceptable Solutions	Complies
<b>The intent may be achieved where:</b>		
water supplies are easily accessible and located at regular intervals	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Complies
	Fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.	Complies
	Hydrants are not located within any road carriageway	Complies
	All above ground water and gas service pipes external to the building are metal, including and up to any taps.	Complies
	The provisions of parking on public roads are met.	Complies

#### 3.5.2 Electricity services

Electricity supply to / within the subject land is located underground and therefore complies with Section 4.1.3 of PBP.

#### 3.5.3 Gas services

Gas services (reticulated or bottle gas) are compliant with Section 4.1.3 of PBP, subject to the following specifications:

- Any gas services are to be installed and maintained in accordance with Australian Standard AS/NZS 1596 *The storage and handling of LP Gas* (SA 2014). Metal piping is to be used;
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation;
- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal; and
- Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

## 4. Assessment of environmental issues

An assessment of significant environmental features, threatened species or Aboriginal relics identified under the *Biodiversity Conservation Act 2016* or the *National Parks Act 1974* that will affect or be affected by the bushfire protection proposals in this report has not been undertaken as it is covered by other reports before the L&EC. The impact footprint of these measures e.g. APZ is clearly identified within this report and therefore capable of being assessed by suitably qualified persons.

## 5. Staging

The mixed-use subdivision will be constructed in the following stages:

### Residential Area

- Stages 1-9: main residential subdivision
  - Developed progressively westward
  - Temporary perimeter roads compliant with **Table 8** will be provided as shown in **Figure 3-4**
  - APZ are to be provided between progressing development perimeter and the bushfire hazard. These APZ are to be wide enough to ensure the adjoining allotments are able to be built upon to the standard anticipated under PBP 2019 when the total subdivision is complete. This may be up to 100 m wide in some instances as shown in **Figure 3-4**.
  - The emergency bushfire egress to the south-east is required to be constructed in stage 1.

### Industrial Area

- Stages 1-2: Industrial lots west of existing industrial area
- Developed progressively westward
  - Temporary perimeter roads compliant with **Table 8** and 100 m APZ will be provided as shown in **Figure 5**.

### Town Centre

- Stage 1: Sports playing field and medium density lots to north
  - Temporary perimeter roads compliance with **Table 8** and 100 m APZ will be provided as shown in **Figure 6**.
- Stages 2-4: residential and commercial lots
  - Developed progressively southward and westward
  - Temporary perimeter roads compliant with **Table 8** and 100 m APZ will be provided as shown in **Figure 6**.

