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Bushfire Management Plan

Shire of Menzies

Prepared for
Shire of Menzies
by Strategen

February 2023

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Bushfire Management Plan

Shire of Menzies

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February 2023

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Document control

Client: Shire of Menzies

Report Version	Revision No.	Purpose	Strategen author	Strategen reviewer and accreditation details	Submitted to Client	
					Form	Date
Draft Report	Rev A	For client review	C Turner	L Wears BPAD19809	Electronic (email)	24/04/2018
Final Report	**Rev 0**	**For approval**	**C Turner**	**L Wears BPAD19809**	**Electronic (email)**	**13/02/2023**

Filename: SMZ18082_01 R001 Rev 0 - 13 February 2023

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1. Proposal details

Shire of Menzies (the Shire) is seeking preparation of a Bushfire Hazard Level (BHL) assessment map and Bushfire Management Plan (BMP) to support preparation of a Local Planning Strategy (LPS) for the local government area (the project area; Figure 1). This BMP will assist the Shire in setting out the long-term planning direction, and:

- identifying new areas for land use intensification
- rationalising legacy areas previously identified for land use intensification but yet to be developed
- identifying management measures to better protect existing developed areas.

The majority of the project area is designated as bushfire prone on the WA *Map of Bush Fire Prone Areas* (DFES 2017; Plate 1). As a result, Strategen has prepared this Bushfire Management Plan (BMP) to address the following information requirements triggered by a strategic planning proposal under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) in accordance with Policy Measure 6.3:

- a BHL assessment – refer to Section 3
- identification of any bushfire hazard issues arising from the BHL assessment – refer to Section 3.2
- clear demonstration that compliance with the bushfire protection criteria in the Guidelines can be achieved in subsequent planning stages – refer to Section 4.

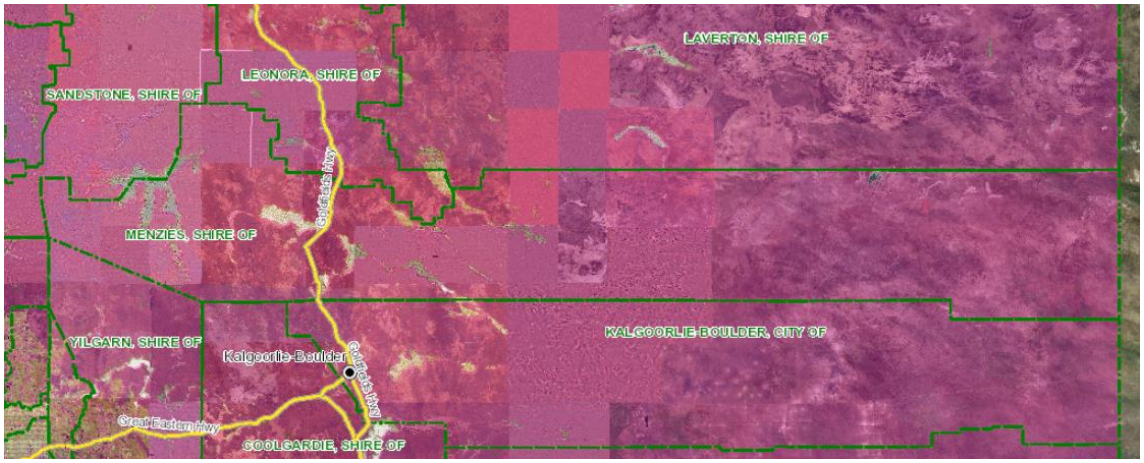

Plate 1: Bush Fire Prone Areas as indicated in pink/purple (DFES 2017)

This BMP has been prepared in accordance with the *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017) and addresses the above information requirements to satisfy SPP 3.7.

This BMP is intended to inform bushfire management planning requirements for any future development within the Shire. The BMP will need to be updated at subsequent planning stages (e.g. structure plan, subdivision and development application as required), at which time development design can be considered and addressed.

Figure 1: Site overview

Mapsheet of 4

Scale 1:3,250,000at A3

0 32.5 65 97.5 km

Coordinate System: GCS GDA 1994
Note that positional errors may occur in some areas
Date: 30/04/2018
Author: vdinh

Legend

- Shire of Menzies boundary
- DPaW managed land & conservation

Source: DPaW: Managed land - 2017; Landgate: Shire of Menzies - 2018, Aerial imagery - 2018; GA: 250k topo serie 3 - 2015.

Path: Q:\Consult\2018\SMZ\SMZ18082\01_GIS_documents\ArcMap_documents\SMZ18082_G016_RevC.mxd

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2. Existing site and environmental considerations

2.1 General description of the area

The Shire is located in the Goldfields-Esperance region of Western Australia, to the north of Kalgoorlie, and covers an area of approximately 125 000 km^2. The Shire has a population of approximately 490 people (based on 2016 Census data) and a main town centre (Menzies), located about 130 km north of Kalgoorlie. The only other town in the Shire is Kookynie, located approximately 70 km north of Menzies. The main public road in the Shire is Goldfields Highway, which runs from Kalgoorlie in the south through the Shire to Leonora in the north.

The key land uses in the Shire comprise mining and pastoral uses with the town of Menzies and a combination of residential, rural residential, recreation, commercial and industrial land uses throughout the town, as shown in Plate 2.

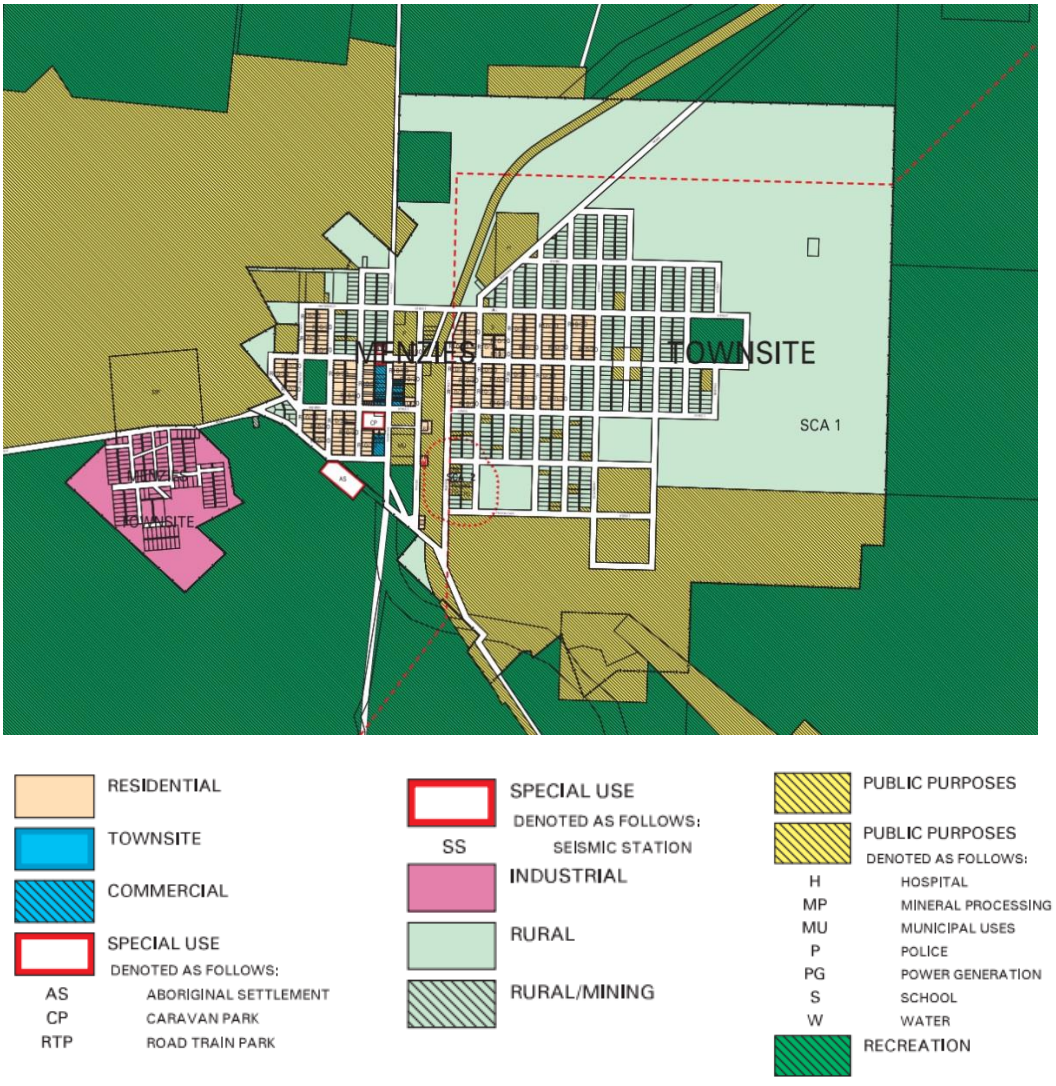

Plate 2: Land uses of Menzies town as per current Town Planning Scheme No. 1

2.1.1 Climate

The Goldfields region has a semi-arid climate characterised by low rainfall and a large temperature range.

Monthly climatic data for the town of Menzies shows that January is the hottest month with an average maximum and minimum temperatures of 35.1°C and 19.7°C, but temperatures exceeding 40.0°C occur regularly during the summer months, typically associated with the arrival of hot, dry, north to north-easterly winds. By contrast, winters are cool, with July average maximum and minimum temperatures being 17.0°C and 5.3°C, respectively. Overnight temperatures can fall below freezing in a typical winter, with such events occurring on clear nights following cold southerly winds.

The average annual rainfall is 254 mm with an average of 32 days of rain (>1 mm) throughout the year. The average rainfall is relatively equally distributed throughout the year, although there can be significant monthly and annual variation.

Prevailing winds in hotter months are predominantly south-easterly, as shown in wind roses below (Plate 3).

