

## MEMORANDUM

TO City of Kwinana

FROM Maitland Ely & Daniel Panickar (Eco Logical Australia) on behalf of Drew Tomkins (QUBE Property Group)



DATE 06/05/2022

PURPOSE For Information

SUBJECT Bushfire Management Plan Compliance Certification: Stage 12 Apsley Estate, Mandogalup

### Document purpose

Eco Logical Australia (ELA) has prepared this Bushfire Management Plan (BMP) compliance report for 32 lots within Stage 12 of Apsley Estate, Mandogalup (the subject site; Figure 1). Lots within Stage 12 are subject to Western Australian Planning Commission (WAPC) subdivision approval WAPC Ref. 155567.

This report provides a post-subdivisional works compliance assessment of bushfire management measures required to clear Condition 30 of subdivision approval as follows:

*30. Information is to be provided to demonstrate that the developer responsibilities contained in the approved Bushfire Management Plan have been implemented during subdivision works.*

*Advice: The landowner/applicant is advised that the current plans referred to are: Bushfire Management Plan – Lot 682 Rowley Road, Mandogalup prepared by Strategen Environmental dated November 2017.*

The approach for preparation of this BMP compliance report is consistent with Section 4.2 of the *Guidelines for Planning in Bushfire Prone Areas v 1.4* (the Guidelines; WAPC 2021).