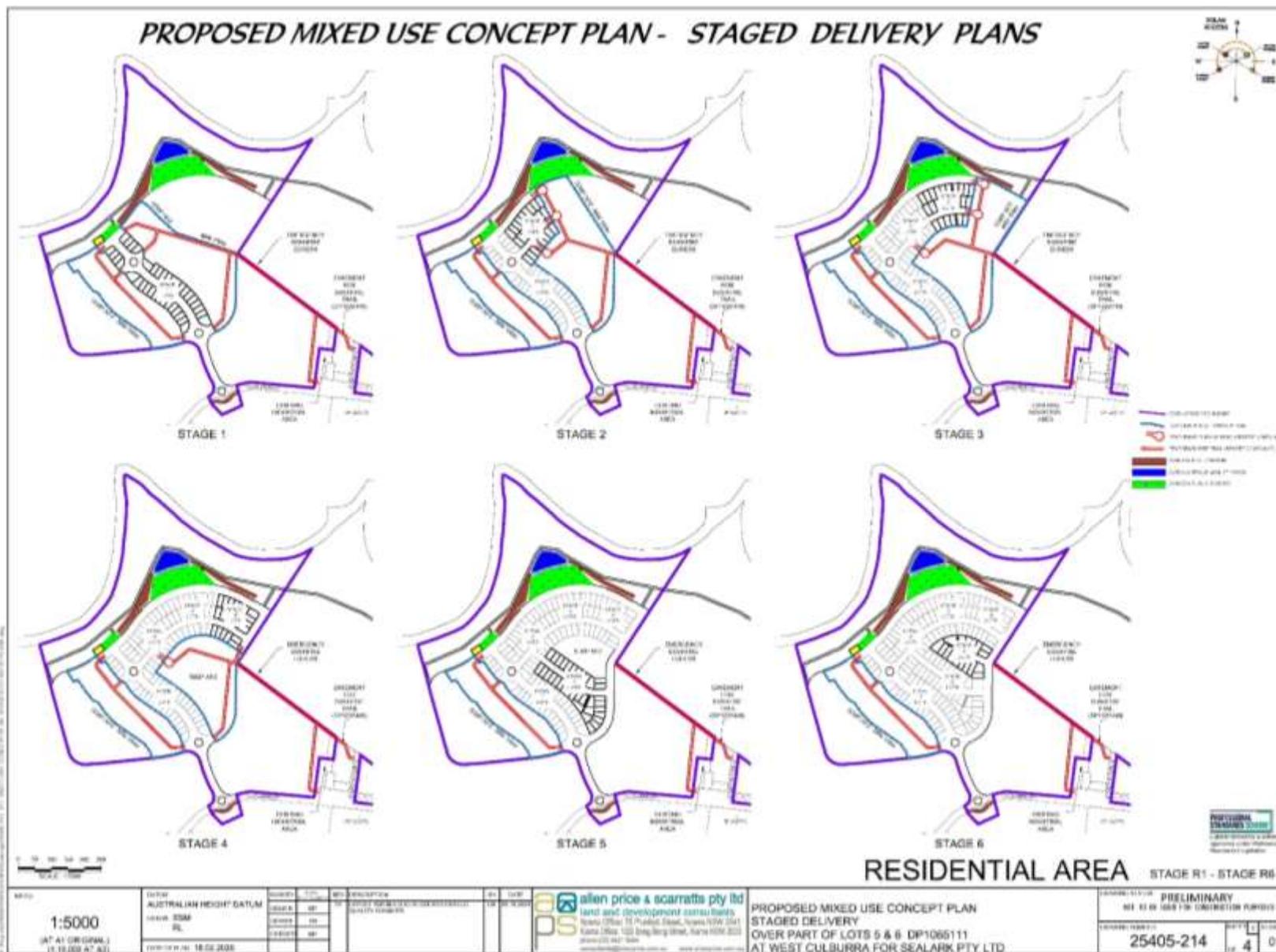


Figure 3: Residential area staging

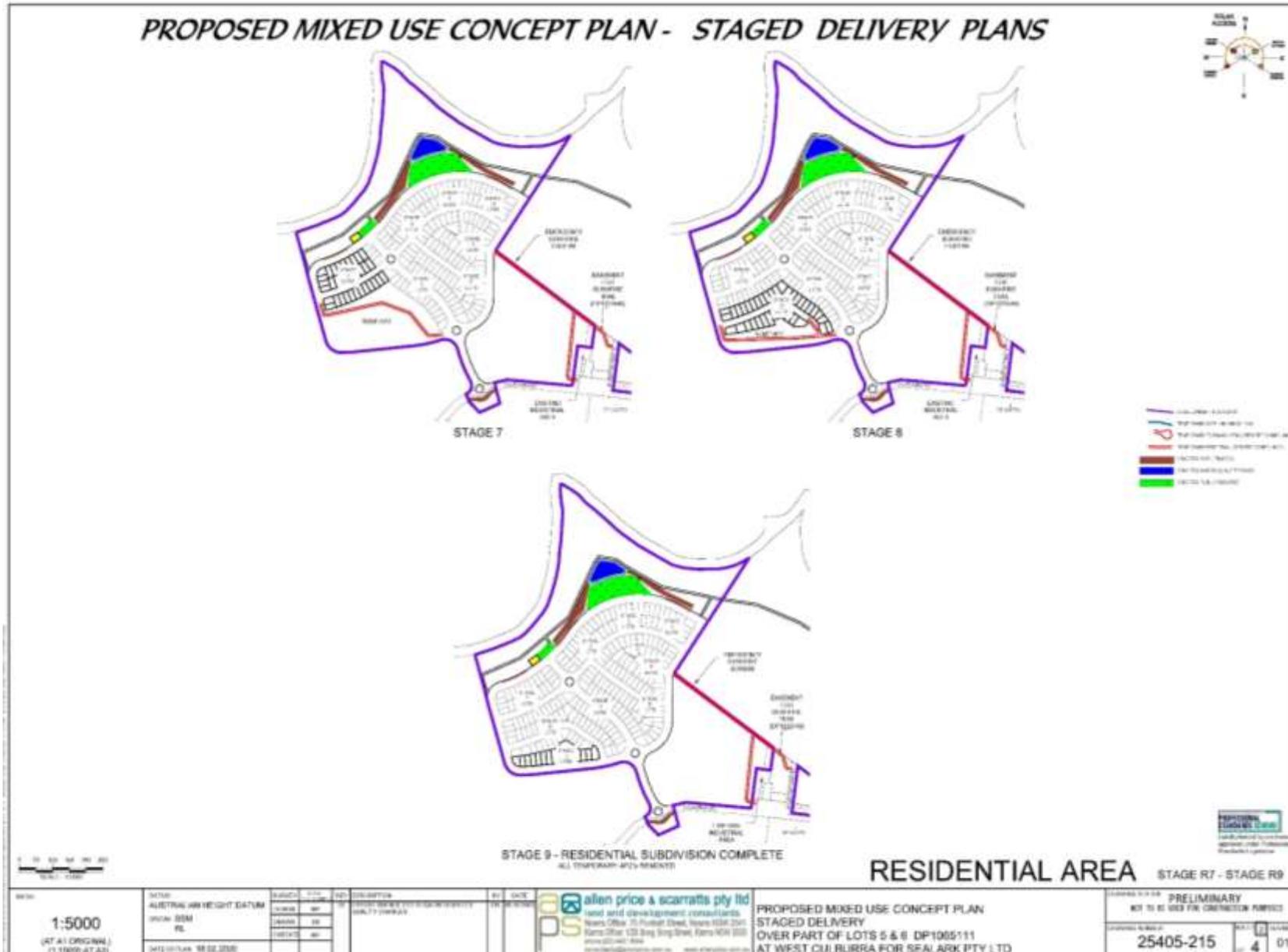


Figure 4: Residential Area Staging

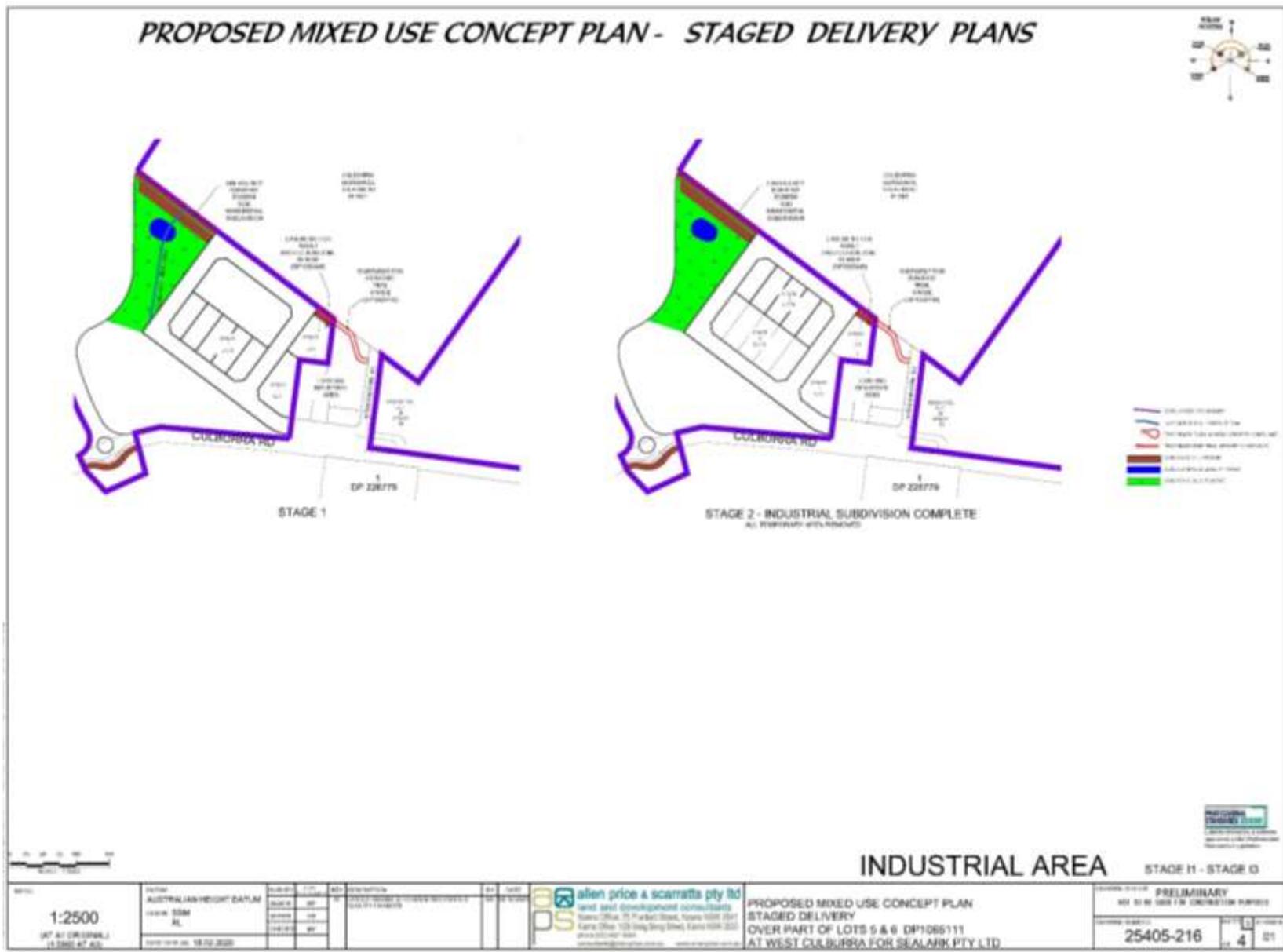


Figure 5: Industrial Area Staging

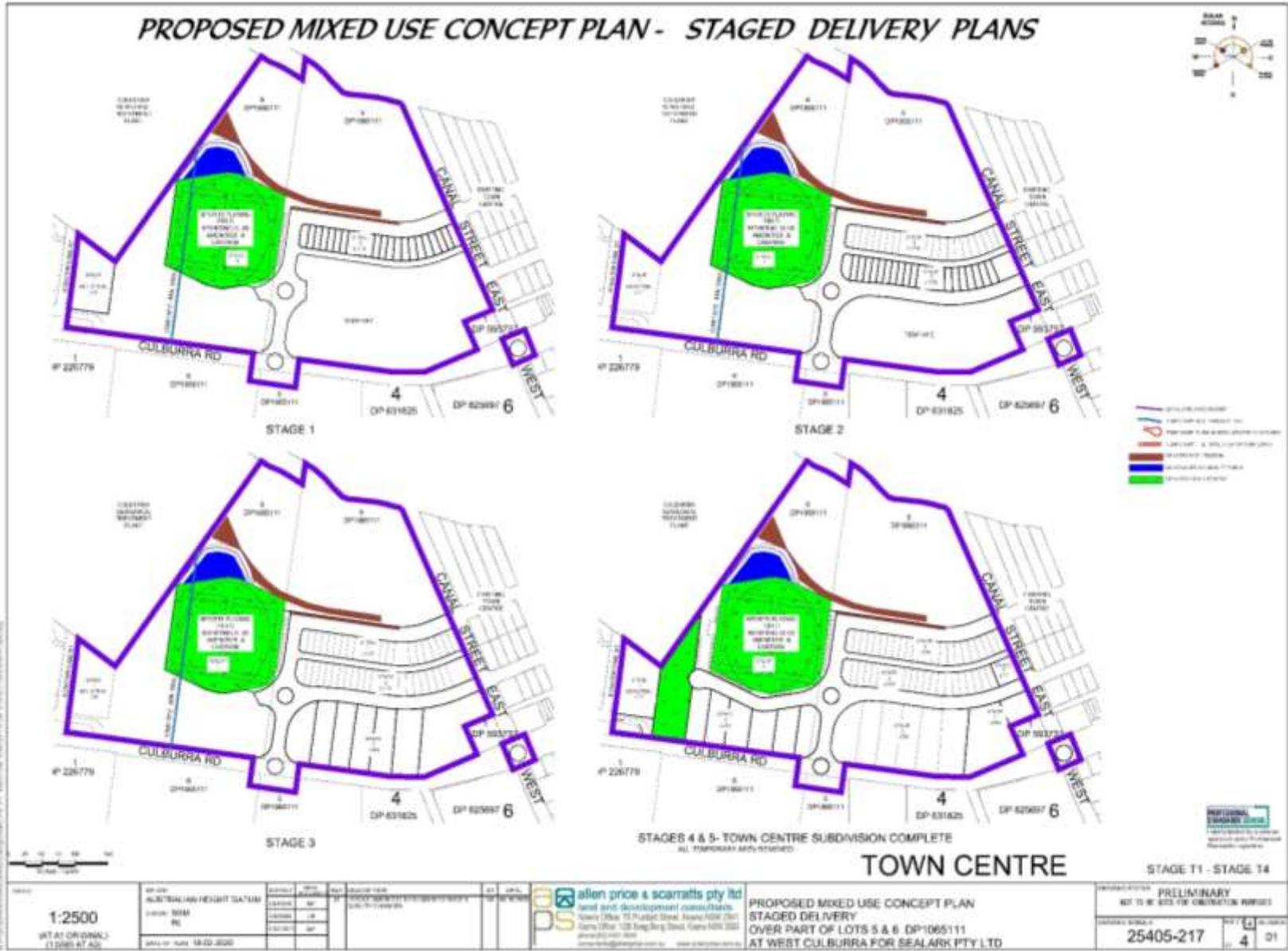


Figure 6: Town Centre Staging

## 6. Conclusion

The proposed subdivision complies with either the acceptable or performance solutions within ‘Planning for Bush Fire Protection 2006’, (see **Table 2**). Where-ever appropriate PBP 2019 requirements have been incorporated into the Modified Concept Plan. All performance solutions used are substantiated within the section of this assessment identified in **Table 6**.

**Table 6: Summary of bushfire protection measures assessed**

Bushfire Protection Measures	Complies	Requirements	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	APZ dimensions are detailed in <b>Table 3</b> and <b>Figure 2</b> .	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