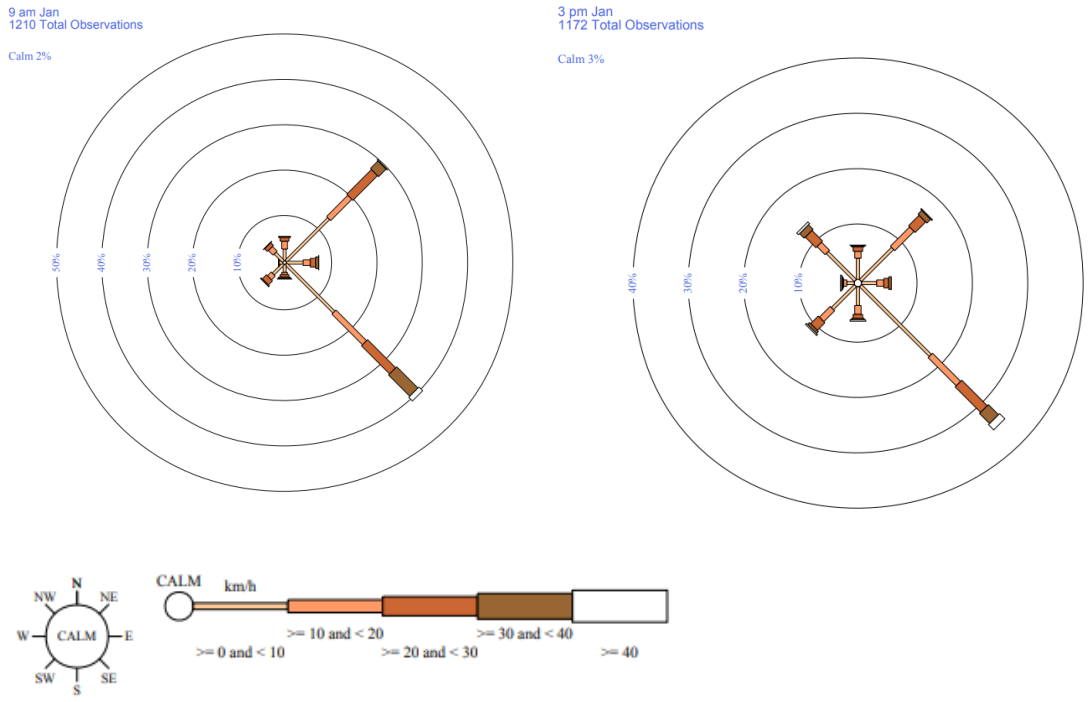

Plate 3: 9am and 3pm wind roses for January (Menzies BOM station 012052)

2.1.2 Topography

Topography across the Shire is variable ranging from approximately 640 m Australian height datum (AHD) to 420 m AHD in the western half of the local government area, and from approximately 375 m AHD to 145 m AHD in the eastern portion (see Figure 2a and Figure 2b). The elevation and slope characteristics of the Shire and Menzies town are further discussed in Section 3.1.2, with relevance to bushfire behaviour and informing the assessed BHL.

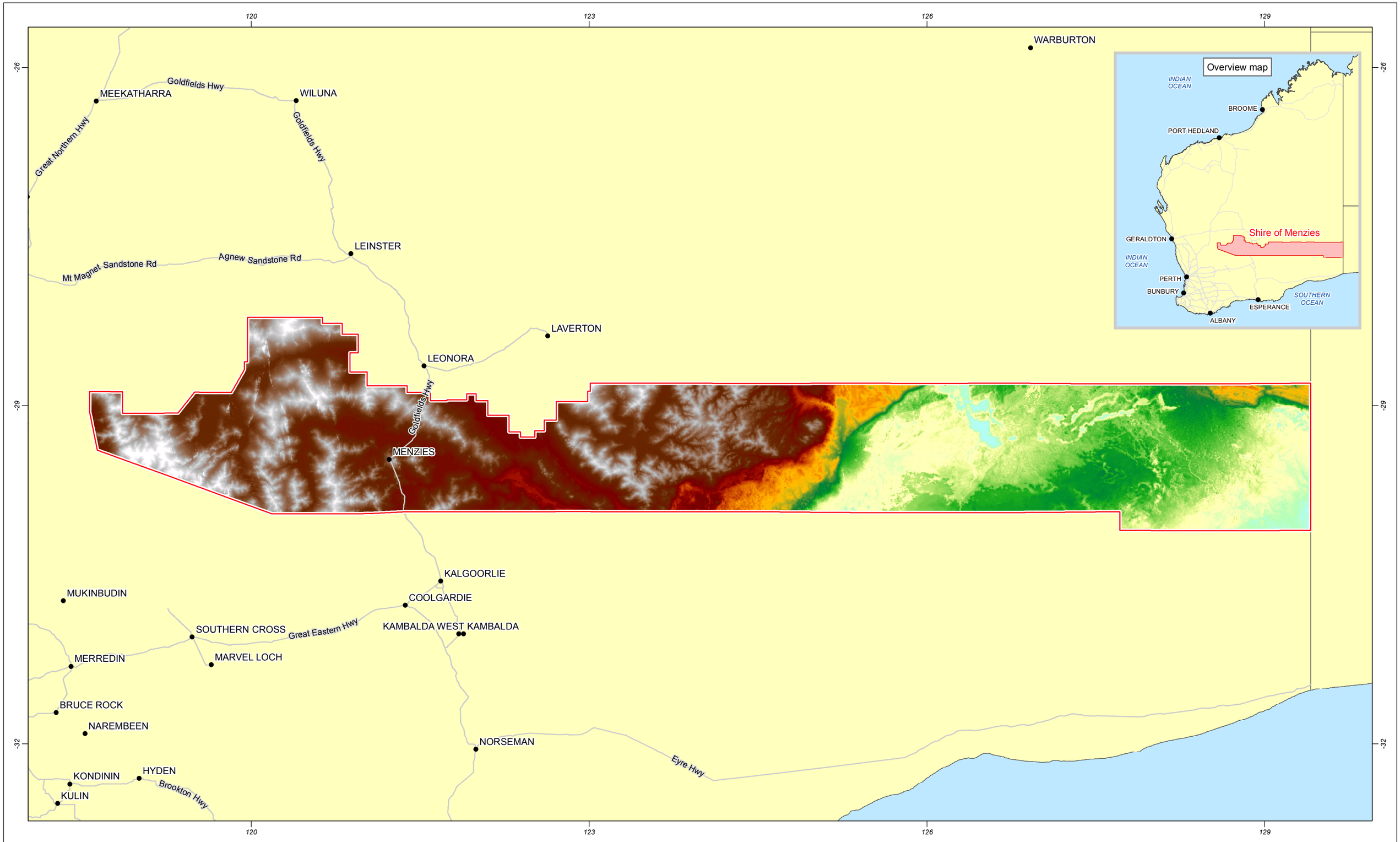

Figure 2a: Site elevation

Scale 1:3,250,000at A3

0 32.5 65 97.5 km

N

Coordinate System: GCS GDA 1994
Note that positional errors may occur in some areas
Date: 30/04/2018
Author: vdinh
Source: Landgate: Shire of Menzies - 2018; GA: 250k topo serie 3 - 2015. NASA: Elevation - 2014.

Legend

Shire of Menzies boundary

Elevation (mAHD)

473 - 643	327 - 375
425 - 473	278 - 327
375 - 425	230 - 278
	147 - 230

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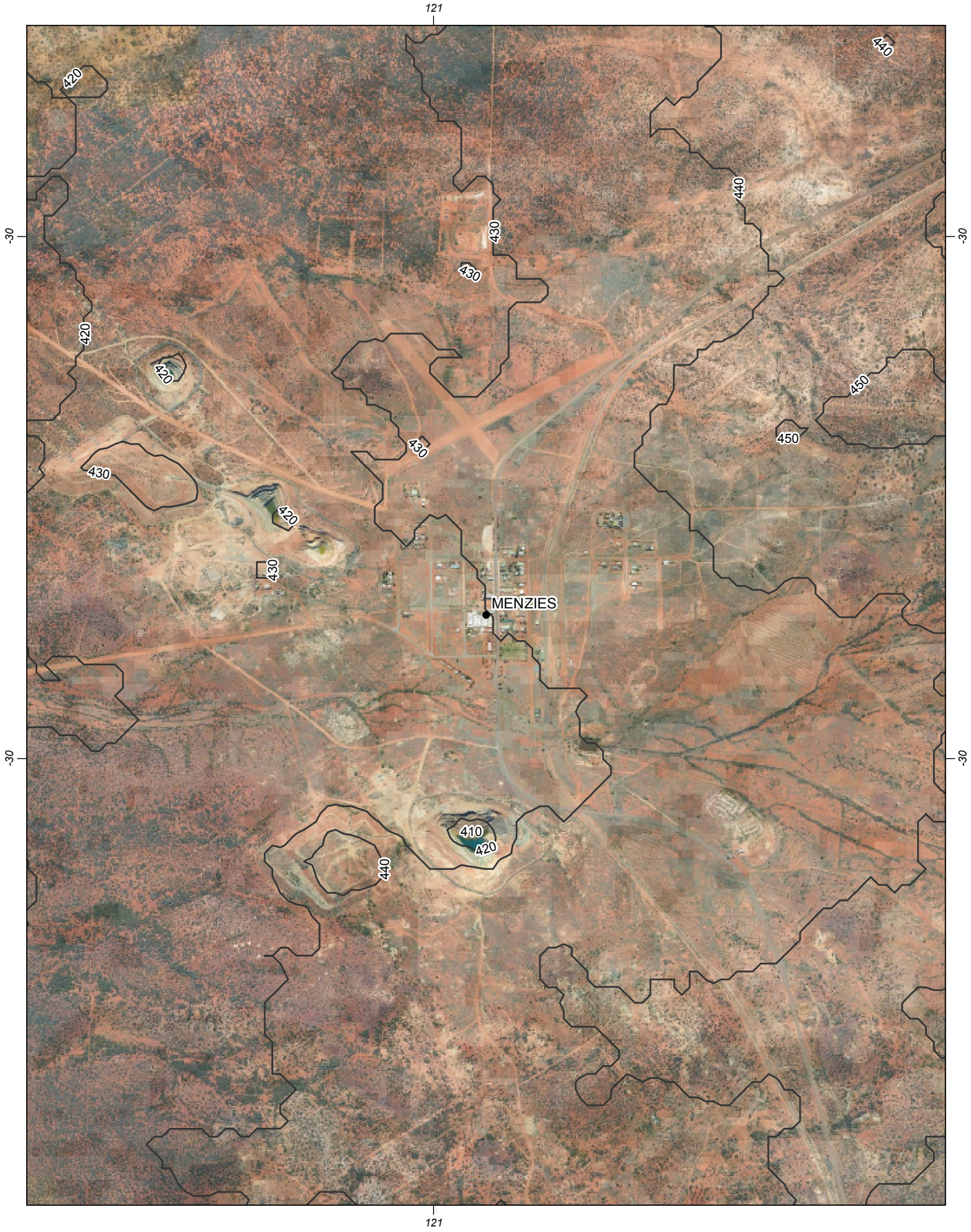

Figure 2b: Elevation

Scale 1:25,000 at A4

0 250 500 750 m

N

Legend

10m contour

Coordinate System: GCS GDA 1994

Note that positional errors may occur in some areas

Date: 30/04/2018

Author: vdinh

Source: Landgate: Aerial imagery - 2013;
Strategen: 10m contours - 22/04/2018.