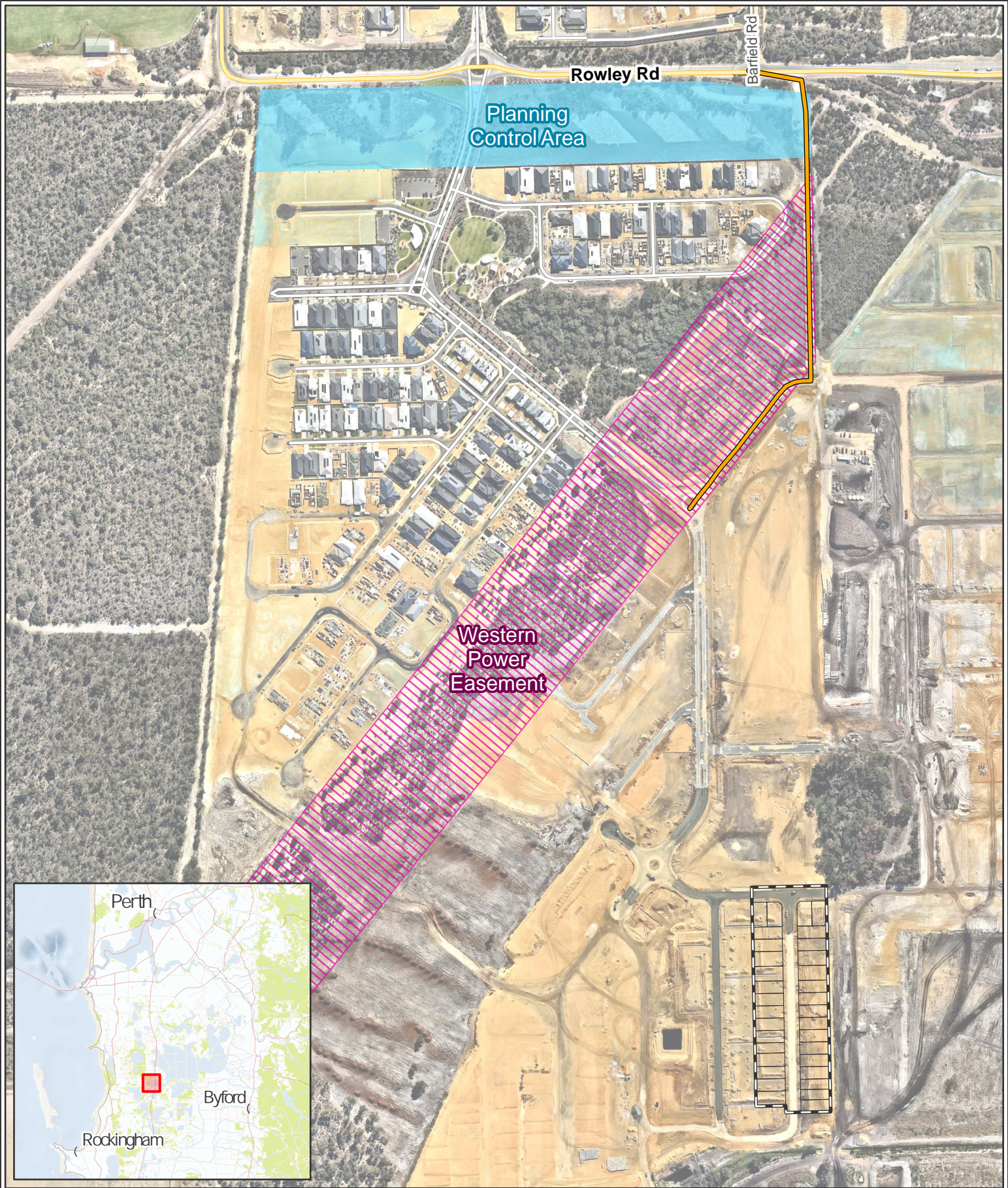
### Compliance assessment

Strategen (2017) includes 17 bushfire management measures that are required to ensure the proposed development will comply with the bushfire protection criteria in the Guidelines.

ELA has undertaken a bushfire risk assessment and compliance assessment to determine if the relevant bushfire management measures documented in the endorsed BMP have been undertaken (Table 1).

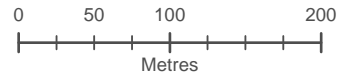
Some of the management measures in Strategen (2017) are difficult to assess compliance against due to the way they are written. In these cases, ELA has tried to assess compliance based on works completed to date and probability of compliance in the future.

Based on our assessment, ELA can confirm that the relevant bushfire management measures detailed in the endorsed BMP have been implemented as intended, or have been progressed to a point that they are likely to be compliant, once completed.



**Figure 1: Site Overview**

-  Subject site
-  Emergency Access Way
-  Lot boundary
-  Planning Control Area
-  Western Power Easement



Datum/Projection:  
GDA 1994 MGA Zone 50  
Project: 16783-SM Date: 5/05/2022

**Table 1: Bushfire compliance assessment**

BMP reference	Action	Implementation status	Compliance assessment
<b>Bushfire Management Plan: Strategen (2017)</b>			
1a	Establish and maintain bushfire fuels within all residential lots to achieve exclusion Clause 2.2.3.2 (f) of AS 3959 <sup>1</sup> .	Earthworks have ensured that all bushfire fuels have been cleared within the subject site. The developer is responsible for ongoing management until sale/transfer of land.	<b>Compliant</b> Refer to Plate 1 & Plate 2 & in Appendix A.
1b	Establish and maintain portions of POS <sup>2</sup> to be cleared/excluded as depicted on Figure 4 <sup>3</sup> in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959.	N/A. No POS areas included in Stage 12.	<b>N/A</b>
1c	Maintain new road verges in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959.	Road verges have been cleared and will be landscaped to achieve the desired exclusion clauses as per the Roadworks Layout Plan. These will be maintained by the developer until transfer to the City.	<b>Not complete</b> Road verges not finished constructed yet, however if constructed in accordance with Roadworks layout plan in Appendix D and resemble the surrounding verges, they are likely to be deemed compliant.  Verges will be landscaped as part of front landscaping rebate applicable to all lots in a low threat state.  Plate 3, Plate 4, Plate 5 & Plate 6 in Appendix A shows a representation of a currently constructed road verge within Stage 12, likely to be replicated throughout Stage 12.
1d	Establish and maintain Western Power easement in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959.	N/A. Western power easement is outside of 150 m buffer around Stage 12.	<b>N/A</b>
1e	Establish and maintain Planning Control Area in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959.	N/A. The Planning Control Area is not within 100 m of Stage 12.	<b>N/A</b>
1f	Establish and maintain onsite low fuel buffers for development stages to achieve exclusion Clause 2.2.3.2 (f) of AS 3959.	Majority of the land within 100 m of Stage 12 (within Apsley Estate) has been cleared or is being maintained (outside of the Western Power Easement) as excluded vegetation areas as per clause 2.2.3.2 (f) of AS 3959: 2018.	Refer to Plate 1, Plate 2, Plate 9, Plate 10, Plate 11 & Plate 12 in Appendix A and the Bushfire Attack Level (BAL) assessment in Appendix B.