APZ Maintenance plan	<input checked="" type="checkbox"/>	Identified APZ to be maintained in perpetuity to the detailed specifications in <b>Section 3.2</b> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	<input checked="" type="checkbox"/>	BAL for dwellings to be determined at individual CDC/DA stage however, a maximum of BAL-29 (using PBP 2019 fuel loads) is achievable.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.3
Access	<input checked="" type="checkbox"/>	Access to meet standards detailed in <b>Table 7</b> . Performance solution addresses the requirement for a secondary egress to western residential precinct.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.4
Water supply	<input checked="" type="checkbox"/>	Reticulated water supply to meet PBP acceptable solution specifications for a subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5.1
Electricity service	<input checked="" type="checkbox"/>	Electricity supply located underground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5.2
Gas service	<input checked="" type="checkbox"/>	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5.3



Rod Rose  
Principal Consultant - Bushfire  
FPAA Certified Practitioner No. BPAD1940-L3



## 7. References

Eco Logical Australia (ELA). 2013. Bushfire Protection Assessment, Proposed Mixed-use Subdivision: West Culburra. 20 March 2013.

Eco Logical Australia (ELA). 2017. *Flora and Fauna Assessment - Culburra, Lot 6 DP106511 Culburra Road*.

NSW Rural Fire Service (RFS). 2006. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners* including the 2010 Appendix 3 Addendum. Australian Government Publishing Service, Canberra.

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Australian Government Publishing Service, Canberra.

Standards Australia (SA). 2017. *Fire hydrant installations - System design, installation and commissioning*, AS 2419.1, Fifth edition 2017, SAI Global, Sydney.

Standards Australia (SA). 2009. Construction of buildings in bushfire-prone areas (including Amendments 1 – 3), AS 3959-2009. SAI Global, Sydney.

Standards Australia (SA). 2014. *The storage and handling of LP Gas*, AS/NZS 1596:2014. SAI Global, Sydney.

## Appendix A – Assessment process

### **Vegetation types**

In accord with PBP the predominant vegetation class has been assessed for a distance of at least 140 m from the subject land in all directions.

### **Effective slope**

In accord with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development where the vegetation was found.

### **Asset Protection Zone determination**

A performance solution using Table A1.12.2 (FDI 100) of PBP 2019 has been used to determine the width of required Asset Protection Zone (APZ) for the proposed development using the vegetation and slope data identified in **Section 2**.