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2.2 Native vegetation

Vegetation system association and System 6 mapping

Regional vegetation was initially mapped at a broad scale (1: 1 000 000) by Beard during the 1970s. This dataset formed the basis of several regional mapping systems, including the biogeographical region dataset (Interim Biogeographic Regionalisation for Australia) for Western Australia, physiographic regions defined by Beard (1981), and System 6 Vegetation Complex mapping undertaken by Heddle *et al.* (1980).

Vegetation across the Shire is variable and comprises 75 different regional Beard (1981) vegetation associations (Figure 3). The predominant vegetation associations in the Menzies town locality are Barlee 18, 20 and 251 which are broadly described as; 'low woodland, open low woodland, or sparse woodland'. Vegetation within these associations is generally Mulga (*Acacia aneura*) with associated understory species. Mulga is a bushy shrub or tree that grows 1.2 m to 10 m high (DBCA 2018). Examples of the typical vegetation structure surrounding the Menzies town locality are shown in Plate 4 and Plate 5 below.

Plate 4: Vegetation located southeast of Menzies town (Google 2008)

Plate 5: Vegetation located northeast of Menzies town (Google 2008)

It is anticipated that the majority of the current vegetation extent will remain with clearing limited to localised areas to support any future development or mining operations.

Several conservation areas exist within the Shire where vegetation is expected to remain and have long-term protection. These areas are shown on Figure 1 and include:

- Great Victoria Desert Nature Reserve
- Plumridge Lakes Nature Reserve
- Ex Goongarrie / Goongarrie National Park
- Mount Manning Range Nature Reserve
- Ex Bulga Downs
- Ex Mt Elvire
- Ex Credo
- various additional, smaller recovered stations.

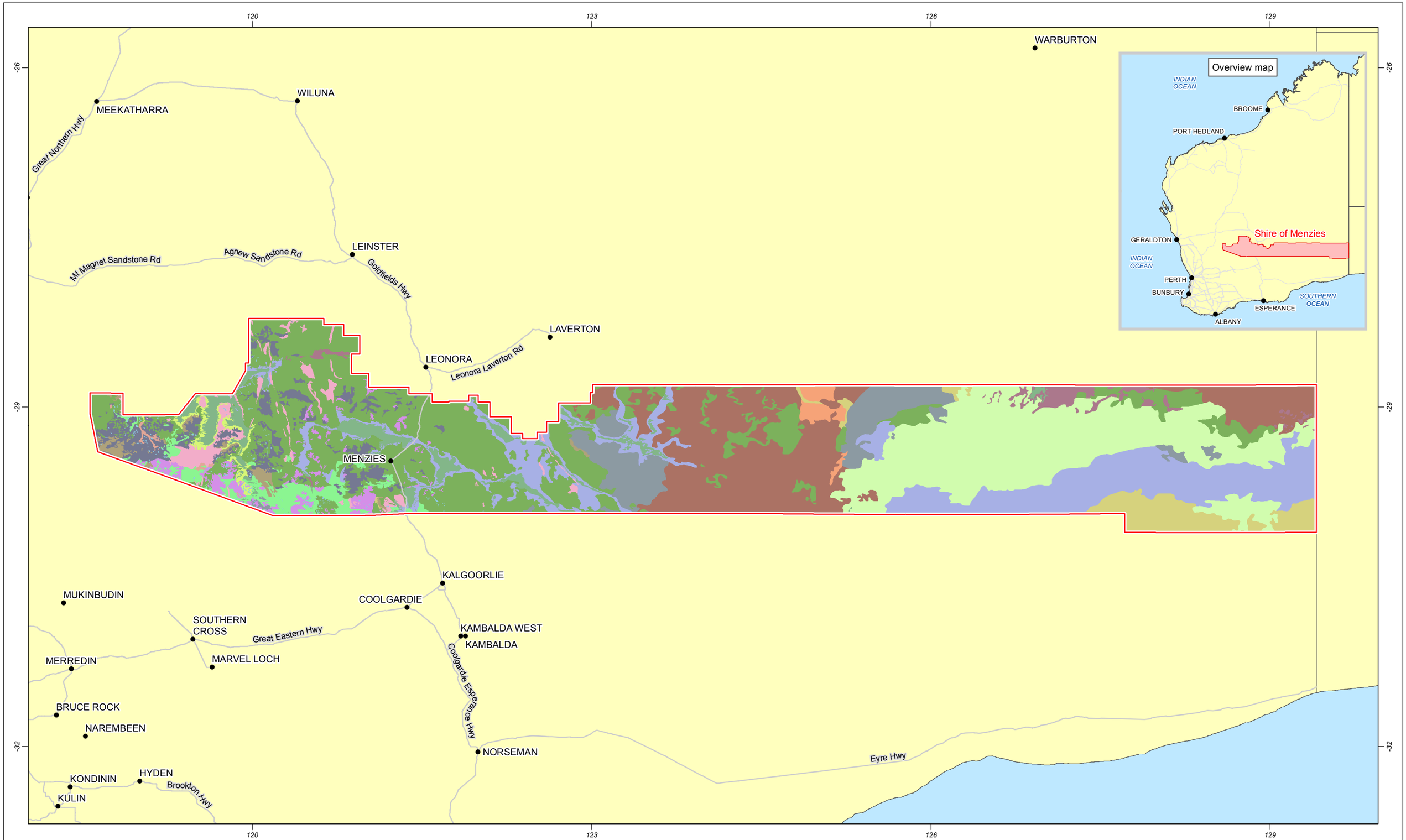

Figure 3: Pre-european vegetation

Mapsheet of 4

Scale 1:3,250,000 at A3

0 32.5 65 97.5 km

Coordinate System: GCS GDA 1994
Note that positional errors may occur in some areas
Date: 30/04/2018
Author: vdinh
Source: DPIRD: Pre-european vegetation - 2017.

Path: Q:\Consult\2018\SMZ\SMZ18082\01_GIS_documents\ArcMap_documents\SMZ18082_G017_RevB.mxd

Legend

- Shire of Menzies boundary

Pre-european vegetation

- Low tree-steppe
- Low woodland or open low woodland
- Low woodland, open low woodland or sparse woodland
- Mallee
- Rock
- Salt lake, lagoon, clay pan
- Saltbush & bluebush
- Saltbush and bluebush with scrub or open scrub
- Saltbush and/or bluebush with low trees
- Saltbush and/or bluebush with scattered low trees
- Samphire
- Scrub with open woodland or scattered trees
- Scrub, open scrub or sparse scrub
- Shrub-steppe
- Spinifex complexes
- Thicket
- Tree-and-shrub-steppe
- Woodland other

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3. Bushfire Hazard Level Assessment

A BHL assessments provides a broad three tier categorisation of vegetation into hazard levels (low, moderate or extreme) based on fuel and effective slope characteristics. The results of the BHL 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.

Determination of the BHL can inform the suitable location of future development areas, as well as identify whether any future subdivision or development areas will require implementation of bushfire management measures to ensure that life and property of these areas is adequately protected.

BHL assessments are generally undertaken for a particular site and surrounding 150 m buffer area; however, given the spatial extent of the Shire and localised potential development sites within it, only the local government area has been subject to a BHL (and not the 150 m surrounding buffer area).

The following subsections outline the inputs, outputs and results of the BHL assessment.

Due to the extent of the local government area, in addition to the PDF maps within this report, map-books have been provided digitally to the Shire (Appendix 1) which provide more detail than the information presented within this report.

3.1 Approach and methodology

The BHL assessment has been undertaken in accordance with the methodology described in Appendix 2 of the Guidelines. The BHL assessment requires the following inputs to inform the BHL:

- vegetation class in accordance with AS3959, and
- effective slope

The following sections outline how each of these inputs has been determined, and the final BHL assessed.

3.1.1 Determination of vegetation type and class

Desktop investigation

Given the remote location and extent of the project area, vegetation type and class across the Shire was determined through a high-level desktop investigation using regional vegetation data based on the statewide mapping carried out by John Beard (Beard *et. al* 2013), as described in Section 2.2. The 1:3,000,000-scale vegetation map shows the distribution of 75 major categories of natural plant cover in Western Australia as they would have been at the time of European settlement, with 50 major vegetation types, five categories of bare and poorly-vegetated ground and 20 vegetation mosaics (combinations of vegetation types).

Consideration was given to the typical structure and species of the mapped, regional vegetation associations (including broad association and floristic descriptions) to determine the vegetation classifications used to define bushfire behaviour, as per the descriptions outlined in Table 2.3 and Figure 2.3 of AS 3959 (refer to Appendix 2 for vegetation conversion table). The vegetation classifications identified within the project area included:

- Class B woodland
- Class C shrubland
- Class D scrub
- Class G grassland.