BMP reference	Action	Implementation status	Compliance assessment
		<p>A patch of forest vegetation within the Public Open Space north of Stage 12 will be present post development, however this vegetation is less than 1 ha in size and more than 100 m from other areas of classified vegetation so can be excluded under clause 2.2.3.2 (b) of AS 3959: 2018.</p>	
1g	<p>Implement staged building exclusion for lots adjoining the western, eastern and south-western boundaries of the project area impacted by BAL-40 or BAL-FZ, as depicted on Figure 4<sup>3</sup>, based on progress of clearing within Lot 2 to the west, Lot 9033 to the east and balance Lot 682 to the southwest.</p>	<p>N/A. Development of lots at the direct bushland interfaces have been delayed through staging and do not form part of Stage 12.</p>	<p><b>N/A</b></p>
2a	<p>Undertake updated BAL<sup>4</sup> assessment via BAL compliance checks.</p>	<p>Updated BAL contour assessment is provided in this report.</p>	<p><b>Compliant</b> Refer to Appendix B.</p>
2b	<p>Construct buildings in accordance with AS 3959, either in accordance with this BMP or future reassessment of the BAL to support the building permit stage.</p>	<p>N/A. This applies to construction of dwellings and not subdivision clearance.</p>	<p><b>N/A</b></p>
3a	<p>Provide and maintain temporary emergency access way as right of way or public access easements in gross with sign posting and any gates unlocked.</p>	<p>The compliant temporary emergency access way (EAW) has been constructed.</p>	<p><b>Compliant</b> Refer to Figure 1.</p>

BMP reference	Action	Implementation status	Compliance assessment
3b	Construct public roads, cul-de-sacs, battle-axes and emergency access way in accordance with subdivision approval and relevant technical requirements of the Guidelines.	All public roads will be constructed in accordance with the approved Roadworks Layout Plan which meets the technical requirements of the Guidelines. No permanent cul-de-sacs or battle-axe lots proposed. Temporary cul-de-sac heads comply with the Guidelines. The emergency access way has been constructed.	<b>Not complete</b> Roads not fully constructed yet, however if constructed in accordance with Roadworks layout plan in Appendix D these will be compliant. Current status of road construction can be seen in Plate 3, Plate 4, Plate 5 & Plate 6.
3c	Construct firebreaks around boundaries of relevant lots in accordance with requirements of the City of Kwinana annual firebreak order.	N/A. No lots in Stage 12 require firebreaks as per the City of Kwinana Fire Notice.	<b>N/A</b>
4a	Construct reticulated water supply and network of hydrants in accordance with DA approval and water authority, DFES and City technical requirements.	Water supply not fully constructed at the time of assessment. Reticulated water supply and network of hydrants will be constructed in accordance with the approved Water Reticulation Plan. Fire hydrant installation is required under the Building Code of Australia and Australian Standard 2419 - <i>Fire hydrant installations - System design, installation and commissioning</i> .	<b>Not complete</b> Water supply not fully constructed yet, however if constructed in accordance with Water Reticulation Plan in Appendix C, this will be compliant. Current status of reticulated water supply and hydrant installation can be seen in Plate 7 & Plate 8.
5a	Reassess BALs for individual lots.	N/A. This applies to construction of dwellings and not subdivision clearance.	<b>N/A</b>
5b	Place notification on the Certificates of Title of all proposed lots with a BAL rating of 12.5 or above.	Notification will be placed on all titles with a rating of BAL-12.5 or greater in accordance with Condition 28 of subdivision approval. Notification shown on Deposited Plan.	<b>Compliant</b> All lots proposed with BAL rating of 12.5 or above will have Notifications on Titles (Appendix D).
5c	Comply with the City of Kwinana annual firebreak order.	N/A. No lots within Stage 12 require firebreaks.	<b>N/A</b>
5d	Prepare Bushfire Emergency Evacuation Plans for any vulnerable land uses.	N/A. No vulnerable land uses are contained within Stage 12.	<b>N/A</b>

1. AUSTRALIAN STANDARD AS 3959: 2018 CONSTRUCTION OF BUILDINGS IN BUSHFIRE PRONE AREAS (AS 3959: 2018; SA 2018)

2. PUBLIC OPEN SPACE

3. FIGURE 4 OF THE BUSHFIRE MANAGEMENT PLAN

4. BUSHFIRE ATTACK LEVEL

## References

Department of Planning (DoP), 2016, *Visual guide for bushfire risk assessment in Western Australia*. DoP, Perth.

Standards Australia, 2018, *Construction of buildings in bushfire-prone areas, AS 3959: 2018*. SAI Global, Sydney.

Strategen, 2017, *Bushfire Management Plan: Lot 682 Rowley Road, Mandogalup*, prepared for QUBE Property Group Pty Ltd.