## Appendix B – Access specifications

**Table 7: General access requirements (adapted from Table 5.3b of PBP 2019)**

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads;	Complies
	Perimeter roads are provided for residential subdivisions of three or more allotments;	Complies with performance criteria.
	Subdivisions of three or more allotments have more than one access in and out of the development;	Complies with alternate solution – refer Section 3.4
	Traffic management devices are constructed to not prohibit access by emergency services vehicles;	Can comply
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;	Can comply
	All roads are through roads;	Complies – refer below
	Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;	Complies – see recommendation in Section 3.4.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	Complies
	Where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system;	Complies with alternate solution – refer Section 3.4
	One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A
The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.	Can comply
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;	Can comply
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017 – Fire hydrant installations system design, installation and commissioning; and	Can comply

There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available. N/A

**Table 8: Perimeter road requirements (adapted from Table 5.3b of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads;	Complies
	Minimum 8m carriageway width kerb to kerb;	Complies
	Parking provided outside of the carriageway width;	Can comply
	Hydrants are located clear of parking areas;	Can comply
	There are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	Complies
	Curves of roads have a minimum inner radius of 6m;	Can comply
	The maximum grade road is 15 degrees and average grade is 10 degrees;	The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3b of PBP.
The road crossfall does not exceed 3 degrees;		
A minimum vertical cleared of 4m to any overhanging obstructions, including tree branches, is provided.		

**Table 9: Non-perimeter road requirements (adapted from Table 5.3b of PBP)**

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m width kerb to kerb;	Complies
	Parking is provided outside of the carriageway width;	Can comply
	Hydrants are located clear of parking areas;	Can comply
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	Complies
	Curves of roads have a minimum inner radius of 6m	Can comply
	The road crossfall does not exceed 3 degrees;	The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance
A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.		

Performance Criteria	Acceptable Solutions	Compliance notes
		with relevant legislation, Australian Standards and table 5.3b of PBP.

## Appendix C – Assessment of 2020 Concept Plan against previous GTAs

Conditions under the	Compliance notes
<b>NSW RFS General Terms of Approval S13/0014 (2013)</b>	
<b>Recommended Condition 1: Asset Protection Zones</b>	
APZs be maintained around the perimeter of the development, within the property boundaries as proposed with the following exceptions:	
a) T3 to be provided with a 25m APZ;	Not applicable T3 is not proposed under 2020 development proposal.
b) North eastern elevation of stage 5 (industrial) be provided with a 25m APZ;	Complies Stage 5 Industrial (referred to as Stages 1-3 under 2020 application) provide 29 m APZ (Refer Figure 2, Table 3).
c) APZs around the medium density developments in stages 1 and 3 be revised depending upon the location of the 55+ age group developments to ensure all 55+ age group housing is located at least 70m away from bush fire hazard to ensure radiant heat levels are no greater than 10kW/m <sup>2</sup> ; and	Not applicable No 55+ development within proposal.
d) Community areas adjacent to lots within 25 metres of lots to be maintained as IPAs.	Complies There are five (5) public reserves proposed within the development. These areas will be managed as IPAs by Shoalhaven City Council.
<b>Recommended Condition 2: Construction Standards</b>	
All proposed SFPP development (T1, T2 and 55+ age group housing in stage1 and 3) should be located an adequate distance away from bush fire hazard to ensure radiant heat level less than 10kW/m <sup>2</sup> .	Not applicable No SFPP development proposed under 2020 development proposal.
<b>Recommended Condition 3: Access</b>	
Access to the development is via one point off Culburra Rd. In consideration of the scale of the development and the location adjacent to large areas of forest vegetation, all components of development should have through road and two points of access or dead end roads that are not more than 200 metres in length where appropriate. In addition public roads from the proposed lot to the main roads should meet public road access requirements. The Allen Price Associates concept plan show a "Possible Future Extension to Collector Road" on the south west of the development, linking to Culburra Rd, to the south east of the proposed access point onto Culburra Rd. It is recommended that this second access to Culburra Rd be provided.	There are two (2) dead end roads proposed however these are less than 200 m in length and will incorporate minimum 12 m outer radius turning circles as per recommendation in Section 3.4 of report.