The high-level, desktop methodology of the vegetation assessment was adopted due to the spatial extent of the local government area, and was considered appropriate for this stage of planning. Vegetation mapping should be verified by on-site assessment at future planning and development stages to inform specific development areas.

The regional vegetation mapping was assessed against recent aerial imagery to identify the predominant areas of vegetation occurring throughout the Shire. Those areas which are anticipated to remain non-vegetated for the foreseeable future were excluded from AS3959 vegetation classification. These areas are generally limited to open mine pits and the centre of the town of Menzies, where revegetation is not expected to occur. Although it is noted that vegetation clearing within the Menzies townsite is more extensive than has been assessed, Strategen has taken a conservative approach assessing the vegetation extent within the town, limiting exclusion only to the central core which is considered unlikely to be revegetated.

Mapping output

Completion of the desktop components outlined above enabled the development of an AS3959 vegetation classification map for the local government area. The maps depict the location of predominant vegetation classifications throughout the Shire.

The determined classified vegetation extents are depicted in Figure 4a and Figure 4b.

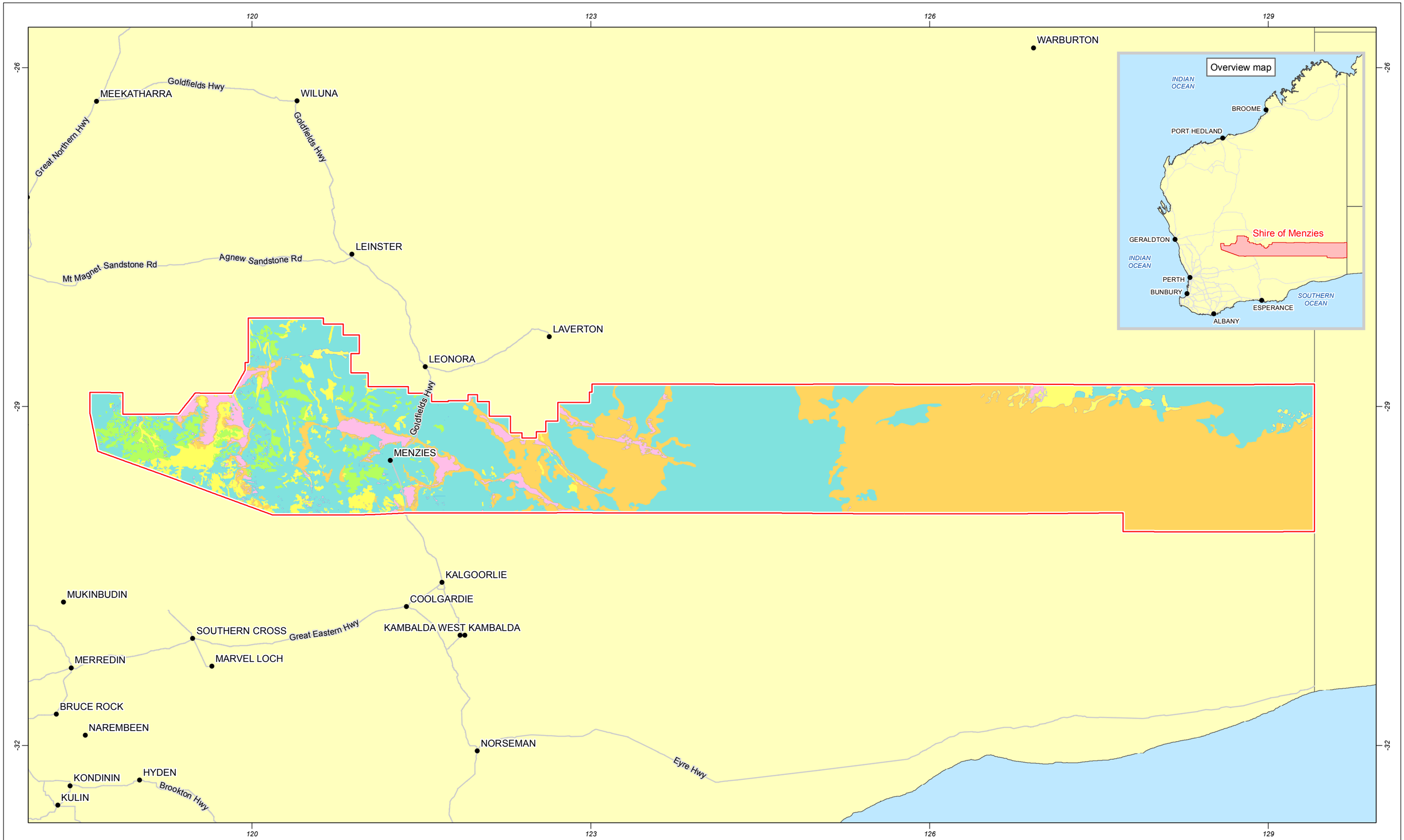

Figure 4a: Classified vegetation

Mapsheet of 4

Scale 1:3,250,000at A3

0 32.5 65 97.5 km

Coordinate System: GCS GDA 1994
Note that positional errors may occur in some areas
Date: 1/05/2018
Author: vdinh
Source: Strategen: Vegetation class - 10/04/2018. GA: Topo 250k serie 3 - 2015.
Path: Q:\Consult\2018\SMZ\SMZ18082\01_GIS_documents\ArcMap_documents\SMZ18082_G006_RevD.mxd

Legend

- Shire of Menzies boundary

Vegetation class

- Class B Woodland
- Class C Shrubland
- Class D Scrub
- Class G Grassland

Areas excluded from classification

- Low threat vegetation - excluded under Clause 2.2.3.2 (f)
- Non-vegetated - excluded under Clause 2.2.3.2 (e)

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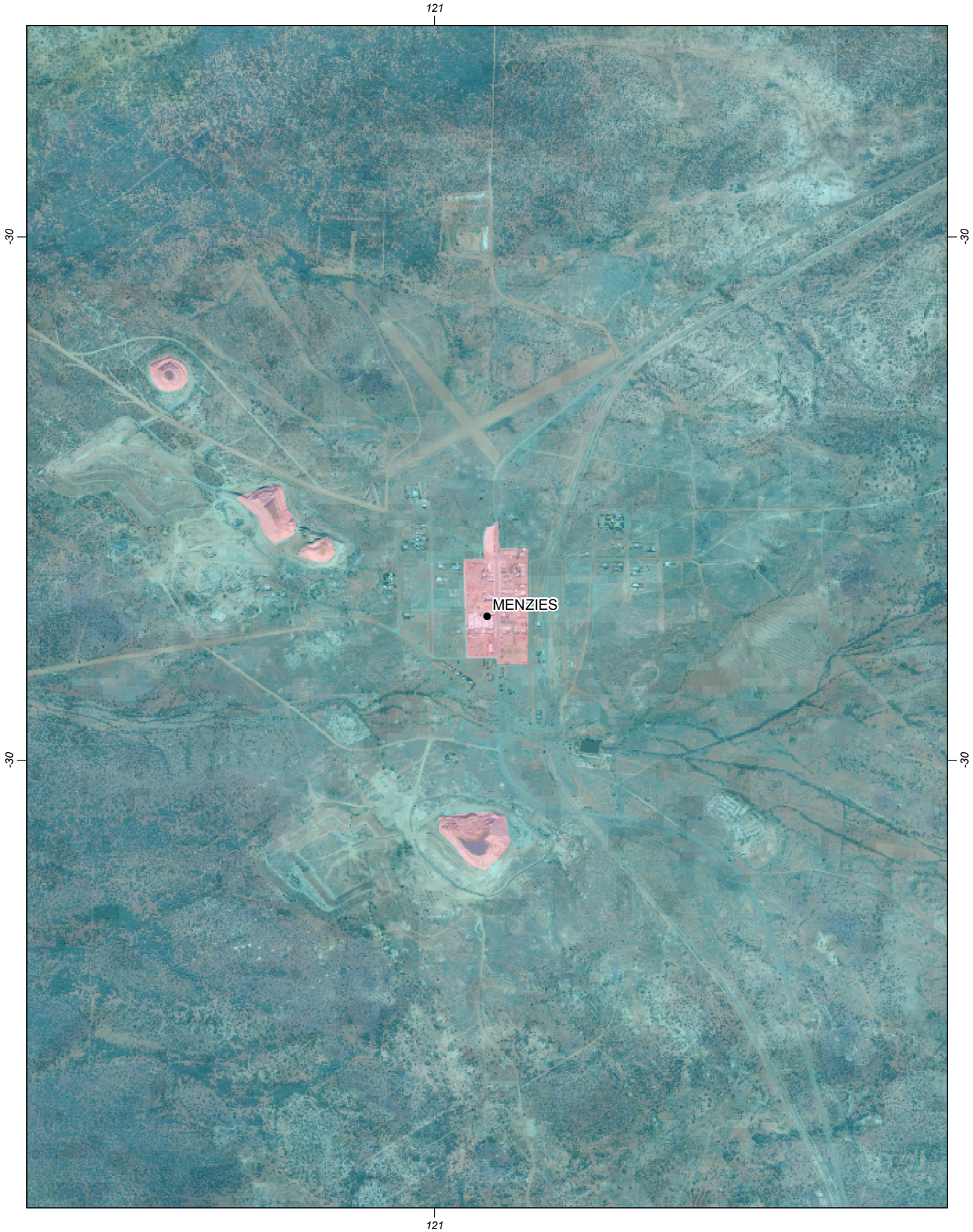

Figure 4b: Classified vegetation

Scale 1:25,000 at A4

0 250 500 750 m

N

Coordinate System: GCS GDA 1994

Note that positional errors may occur in some areas

Date: 1/05/2018

Author: vdinh

Source: Landgate: Aerial imagery - 2013.
Strategen: Vegetation class - 10/04/2018.