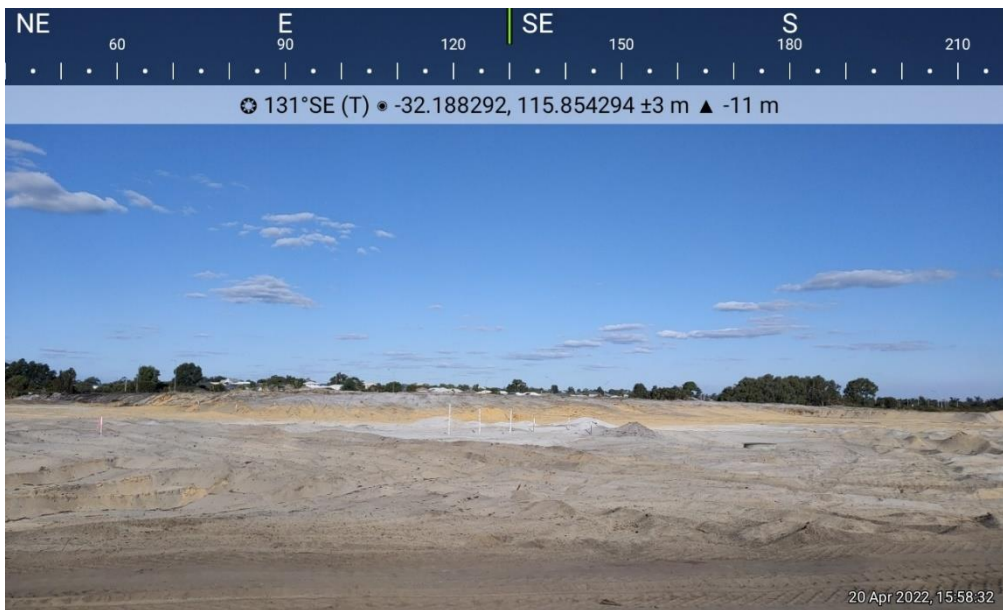
Western Australian Planning Commission, 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission, 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4 (including appendices)*, WAPC, Perth.

## Appendix A Photographic evidence of compliance



**Plate 1: Clearing and maintenance of residential lots within and surrounding Stage 12.**



**Plate 2: Clearing and maintenance of residential lots within and surrounding Stage 12.**

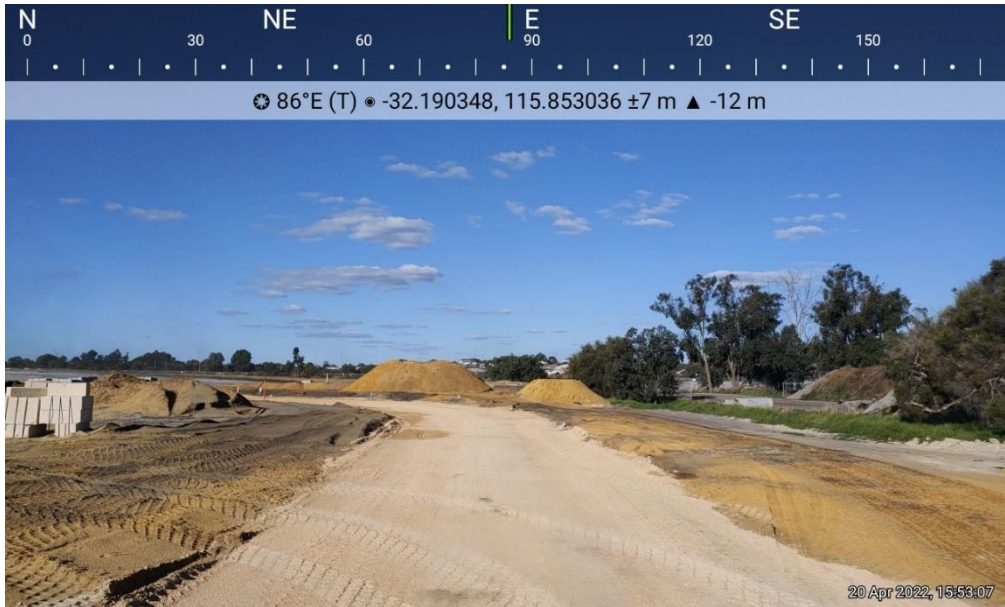


Plate 3: Road and road verge construction connected to Stage 12.



Plate 4: Road and road verge construction as part of Stage 12.





**Plate 5: Road and road verge construction connected to Stage 12.**



**Plate 6: Road and road verge construction as part of Stage 12.**



Plate 7: Installation of water reticulation within Stage 12.



Plate 8: Installation of hydrants within Stage 12.