Conditions	Compliance notes
<p>a) To ensure the intent of this measure is met, a second point of access to Culburra Rd be provided.</p>	<p>Complies with performance criteria. Public road access to the residential area (Stages 1-9) is via an entry point off Culburra Road with an alternate egress provided by an emergency use (only) road connecting with a proposed road within the industrial estate and further east with Strathstone Street. Further detail provided in Section 3.4 of report.</p>
<p>b) A perimeter rd be provided around the medium density component of Stage 3</p>	<p>Complies Stages 2-3 is referred to as Stages 1-9 Residential Area under 2020 development proposal. Perimeter road provided as shown in Figures 1 and 2 of report.</p>
<p><b>Recommended Condition 4: Emergency and Evacuation Planning</b></p>	
<p>a) An emergency/evacuation plan should be prepared consistent with the RFS Guidelines for the Preparation of Emergency/Evacuation Plan.</p>	<p>Not applicable No SFPP development proposed as part of 2020 application.</p>
<p>b) Compliance with AS 3745-2002 'Emergency control organisation and procedures for buildings, structures and workplaces' for residential accommodation'.</p>	<p>Not applicable No SFPP development proposed as part of 2020 development application.</p>
<p><b>NSW RFS General Terms of Approval S13/0014 (2014)</b></p>	
<p><b>General Conditions – Concept Plan Approval</b></p>	
<p>1. The provision of adequate setbacks for future SFPPs from bushfire hazards located within 140m. This may restrict certain development lots for the land use purpose the subject of this approval.</p>	<p>Not applicable. No SFPP development proposed as part of 2020 development application.</p>
<p>2. The land use of Lot T3 has not been assessed for any special fire protection purpose - SFPP (as defined in the Rural Fires Act 1997 and supporting Regulations 2008). Lot T3 was identified for use as a "Cafe/Retail" in the submitted documentation. The RFS notes due to Lot T3s proximity to the hazard in the north, it is unlikely to satisfy SFPP requirements for APZs as per PBP 2006.</p>	<p>Not applicable T3 is no longer included in 2020 development proposal.</p>

Conditions	Compliance notes
<p>3. Stage 5 has been assessed for industrial land use only. No residential, rural residential or special fire protection purpose land use has been assessed for Stage 5. Stage 5 was identified for use as an Industrial Estate in the submitted documentation. The RFS notes that additional APZs and a secondary egress would be required for this stage to be able to satisfy the residential and/or SFPP requirements as per PBP 2006.</p>	<p>Complies Stage 5 is now referred as Stages 1-3 under 2020 development proposal and remains industrial development only.</p>
<p><b>RFS Condition: Access</b></p>	
<p>4. The construction of roads shall generally comply with Figure 3 'Perimeter Roads and Fire Trails' of the Draft Bush Fire Assessment prepared by Eco Logical Australia, dated 20 March 2013, except where modified below:</p>	
<p>a) Public and perimeter road construction shall comply with the requirements of Clause 4.1.3 (1) Public Roads of PBP 2006;</p>	<p>Complies with performance criteria. Public and perimeter road for 2020 development proposal have been assessed under PBP 2020. Refer Table 7 of the report for further detail.</p>
<p>b) Fire trail construction shall comply with the requirements of Clause 4.1.3 (3) Fire Trails (except for that portion of road separately specified in (d) below);</p>	<p>Not applicable No fire trail proposed for 2020 development proposal. Emergency use (only) road is considered a 'non-public road' having a 4-6 trafficable widths as per Section 3.4 of report.</p>
<p>c) Prior to development of Stage 2 the road identified on Figure 3 referenced above, as a "Fire Trail" (abounding the northern portion of Stage 2 to the east) shall be constructed in accordance with the standards specified in Clause 4.1.3 (3) Fire Trails of PBP 2006.</p>	<p>Not applicable No fire trail proposed for 2020 development proposal.</p>
<p>d) Prior to development of Stages 2, 3 or 4, the road identified on Figure 3 referenced above, as the "Collector Road" (bordering the proposal to the south) and the road identified as a "Fire Trail" (linking the Collector Road back into Culburra Road to the south west) shall be constructed in accordance with the standards specified in Clause 4.1.3 (1) Public Access of PBP 2006;</p>	<p>Complies Stages 3 and 4 are not proposed within 2020 development proposal. Perimeter road for Stage 2 complies with PBP 2006 and 2019 standards. Refer Table 7 of the report for further detail.</p>
<p>e) Prior to development of the 3.4 ha medium density component of Stage 3 the road identified on Figure 3 referenced above, as a "Perimeter Road" (generally abounding the medium density component of Stage 3 to the south and west) shall be constructed in accordance with the standards specified in Clause 4.1.3 (1) Public Roads of PBP 2006; and</p>	<p>Complies Temporary perimeter roads will be constructed at each stage of residential area as shown in Section 5 'Staging' section of report.</p>