Path: Q:\Consult\2018\SMZ\SMZ18082\01_GIS_documents\ArcMap_documents\SMZ18082_G018_RevB.mxd

Legend

Vegetation class

Class B Woodland

Areas excluded from classification

Non-vegetated - excluded under Clause 2.2.3.2 (e)

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3.1.2 Determination of effective slope

The slope of the land under the classified vegetation has a direct influence on the rate of bushfire spread, the severity of the bushfire and the ultimate level of radiant heat flux received by a given receptor (typically buildings associated with development). As such, it is important to identify areas of discernible slope which may increase the speed and intensity of a bushfire within the Shire.

In accordance with the Guidelines, any land beneath classified vegetation with a slope greater than 10 degrees is to be assigned an 'Extreme' BHL as a result of the influence that these steep slopes may have on bushfire behaviour.

Desktop assessment of slope

The slope of the assessment area was determined using satellite elevation data, which was converted into a digital elevation model (DEM) to depict land relief across the extent of the Shire (Figure 2a and Figure 2b).

The elevation data was then used to identify the slope across the local government area, particularly where any areas of discernible slope occur. The areas identified as having a slope greater than 10 degrees were generally limited to several localised areas and the steep slopes of open mine pits.

Where any areas of slope greater than 10 degrees were identified, these were factored into the BHL assessment, as discussed in Section 3.1.3.

As the elevation mapping was undertaken using satellite imagery, future development should be subject to accurate, site specific measurements of effective slope. The high-level elevation and slope assessment is not expected to affect the determination of bushfire hazard levels, as the Guidelines recommend that any areas of forest, woodland or tall shrubs should generally be assigned an extreme bushfire hazard level.

Mapping output

Completion of the mapping components enabled the development of a DEM for the Shire (see Figure 2a and Figure 2b)

3.1.3 Determination of BHL

Using the determined AS3959 vegetation class and the slope of the land beneath classified vegetation, bushfire hazard levels (i.e. low, moderate and extreme) can be designated throughout the project area. BHLs were applied to different areas of the Shires in accordance with the Guidelines and Table 1 (WAPC 2017).

Table 1: Bush fire hazard levels (reproduced from the Table 3 of the Guideline Appendices)

Bush fire hazard level	Description
Extreme	Class A: Forest
	Class B: Woodland (05)
	Class D: Scrub
	Any classified vegetation with a slope greater than 10°
Moderate	Class B: Open woodland (06), Low woodland (07), Low open woodland (08), Open shrubland (09)*
	Class C: Shrubland
	Class E: Mallee/Mulga
	Class G: Grassland, including sown pasture and crops
	Vegetation that has a low hazard level but is within 100 m of vegetation classified as moderate or extreme hazard is to adopt a moderate hazard level
Low	Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks
	Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 mm
	Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops

** As per AS 3959 Table 2.3, Note 2 – Overstoreys of open woodland, low open woodland, tall open shrubland, and low open shrubland should be classified to the vegetation type on the basis of their understoreys; other to be classified on the basis of their overstoreys.*

Mapping output

The methodology described in Sections 3.1.1 and 3.1.2 enabled the development of a BHL assessment map for the Shire. Figure 5a and 5b illustrates land designated as low, moderate or extreme BHL based on vegetation class and slope.

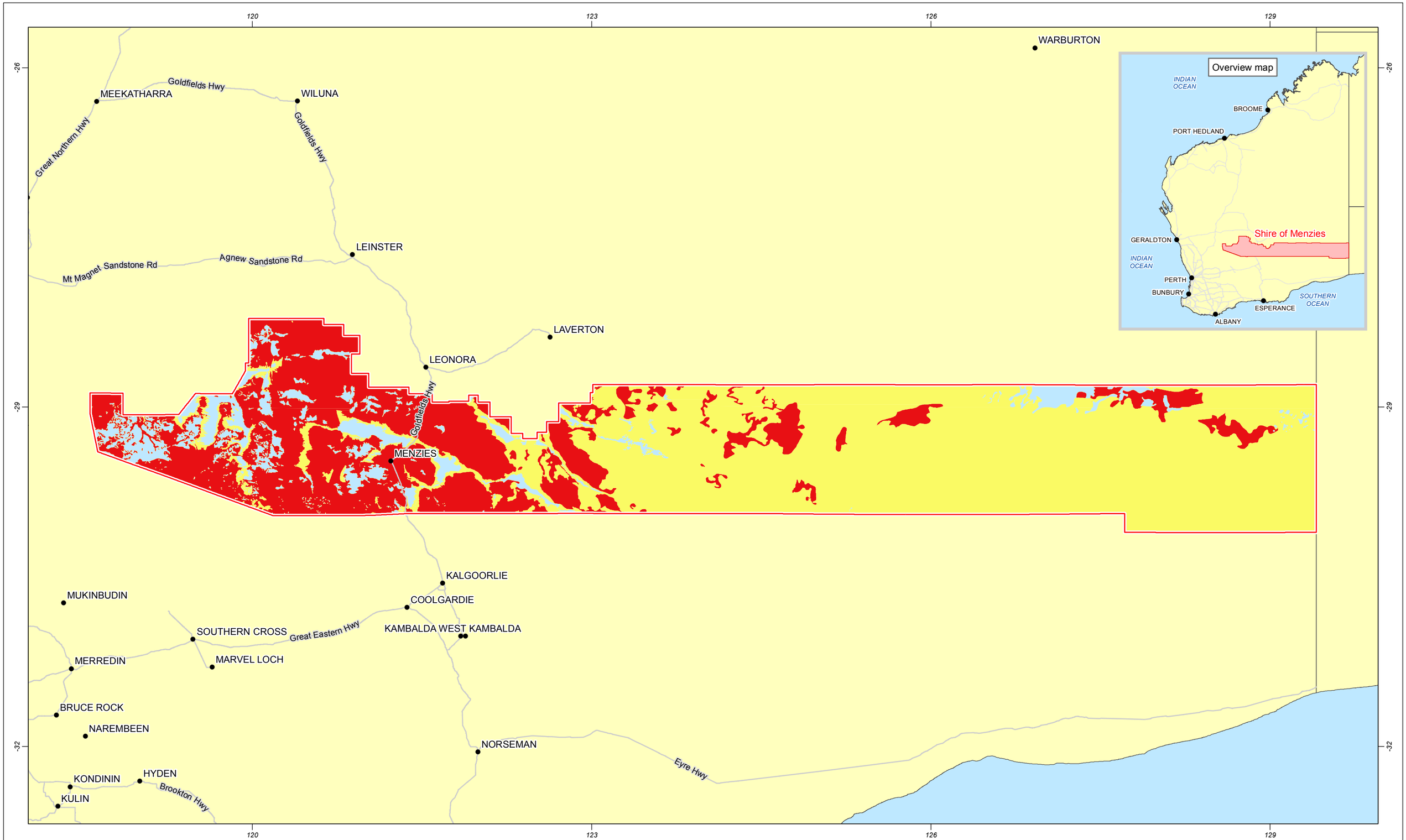

Figure 5a: Bushfire Hazard Level

Mapsheet of 4

Scale 1:3,250,000at A3

0 32.5 65 97.5 km

Coordinate System: GCS GDA 1994
Note that positional errors may occur in some areas
Date: 11/05/2018
Author: vdinh
Source: Strategen: Bushfire hazard level - 10/04/2018.

Legend

Shire of Menzies boundary

Bushfire Hazard Level

Extreme
Moderate
Low

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Figure 5b: Bushfire Hazard Level

Scale 1:25,000 at A4

0 250 500 750 m

N

Coordinate System: GCS GDA 1994

Note that positional errors may occur in some areas

Date: 30/04/2018

Author: vdinh

Source: Landgate: Aerial imagery - 2013.
Strategen: Bushfire hazard level - 10/04/2018

Path: Q:\Consult\2018\SMZ\SMZ18082\01_GIS_documents\ArcMap_documents\SMZ18082_G019_RevB.mxd

Legend

Bushfire hazard level

Extreme

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3.2 BHL results and identification of bushfire hazards

The assessment of pre-European vegetation and AS3959 vegetation class identified that the western portion of the local government area is likely to be predominantly commensurate with Class B woodland vegetation, while the eastern portion is predominantly Class C shrubland (refer Figure 4a and 4b).

The above vegetation classifications, coupled with consideration of slope (namely areas greater than 10 degrees) and areas within 100 m of 'Extreme' or 'Moderate' BHL across the Shire, result in a BHL of predominantly 'Extreme' in the western portion of the local government area, and 'Moderate' in the eastern portion.

The BHL rating determined through the assessment is attributed to the mostly undeveloped nature of the Shire, and the presence of remnant vegetation.

Strategic planning proposals, subdivisions and development applications within designated bushfire prone areas relating to land that has or will have a BHL above low must comply with the policy measures of SPP3.7.

4. Assessment against the bushfire protection criteria

The bushfire protection criteria are a performance-based system of assessing bushfire risk management measures (WAPC 2017). In accordance with the Guidelines, an assessment against the criteria is required to be undertaken for any LPS that has a bushfire hazard level above 'Low' or a BAL rating above BAL–LOW. Given that the results of the BHL assessment identified 'Extreme' and 'Moderate' areas across the majority of the Shire, assessment against these criteria is required.

Given the high-level nature of a LPS (and absence of development detail such as proposed lot layouts), this section discusses strategies on how compliance with the bushfire protection criteria can be achieved in subsequent planning stages, as per the final requirement under Policy Measure 6.3 of SPP 3.7.

Table 2 below outlines the requirements of the Guidelines to achieve compliance based on an 'Acceptable Solutions' approach to future development.

It is noted that application of these measures does not apply retrospectively to established development; however, management strategies have been provided in Table 2 as recommendations and can be applied to existing development to increase bushfire resilience and protection of property and life within the Shire.