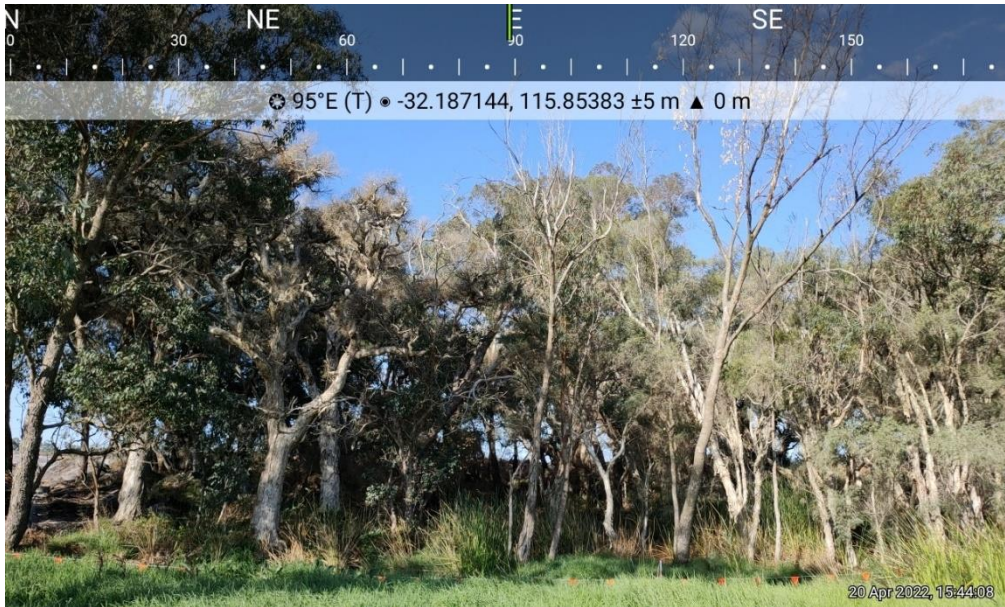


Plate 9: Remnant vegetation within 100 m of Stage 12 that will be present post development (<1 ha in size and excludable under clause 2.2.3.2 (b) of AS 3959: 2018).

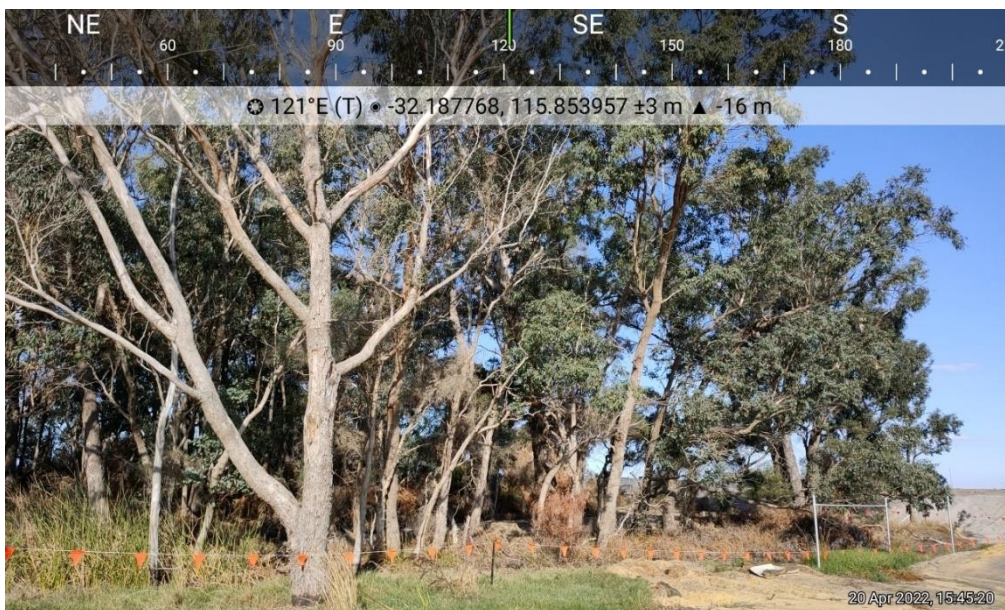


Plate 10: Remnant vegetation within 100 m of Stage 12 that will be present post development (<1 ha in size and excludable under clause 2.2.3.2 (b) of AS 3959: 2018).



**Plate 11: Remnant vegetation within 100 m of Stage 12 that will be present post development (<1 ha in size and excludable under clause 2.2.3.2 (b) of AS 3959: 2018).**



**Plate 12: Remnant vegetation within 100 m of Stage 12 that will be present post development (<1 ha in size and excludable under clause 2.2.3.2 (b) of AS 3959: 2018) (<1 ha in size and excludable under clause 2.2.3.2 (b) of AS 3959: 2018).**

## Appendix B Updated Bushfire Attack Level assessment

An updated Bushfire Attack Level (BAL) assessment for Stage 12 Apsley Estate has been undertaken for the subject site to assist assessing compliance with the endorsed BMP. The assessment has been undertaken in accordance with *Australian Standard AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (AS 3959: 2018; SA 2018) Simplified Procedure (Method 1).

This assessment has been prepared by Bushfire Consultant Maitland Ely and Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802-L3).