Conditions	Compliance notes
<p>f) Prior to development of Stage 5 the road identified on Figure 3 referenced above, as a "Fire Trail" (generally abounding Stage 5 to the north east and east) shall be constructed in accordance with the standards specified in Clause 4.1.3 (3) Fire Trails of PBP 2006.</p>	<p>Not applicable No fire trail proposed for 2020 development proposal.</p>
<p><b>RFS Condition: Asset Protection Zone</b></p>	
<p>5. APZs should be wholly located within the boundaries of each lot (both 'superlots' and subsequent subdivided allotments). Any APZs over land not within lot boundaries, and not located over existing roads or other existing developed, managed land (such as developed urban areas and managed recreational reserves) shall be secured through a legally binding instrument (i.e. 88B instrument) which identifies the management outcomes (i.e. contain an APZ management plan) and party responsible for management. The legally binding instrument of any APZs shall be created prior to the release of any subdivision certificates.</p>	<p>Complies All APZ are located within development site or within existing public roads, refer Figure 2 of report.</p>
<p>6. This development site is largely vegetated and is to be developed in a number of stages. To ensure that adequate APZs are created and maintained as required for each progressive stage, an APZ Staging Plan shall be submitted with the future development of each stage. The APZ Staging Plan shall demonstrate how the development proposed in that stage complies with the development types relevant radiant heat levels identified in PBP 2006. Where any APZs extend over adjacent land, the Staging Plan shall reflect the location of any easement/instrument including information on the APZ maintenance requirements including management responsibilities.</p>	<p>Complies Refer Section 5 'Staging' of report which demonstrates temporary APZ will be in place throughout the staged construction. All temporary APZ will be located wholly within the development and managed by the developer – no easements/instruments required.</p>
<p>7. Prior to any use of development approved within each stage, the APZ required as per the APZ Staging Plan referenced in condition 6 above shall be created as an APZ as outlined within section 4.1.3 and Appendix 5 of PBP 2006 and the NSW RFS document 'Standards for asset protection zones' maintained including any easements etc.</p>	<p>Complies As per Section 3.2 of the report, APZ are to be managed in accordance with Section 4.1.3 and Appendix 5 of PBP 2006 and the NSW RFS document 'Standards for asset protection zones'. These APZ requirements also apply to the temporary APZs.</p>
<p><b>RFS Condition: Water and utilities</b></p>	
<p>8. Water, electricity and gas are to comply with section 4.1.3 of PBP 2006. Conditions for Project Application Approval of Stage 'I</p>	<p>Complies As per Section 3.5.1 (Water), 3.5.2 (Electricity) and 3.5.3 (Gas) of report – utilities will comply with Section 4.1.3 of PBP.</p>

Conditions	Compliance notes
<b>RFS Condition: General Conditions – Stage 1 Approval</b>	
9. Future development of any SFPP within the Stage 1 Project Application requires the prior issue of a separate Bush Fire Safety Authority from the RFS.	Not applicable No SFPP development proposed within any stage of development.
<b>RFS Condition: Asset Protection Zone</b>	
10. Prior to the commencement of any building work associated with Stage 1 Project Application approval, the APZ as shown on Figure 2 - 'Asset Protection Zones' of the Draft Bush Fire Assessment prepared by Eco Logical Australia, dated 20 March 2013, for Stage 1 shall be maintained as an APZs as outlined within section 4.1.3 and Appendix 5 of PBP 2006 and the NSW RFS document 'Standards for asset protection zones'.	Not applicable Stage 1 does not form part of 2020 development proposal.
<b>RFS Condition: Access</b>	
11. Prior to the commencement of any building work approved as part of the Stage 1 Project Application approval, the road identified as a "fire trail" (abounding Stage 1 to the south and west) on Figure 3 'Perimeter Roads and Fire Trails' of the Draft Bush Fire Assessment prepared by Eco Logical Australia, dated 20 March 2013, shall be constructed in accordance with the standards specified in Clause 4.1.3 (3) Fire Trails of PBP 2006.	Not applicable Stage 1 does not form part of 2020 development proposal.
12. Construction of roads except for the road specified in condition 11 above shall comply with the requirements of Clause 4.1.3 (1) Public Roads of PBP 2006.	Not applicable Stage 1 does not form part of 2020 development proposal.
<b>RFS Condition: Water and utilities</b>	
13. Water, electricity and gas installed as part of the Stage 1 Project Application approval shall to comply with the requirements of section 4.1.3 of PBP 2006.	Not applicable Stage 1 does not form part of 2020 development proposal.