Table 2: Assessment against the bushfire protection criteria

Bushfire protection criteria	Acceptable solution	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	**Existing development recommendation:** A1.1 can be achieved through implementation of A2.1 as outlined below. **Proposed development requirement:** A1.1 can be achieved through locating proposed development (habitable buildings) in areas with adequate separation to bushfire hazards (classified vegetation) to achieve a moderate or low bushfire hazard level. The required separation distances between classified vegetation and proposed development can be determined through a Bushfire Attack Level (BAL) assessment/contour map at future planning stages.
Element 2: Siting and design	A2.1 Asset Protection Zone (APZ) Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL–29) in all circumstances • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes) Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (see Guidelines Schedule 1).	**Existing development recommendation:** As per proposed development below. **Proposed development requirement:** A2.1 can be achieved through the implementation and ongoing maintenance of an Asset Protection Zone (APZ) surrounding any habitable building. The required width of the APZ to achieve a rating of BAL-29 or lower should be determined through a BAL assessment/contour map in accordance with AS3959 at future planning stages (outlined in Section 4.1). Consideration will need to be given to ensuring that the extent of the APZ is located in areas which are able to be managed to an APZ standard, in perpetuity, and do not include any vegetation under environmental protection. APZs are low fuel areas and are required to comply with Schedule 1 of the Guidelines (Appendix 3), and must be maintained on a regular and ongoing basis by proponents at a fuel load less than 2 t/ha to achieve a low threat minimal fuel condition status all year round.
Element 3: Vehicular access	A3.1 Two access routes Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.	**Existing development recommendation requirement:** The existing Menzies town is serviced predominantly by the Goldfields highway which provides access and egress to two different destinations (north toward Leonora and south toward Kalgoorlie) and are available to residents of the town. Residents of Kookynie also are provided with two access routes via Kookynie Road, Kookynie-Yarri Road and Kookynie Mount Remarkable Road. Where any isolated habitable buildings occur within the Shire, two different access routes to these buildings should be investigated and where practicable, provided to ensure accessibility by fire brigade/emergency services, and evacuation can be undertaken safely in the event of a bushfire.

<table>
<tr><th>Bushfire protection criteria</th><th>Acceptable solution</th><th>Proposed bushfire management strategies</th></tr>
<tr><td></td><td></td><td>Proposed development requirement: All future development in a bushfire prone area will need to be provided with two different vehicular access routes, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions. This is required to ensure both accessibility by fire brigade/emergency services and safe evacuation in the event of a bushfire.</td></tr>
<tr><td></td><td><u>A3.2 Public road</u>
A public road is to meet the requirements in Table 6 Column 1 of the Guidelines.</td><td>Existing development recommendation: It is recommended that the Shire ensure that all existing roads servicing habitable buildings are trafficable by fire brigade/ emergency services vehicles, and well as suitable for public use.

Proposed development requirement: All future public roads proposed in a bushfire prone area will need to be constructed to the following technical specifications:
<table><tr><th>Technical requirement</th><th>Public road</th></tr><tr><td>Minimum trafficable surface (m)</td><td>6*</td></tr><tr><td>Horizontal distance (m)</td><td>6</td></tr><tr><td>Vertical clearance (m)</td><td>4.5</td></tr><tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr><tr><td>Minimum weight capacity (t)</td><td>15</td></tr><tr><td>Maximum crossfall</td><td>1 in 33</td></tr><tr><td>Curves minimum inner radius</td><td>8.5</td></tr></table>*Refer to E3.2 Public roads: Trafficable surface of the Guidelines</td></tr>
<tr><td></td><td><u>A3.3 Cul-de-sac (including a dead-end-road)</u>
A cul-de-sac and/or a dead-end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), detailed requirements will need to be achieved as per Table 6 Column 2 of the Guidelines.</td><td>Existing development recommendation: N/A

Proposed development requirement: All future cul-de-sacs proposed in a bushfire prone area shall not exceed 200 m in length (or 600 m if serving less than 8 lots), shall have a compliant turnaround area and will need to be constructed to the following technical specifications:
<table><tr><th>Technical requirement</th><th>Cul-de-sac</th></tr><tr><td>Minimum trafficable surface (m)</td><td>6</td></tr><tr><td>Horizontal distance (m)</td><td>6</td></tr><tr><td>Vertical clearance (m)</td><td>N/A</td></tr><tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr><tr><td>Minimum weight capacity (t)</td><td>15</td></tr><tr><td>Maximum crossfall</td><td>1 in 33</td></tr><tr><td>Curves minimum inner radius</td><td>8.5</td></tr></table></td></tr>
<tr><td></td><td></td><td>Existing development recommendation: N/A</td></tr>
</table>

<table>
<tr><th>Bushfire protection criteria</th><th>Acceptable solution</th><th>Proposed bushfire management strategies</th></tr>
<tr><td></td><td><u>A3.4 Battle-axe</u>
Battle-axe access legs should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) detailed requirements will need to be achieved as per Table 6 Column 3 of the Guidelines.</td><td>Proposed development requirement: While battle-axe lots should be avoided, all future battle-axe lots proposed in a bushfire prone area shall not exceed 600 m in length and will need to have access constructed to the following technical specifications:
<table>
<tr><th>Technical requirement</th><th>Private driveway</th></tr>
<tr><td>Minimum trafficable surface (m)</td><td>4</td></tr>
<tr><td>Horizontal distance (m)</td><td>6</td></tr>
<tr><td>Vertical clearance (m)</td><td>4.5</td></tr>
<tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr>
<tr><td>Minimum weight capacity (t)</td><td>15</td></tr>
<tr><td>Maximum crossfall</td><td>1 in 33</td></tr>
<tr><td>Curves minimum inner radius</td><td>8.5</td></tr>
</table></td></tr>
<tr><td></td><td><u>A3.5 Private driveway longer than 50 m</u>
A private driveway is to meet detailed requirements as per Table 6 Column 3 of the Guidelines.</td><td>Existing development recommendation: N/A
Proposed development requirement: Private driveways exceeding 50 m in length proposed in a bushfire prone area shall have an all-weather surface, passing bays and turnarounds as per the Guidelines will need to have access constructed to the following technical specifications:
<table>
<tr><th>Technical requirement</th><th>Private driveway</th></tr>
<tr><td>Minimum trafficable surface (m)</td><td>4</td></tr>
<tr><td>Horizontal distance (m)</td><td>6</td></tr>
<tr><td>Vertical clearance (m)</td><td>4.5</td></tr>
<tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr>
<tr><td>Minimum weight capacity (t)</td><td>15</td></tr>
<tr><td>Maximum crossfall</td><td>1 in 33</td></tr>
<tr><td>Curves minimum inner radius</td><td>8.5</td></tr>
</table></td></tr>
<tr><td></td><td><u>A3.6 Emergency access way</u>
An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will</td><td>Existing development recommendation: Any areas of existing development that are serviced by roads that do not provide through access to a public road should have an EAW to link up roads to allow alternative access and egress during emergencies where existing traffic flow designs do not allow for two-way access.</td></tr>
</table>

<table>
<tr><th>Bushfire protection criteria</th><th>Acceptable solution</th><th>Proposed bushfire management strategies</th></tr>
<tr><td></td><td>need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet detailed requirements as per Table 6 Column 6 of the Guidelines.</td><td>Proposed development requirement: The need for an EAW should be avoided through ensuring future traffic flow design allows for two-way, through access. However, where an access way cannot be avoided, an EAW can be used to link to a public road during emergencies. Any proposed EAWs shall not exceed 600 m, be provided as a right of way or public easement, be signposted and must meet the following technical requirements:
<table>
<tr><th>Technical requirement</th><th>EAW</th></tr>
<tr><td>Minimum trafficable surface (m)</td><td>6*</td></tr>
<tr><td>Horizontal distance (m)</td><td>6</td></tr>
<tr><td>Vertical clearance (m)</td><td>4.5</td></tr>
<tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr>
<tr><td>Minimum weight capacity (t)</td><td>15</td></tr>
<tr><td>Maximum crossfall</td><td>1 in 33</td></tr>
<tr><td>Curves minimum inner radius</td><td>8.5</td></tr>
</table>
*Refer to E3.2 Public roads: Trafficable surface of the Guidelines</td></tr>
<tr><td></td><td><u>A3.7 Fire service access routes (perimeter roads)</u>
Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for fire fighting purposes. Fire service access routes are to meet detailed requirements as per Table 6 Column 5 of the Guidelines.</td><td>Existing development recommendation: N/A
Proposed development requirement: Fire service access routes (FSARs) should be established to assist with separating bushfire hazards from development and to facilitate fire brigade access at the hazard/ development interface. FSARs are required to be all-weather surfaces, be no further than 600 m from a public road, have turnarounds every 500 m and no dead-ends, be provided as a right of way or public easement, be signposted and must meet the following standards:
<table>
<tr><th>Technical requirement</th><th>Fire service access routes</th></tr>
<tr><td>Minimum trafficable surface (m)</td><td>6*</td></tr>
<tr><td>Horizontal distance (m)</td><td>6</td></tr>
<tr><td>Vertical clearance (m)</td><td>4.5</td></tr>
<tr><td>Maximum grade <50 m</td><td>1 in 10</td></tr>
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<tr><td>Curves minimum inner radius</td><td>8.5</td></tr>
</table>
*Refer to E3.2 Public roads: Trafficable surface of the Guidelines</td></tr>
<tr><td></td><td><u>A3.8 Firebreak width</u>
Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the</td><td>Existing development requirement: Existing development is required to comply with the Shire's annual firebreak notice which requires all land within townsites >2000 m^2 to have a 2.5 m firebreak, and land outside of townsites to have a 2 m firebreak. Full details of the firebreak notice are provided in Appendix 4.</td></tr>
</table>