### Vegetation classification assessment

Vegetation within the subject area and surrounding 150 m (the assessment area) was assessed in accordance with the *Guidelines for Planning in Bushfire Prone Areas v 1.4* (the Guidelines; WAPC 2021) and AS 3959: 2018 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment has been undertaken multiple times since 2020 to inform staged development. The most recent assessment was undertaken on 20 March 2022.

The following vegetation classes and exclusions were identified within the assessment area as depicted in Table 2 and Figure 2. Photographs relating to each vegetation type are included in Table 3.

**Table 2: Classified vegetation as per AS 3959-2018**

Plot	Vegetation Classification	Effective Slope
1	Class B Woodland	All upslopes and flat land (0 degrees)
2	Class G Grassland	All upslopes and flat land (0 degrees)
3	Excluded AS 3959-2009 2.2.3.2 (b)	-
4	Excluded AS 3959-2009 2.2.3.2 (e) & (f)	-

### Slope under vegetation

Effective slope under vegetation was assessed for a distance of 150 m from the subject site in accordance with the Guidelines and AS 3959: 2018 and is depicted in Table 2 and Figure 2.

**Table 3: Vegetation classifications**

Plot	Classification or Exclusion Clause	
<b>Plot 1</b>	<b>Classification or Exclusion Clause</b>	<b>Class B Woodland</b>
<b>Photo Point 1</b>	Classified vegetation within this plot is comprised of trees 10 m to 30 m tall with approximately 10 to 30% foliage cover within a conservation reserve. Vegetation can be seen in background of Photo 1. Slope under the vegetation has been assessed as upslope/flat land.	
<b>Plot 2</b>	<b>Classification or Exclusion Clause</b>	<b>Class G Grassland</b>
<b>Photo Point 2</b>	Classified vegetation within this plot is comprised of grasses and some isolated trees. Slope under the vegetation has been assessed as upslope/flat land.	
<b>Plot 3</b>	<b>Classification or Exclusion Clause</b>	<b>Excluded AS 3959: 2018 (b)</b>
<b>Photo Point 3</b>	Vegetation present has been excluded as it less than 1 ha in area and not within 100 m of other classifiable vegetation.	

**Plot 3 Classification or Exclusion Clause Excluded AS 3959: 2018 (b)**

**Photo Point 4**

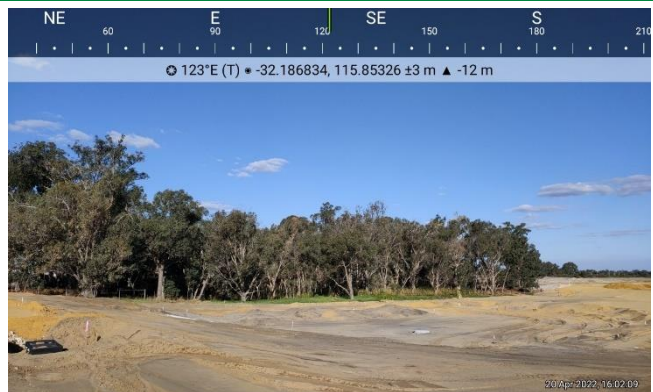
Vegetation present has been excluded as it less than 1 ha in area and not within 100 m of other classifiable vegetation.



**Plot 3 Classification or Exclusion Clause Excluded AS 3959: 2018 (b)**

**Photo Point 5**

Vegetation present has been excluded as it less than 1 ha in area and not within 100 m of other classifiable vegetation.




**Plot 4 Classification or Exclusion Clause Excluded AS 3959: 2018 (e)**

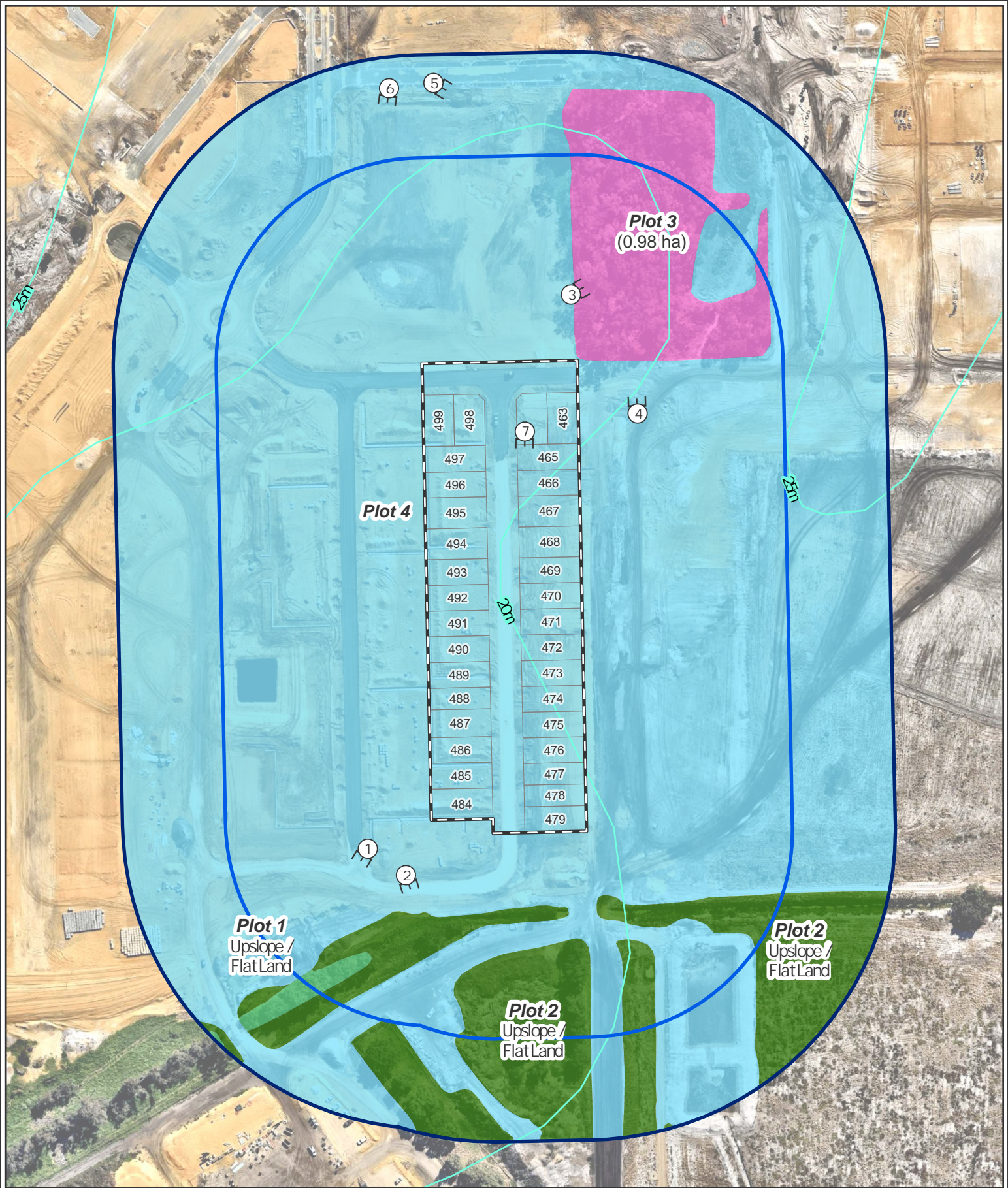
**Photo Point 6**

Non-vegetated area that has future development plans.



Plot 4	Classification or Exclusion Clause	Excluded AS 3959: 2018 (e)
<b>Photo Point 7</b>	Non-vegetated area that has future development plans.	 <p>The image shows a wide dirt road or access track in a cleared, sandy area. The road is flanked by low mounds of earth and some sparse vegetation. A GIS overlay at the top of the image displays bearings (SE, S, SW) and coordinates (181°S (T) • -32.188366, 115.853712 ±7 m ▲ 3 m). A timestamp in the bottom right corner reads '20 Apr 2022 15:48:10'.</p>

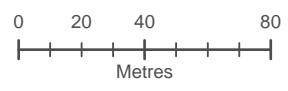




**Figure 2: Vegetation Classification**

- Subject site
- 100m site assessment
- 150m site assessment
- Lot boundary
- Contour (5m)
- Photo location

- Vegetation classification**
- Class B woodland
  - Class G grassland
  - Excluded as per clause 2.2.3.2 (b)
  - Excluded as per clause 2.2.3.2 (e) and (f)



Datum/Projection:  
GDA 1994 MGA Zone 50  
Project: 16783-SM Date: 6/05/2022

### Bushfire Attack Level (BAL) assessment

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7)*, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs above.

All land located within 100 m of the classified vegetation depicted in Figure 2 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- State adopted Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development area and the classified vegetation.