Bushfire protection criteria	Acceptable solution	Proposed bushfire management strategies
	local firebreak notice issued by the local government	**Proposed development requirement:** All future lots are to comply with the Shire's annual firebreak notice (Appendix 4). Where lots are > 0.5 ha a three metre firebreak must be installed immediately within the lot boundary.
Element 4: Water	A4.1 Reticulated areas The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.	**Existing development recommendation:** Where possible, existing developed areas supplied with reticulated water should comply with the Water Corporations No. 63 Water Reticulation Standard, or with advice from the local water supply authority, including ensuring sufficient hydrants to provide firefighting water to existing buildings.
		Proposed development requirement: It is understood that Menzies receives its water supply from a Water Corporation wellfield located approximately 5 km east of Menzies. Menzies also has a surface water source, Menzies Town Dam No. 1; however, this dam has been used to store backwash from the Menzies water treatment plant (DoW 2010) and may not be appropriate for firefighting purposes. Where reticulated water supply can be provided to future development, water supply infrastructure is to comply with the Water Corporations No. 63 Water Reticulation Standard, or with advice from the local water supply authority.
	A4.2 Non-reticulated areas Water tanks for fire fighting purposes with a hydrant or standpipe are provided and meet detailed requirements (refer to the Guidelines for detailed requirements for non-reticulated areas)	**Existing development recommendation:** It is recommended that any existing development areas which are not currently serviced by a reticulated water supply be supplied with one 50 000L water tank per 25 lots for firefighting purposes.
		Proposed development requirement: any proposed development (other than creation of a single additional lot) which cannot be serviced by a reticulated water supply will need to be supplied with one 50 000L water tank per 25 lots for firefighting purposes.
	A4.3 Individual lots within non-reticulated areas (only for use if creating 1 additional lot and cannot be applied cumulatively) Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10 000 litres.	**Existing development recommendation:** It is recommended that any single isolated lots which are not currently serviced by a reticulated water supply be supplied with a 10 000L water tank for firefighting purposes, or where existing water tanks are provided, ensure that the domestic water supply tank fittings are located above firefighting valves to ensure a static water supply of 10 000 L to be used in the event of a bushfire.
		Proposed development requirement: Where a single lot subdivision is proposed in a non-reticulated area, a 10 000L water tank will be required to be installed for firefighting purposes.

4.1 Additional bushfire management recommendations

It is understood that emergency bushfire response is currently provided by the Shire of Menzies volunteer fire brigade. Given the remoteness of the local government area and Menzies and Kookynie townsites, and the expected timely response of external fire fighting and emergency services providers, it is recommended that the Shire, and any proposed future development, be as self-sufficient and prepare for a bushfire emergency as much as possible to ensure maximum protection of life and property assets.

In addition to the requirements of SPP3.7 and the Guidelines, the following recommendations are made for consideration in improving the bushfire readiness and resilience of the Shire:

1. Ensure that the Shire has a central, safe, public evacuation area that is separated from bushfire hazards, that residents and visitors can seek refuge at in the event of a bushfire emergency. Ideally this area will include shelter, drinking water and ablution facilities.
2. Develop a bushfire monitoring and communication system to alert residents and visitors of any approaching bushfires, and to seek refuge or evacuate the townsite/dwellings.
3. Prepare an emergency evacuation plan in the event that evacuation from the townsite is required to protect human life.

5. Bushfire requirements for future development

Given the high-level nature of the LPS, development across the local government area may occur over a long-term timeframe. The below information provides guidance on bushfire assessment and management requirements specific to each potential future planning stage.

5.1 Statutory requirements

Applicable legislation, standards, supporting guidelines and local government provisions that determine or influence bushfire requirements for future planning stages within the project area include:

- *Bush Fires Act 1954*
- State Planning Policy 3.7 *Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015)
- *Planning and Development (Local Planning Schemes) Regulations 2015* (deemed planning provisions)
- *Building Act 2011* and *Building Regulations 2012* (Building Regulations)
- Building Code of Australia (BCA)
- Australian Standard AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas* (AS 3959-2009: SA 2009)
- *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines; WAPC 2017)
- Local Government annual firebreak notices.

5.2 Planning stage requirements

5.2.1 Structure plan

SPP 3.7 policy measure 6.3 requires Structure Plans to be accompanied by the following information in accordance with the Guidelines:

- results of a BHL (as previously discussed in this BMP), or if lot layout is known, results of a Bushfire Attack Level (BAL) contour assessment identifying the indicative BAL ratings across the subject land in accordance with methodology set out in *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017)
- identification of any bushfire hazard issues arising from the BHL or BAL contour assessment
- clear demonstration that compliance with the bushfire protection criteria in the Guidelines can be achieved in subsequent planning stages.

This information can be provided in the form of a BMP or an amended BMP where one has been previously endorsed.

5.2.2 Subdivision applications

SPP 3.7 policy measure 6.4 requires subdivision applications to be accompanied by the following information in accordance with the Guidelines:

1. A BAL Contour Map or where building layout is known, a BAL assessment to determine the indicative acceptable BAL ratings across the subject site.
2. The identification of any bushfire hazard issues arising from the BAL Contour Map or BAL assessment.
3. An assessment against the bushfire protection criteria requirements demonstrating compliance within the boundary of the subdivision site.

This information can be provided in the form of a BMP or an amended BMP where one has been previously endorsed.

5.2.3 Development applications

Development applications include any application to carry out development or to change land use, but excludes applications for single houses or ancillary dwellings on lots less than 1100 m².

SPP 3.7 policy measure 6.5 requires development applications in a designated bushfire prone area to be accompanied by the following information:

1. A BAL assessment

   or

   A BAL Contour Map that has been prepared for an approved subdivision clearly showing the indicative acceptable BAL rating across the subject site.
2. The identification of any bushfire hazard issues arising from the BAL Contour Map or BAL assessment.
3. An assessment against the bushfire protection criteria requirements demonstrating compliance within the boundary of the development site.

This information can be provided in the form of a BMP or an amended BMP where one has been previously endorsed.

Development applications for vulnerable land uses where BAL-12.5 to BAL-29 applies will not be supported unless accompanied by a BMP and emergency evacuation plan jointly endorsed by the relevant local government and DFES. Similarly, any high-risk land uses will require a bushfire risk management plan to accompany the BMP.

Vulnerable land uses, as defined under the Guidelines, include hospitals, nursing homes and aged care facilities, childcare centres, educational establishments and tourist accommodation. High-risk land uses, as defined under the Guidelines, typically include service stations and other facilities that have bulk storage of hazardous or flammable materials.

5.2.4 Building permits

For most building works a building permit is required and the permit authority will be the relevant local government. The permit authority is also responsible for enforcement and dealing with non-compliance in relation to applicable building standards.

For single houses or ancillary dwellings on sites 1100 m² or greater, other habitable buildings[1] (other than a single house of ancillary dwelling) or specified buildings[2] in bushfire prone areas, under the deemed planning provisions a BAL assessment is required, where a BAL Contour Map does not exist from a previous approved proposal. If the BAL assessment or BAL Contour Map identifies the development site as BAL-40 or BAL-FZ, a development application and planning approval is required.

For development on sites less than 1 100 m² in bushfire prone areas the bushfire construction requirements under the Building Act and BCA may still apply, which also includes undertaking a BAL assessment, where a BAL Contour Map does not exist from a previous approved proposal.

Building permit applications must demonstrate compliance with applicable BCA bushfire construction requirements.
The BCA bushfire construction requirements only apply to Class 1a (single dwelling), Class 1b (accommodation, grouped dwellings), Class 2 (apartments), Class 3 (accommodation, schools, health-care, detention centre) buildings, other structures and decks (Class 10a) associated with these buildings and major alterations/additions to residential buildings.

[1] Habitable building as defined under SPP 3.7 means a permanent or temporary structure that is fully or partially enclosed and has at least one wall of solid material and a roof of solid material and is used by people for living, working, studying or being entertained.

[2] Specified building means a structure identified in a local planning scheme as a building to which the deemed provisions apply.

6. References

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DBCA 2018, *Florabase*. Government of Western Australia. Accessed 17/04/18 via *https://florabase.dpaw.wa.gov.au/*

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Department of Water 2010, *Menzies Water Reserve Drinking water source protection plan; Menzies town water supply.* Government of Western Australia, Perth.

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

Western Australian Planning Commission (WAPC) 2017, *Guidelines for Planning in Bushfire-Prone Areas*, Western Australian Planning Commission, Perth.

Appendix 1
Map-books of elevation, classified and pre-European vegetation, and BHL (provided digitally)

Appendix 2
Table of pre-European vegetation/ AS3959 classified vegetation conversion

vegetation association	vegetation type	structural description	floristic description	AS3959 Vegetaton Classification	Bushfire Hazard Level
86	35	Low tree-steppe	Hummock grassland with scattered bloodwoods & snappy gum Triodia spp., Corymbia dichromophloia, Eucalyptus leucophloia	Class C Shrubland	Moderate
444	35	Low tree-steppe	Hummock grassland with scattered bloodwoods & snappy gum Triodia spp., Corymbia dichromophloia, Eucalyptus leucophloia		
24	9	Low woodland or open low woodland	Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.	Class B Woodland	Extreme
256	9	Low woodland or open low woodland	Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.		
416	9	Low woodland or open low woodland	Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.		
533	9	Low woodland or open low woodland	Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.		
18	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.	Class B Woodland	Extreme
19	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
20	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
28	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
182	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
251	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
442	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
504	8	Low woodland, open low woodland or sparse woodland	Mulga Acacia aneura and associated species.		
516	16	Mallee	Eucalypt shrubland Eucalyptus eremophila, E. redunca, E. spp.	Class B Woodland	Moderate
128	54	Rock		Non-vegetated - excluded under Clause 2.2.3.2 (e)	Low
125	51	Salt lake, lagoon, clay pan		Non-vegetated - excluded under Clause 2.2.3.2 (e)	Low
1271	51	Salt lake, lagoon, clay pan			
221	49	Saltbush & bluebush	Atriplex spp. Maireana spp. communities on alkaline soils	Class C Shrubland	Moderate
289	49	Saltbush & bluebush	Atriplex spp. Maireana spp. communities on alkaline soils		
448	49	Saltbush & bluebush	Atriplex spp. Maireana spp. communities on alkaline soils		
449	49	Saltbush & bluebush	Atriplex spp. Maireana spp. communities on alkaline soils		
460	49	Saltbush & bluebush	Atriplex spp. Maireana spp. communities on alkaline soils		
411	48	Saltbush and bluebush with scrub or open scrub	Mulga, other wattle Atriplex spp, Maireana spp. with Acacia aneura & other Acacia spp.	Class C Shrubland	Moderate
417	48	Saltbush and bluebush with scrub or open scrub	Mulga, other wattle Atriplex spp, Maireana spp. with Acacia aneura & other Acacia spp.		
508	48	Saltbush and bluebush with scrub or open scrub	Mulga, other wattle Atriplex spp, Maireana spp. with Acacia aneura & other Acacia spp.		
120	45	Saltbush and/or bluebush with low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata	Class C Shrubland	Moderate
441	45	Saltbush and/or bluebush with low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
4623	45	Saltbush and/or bluebush with low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		