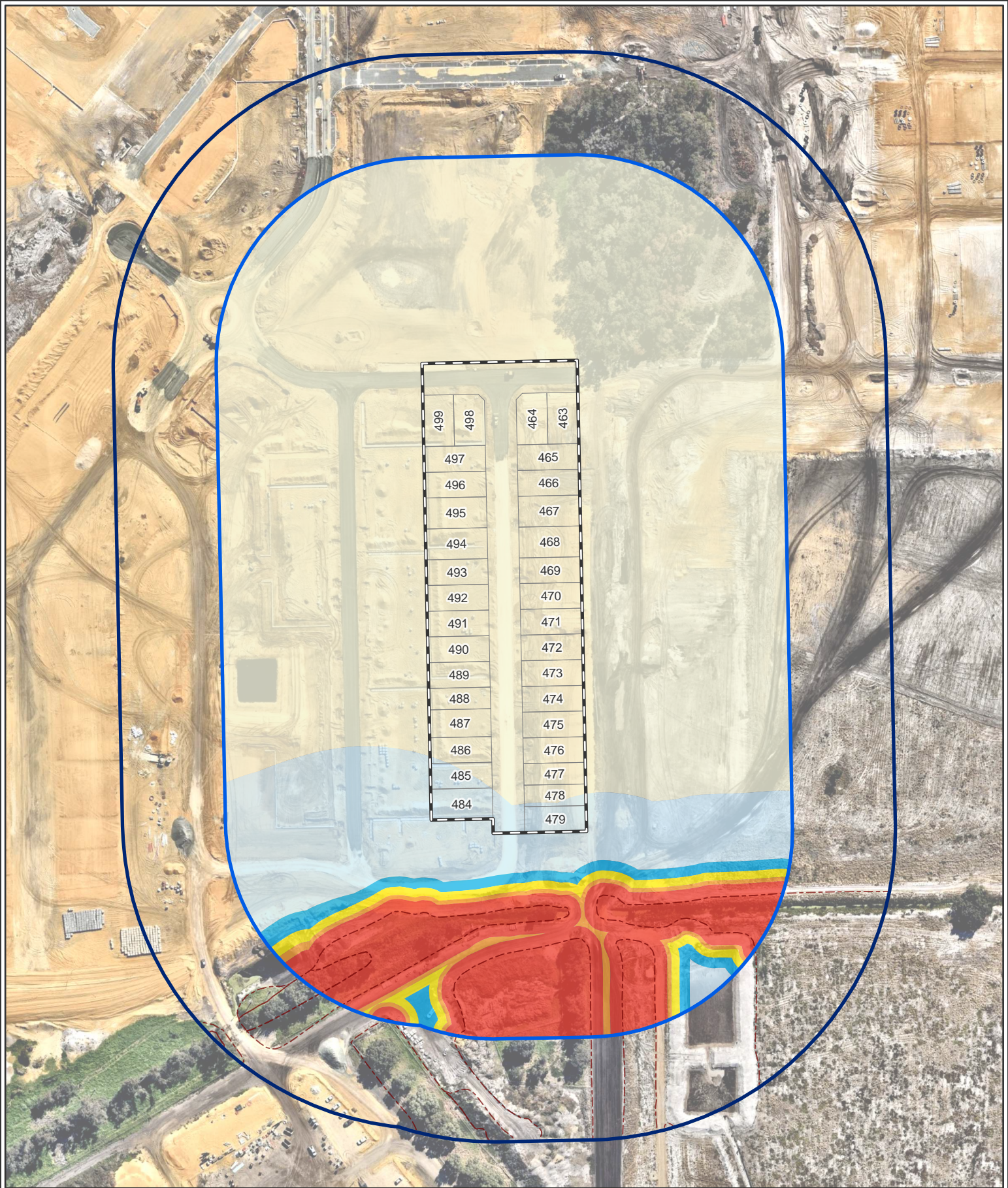
Based on the identified BAL, construction requirements for proposed buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

Table 4 and Figure 3 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959: 2018 methodology.

Lot 463 was given a BAL rating of BAL-40 as displayed in Figure 3. Corner of lot that is located in BAL-40 rating could be used an APZ and building envelope reduced to areas within the lot subject to BAL29 and lower.

**Table 4: Method BAL calculation (BAL contours)**

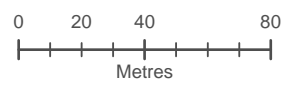
Plot	Vegetation Classification	Effective Slope	Separation distances required				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10-<14	14-<20	20-<29	29-<100
2	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6-<8	8-<12	12-<17	17-<50
3	Excluded AS 3959: 2018 2.2.3.2 (b)	-	No separation distances required – BAL-LOW				
4	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-	No separation distances required – BAL-LOW				



**Figure 3: Bushfire Attack Level (BAL) Contours**

- Subject site
- 100m site assessment
- 150m site assessment
- Lot boundary
- Bushfire hazard interface

- Bushfire Attack Level (BAL)**
- BAL - FZ
  - BAL - 40
  - BAL - 29
  - BAL - 19
  - BAL - 12.5
  - BAL - LOW



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## Appendix C Water reticulation plan

## Appendix D Deposited plan