vegetation association	vegetation type	structural description	floristic description	AS3959 Vegetaton Classification	Bushfire Hazard Level
122	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata	Class C Shrubland	Moderate
389	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
400	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
461	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
480	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
529	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
540	46	Saltbush and/or bluebush with scattered low trees	Mulga, other wattle, casuarina Atriplex spp. Maireana spp. with Acacia aneura, A. papyrocarpa, Allocasuarina cristata		
676	50	Samphire	Tecticornia spp. communities in saline areas	Low threat vegetation - excluded under Clause 2.2.3.2 (f)	Low
385	13	Scrub with open woodland or scattered trees	Wattle with York gum, casuarina, mulga Acacia spp. with Eucalyptus loxophleba, Allocasuarina spp. Acacia aneura.	Class D Scrub	Extreme
554	13	Scrub with open woodland or scattered trees	Wattle with York gum, casuarina, mulga Acacia spp. with Eucalyptus loxophleba, Allocasuarina spp. Acacia aneura.		
39	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.	Class D Scrub	Extreme
40	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
169	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
202	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
358	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
420	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
538	15	Scrub, open scrub or sparse scrub	Wattle, teatree & other species Acacia spp. Melaleuca spp.		
109	38	Shrub-steppe	Hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp	Class C Shrubland	Moderate
110	38	Shrub-steppe	Hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp		
207	38	Shrub-steppe	Hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp		
555	38	Shrub-steppe	Hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp		
483	41	Spinifex complexes	Hummock grassland with scattered low trees over dwarf shrubs or mixed short grass and spinifex mixed species, Triodia spp.	Class G Grassland	Low
485	41	Spinifex complexes	Hummock grassland with scattered low trees over dwarf shrubs or mixed short grass and spinifex mixed species, Triodia spp.		
532	41	Spinifex complexes	Hummock grassland with scattered low trees over dwarf shrubs or mixed short grass and spinifex mixed species, Triodia spp.		
863	41	Spinifex complexes	Hummock grassland with scattered low trees over dwarf shrubs or mixed short grass and spinifex mixed species, Triodia spp.		
435	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.	Class D Scrub	Extreme
437	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.		
484	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.		
520	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.		
551	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.		
1413	14	Thicket	Wattle, casuarina and teatree acacia-allocasuarina-melaleuca alliance.		
84	37	Tree-and-shrub-steppe	Hummock grassland with scattered eucalypts over wattle scrub or mallee Triodia spp. Acacia spp. Corymbia dichromophloia, Eucalyptus leucophloia, E. youngiana		

vegetation association	vegetation type	structural description	floristic description	AS3959 Vegetaton Classification	Bushfire Hazard Level
85	37	Tree-and-shrub-steppe	Hummock grassland with scattered eucalypts over wattle scrub or mallee Triodia spp. Acacia spp. Corymbia dichromophloia, Eucalyptus leucophloia, E. youngiana	Class B Woodland	Moderate
1239	37	Tree-and-shrub-steppe	Hummock grassland with scattered eucalypts over wattle scrub or mallee Triodia spp. Acacia spp. Corymbia dichromophloia, Eucalyptus leucophloia, E. youngiana		
8	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
10	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
141	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
142	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
468	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
501	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb	Class B Woodland	Extreme
502	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
521	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
936	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
2902	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		
2903	4	Woodland other	Wheatbelt; York gum, salmon gum etc. Eucalyptus loxophleba, E. salmonophloia. Goldfields; gimlet, redwood etc. E. salubris, E. oleosa. Riverine; rivergum E. camaldulensis. Tropical; messmate, woolyb		

Vegetation data reference:

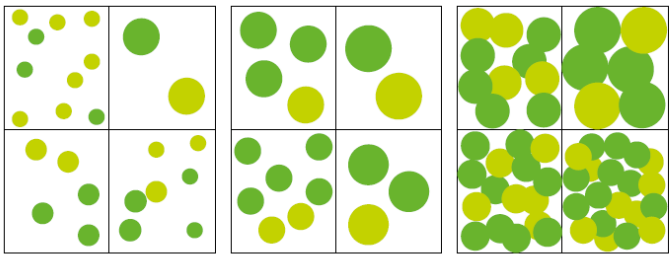
Beard, J., Beeston, G., Harvey, J., Hopkins A., Shepherd D., 2013, 'The vegetation of Western Australia at the 1:3 000 000 scale Explanatory Memoir Second Edition' In: *Conservation Science Western Australia* - Vol 9.

Appendix 3
Standards for Asset Protection Zones

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than $5m^2$ in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Appendix 4
Shire of Menzies Firebreak Notice

SHIRE OF MENZIES

Notice to all Owners and /or Occupiers of Land in the Shire of Menzies

Pursuant to the powers contained in Section 38 of the Bush Fires Act 1954, you are hereby required, on or before 1 November 2017 to clear fire breaks and remove flammable material from land owned or occupied by you as specified hereunder.

This work must be carried on or before 1 November 2017 and kept maintained throughout the summer months up to and including the 15 March 2018.

1.0 Land Outside Townsites

1.1 Buildings on land which are located outside townsites shall be surrounded by a fire break not less than two metres wide and that land inside the fire break shall be cleared of flammable material.

2.0 Land in Townsites

2.1 Where the area of land is 2,000sqm or less, all flammable material shall be removed from the land.

2.2 Where the area of land is 2,000sqm or more, fire breaks of at least 2.5metres wide shall be cleared of all flammable materials and in general comply with the requirements of the Explosive and Dangerous Goods Act 1931

3.0 Fuel Dumps/Tanks/Depots

Where there are flammable liquid or gas containers on the land, such and shall be cleared and kept clear of all flammable materials and in general comply with the requirements of the Explosive and Dangerous Goods Act 1961

4.0 General Provisions

The term "flammable Materials" for the purpose of this notice includes (as defined in the Bush Fires Act 1954) timber, Boxes, cartons, paper and like materials, but does not include buildings, green standing trees and bushes or growing bushes or plants in gardens or lawns. If it is considered impracticable for any reason to clear the land of flammable materials, you may apply to the Council for permission to prepare fire breaks in an alternative position. If such permission is not granted, you shall comply with the provisions of this notice. If the requirements of this notice are carried out by burning, such burning shall comply with the provisions of the Bush Fires Act 1954. The penalty for failing to comply with this notice is a fine of $1,000 and a person is also liable, whether prosecuted or not, to pay the cost of performing work directed by this notice if it is not carried out by the owner or occupier by the required date.

By Order of the Council

Rhonda Evans
Chief Executive Officer

DATES TO REMEMBER IN 2017/2018

Restricted Burning Periods 1:

19 September 2017 to 31 October 2017 *(inclusive)*

Permits to burn are required during this period for hazard reduction burning.
Alternative firebreak applications to be submitted by 1 October 2017.
Firebreaks must be installed by 15 October 2017.

Please note that penalties apply where burning regulations are contravened or permit conditions are not complied with

Prohibited Burning Period:

From 1 November 2017 to 15 March 2018 *(inclusive)*

All burning, including garden refuse is prohibited during this period.
Properties to be maintained clear of flammable material until 15 March 2018.

Restricted Burning Periods 2:

From 16 March 2018 to 30 April 2018 *(inclusive)*

Permits to burn are required during this period for hazard reduction burning.
Please note that penalties apply where burning regulations are contravened or permit conditions are not complied with.
Certain climate or weather conditions may cause these periods to be extended or shortened.
You must check the press for details
or call the Shire office on (08) 9024 2041 before commencing to burn.

Unrestricted Season:

From 1 May 2018 to 18 September 2018 *(inclusive)*

FIRE CONTROL OFFICERS 2017/2018 SEASON

Paul Warner	Chief Bush Fire Control Officer		0408 494 925
Ray McKay	Deputy Chief Fire Control Officer		0427 663 703
Ian Tucker	Adelong Station	(08) 9024 2150 (08) 9024 2020	0417 085 336
David McQuie	Bulga Downs Station	(08) 9037 5917	***No Mobile Coverage***
Adam Maynard	Edjudina Station	(08) 9024 2024	0467 654 246
Stephen Tonkin	Gindable Station	(08) 9024 2070	0418 944 492
Chris Tonkin	Gindable Station	(08) 9024 2070	0427 869 731
Philip Wedgwood	Glenorn Station	(08) 9031 3636	0477 489 676
Gary Smith *Not staffed* *Not staffed* *Not staffed* *Not staffed*	Riverina Station *Perrinvale Station* *Jeedamia Station* *Kookynie Station* *Melita Station*	(08) 9024 2874	0419 900 820 *(Riverina includes Perrinvale, Jeedamia, Kookynie and Melita Stations as all under one manager now)*
John Scoble	Menangina Station	(08) 9024 2856	***No Mobile Coverage***
Harry Krieg	Yerilla Station	(08) 9031 3017	***No Mobile Coverage***
Justin Stephens	Mt Vetters Station	(08) 9024 2700	0429 471 440
Colin Lewis	Pinnacles Station	(08) 9031 3111	0427 761 165
Paul Axford	Stuart Meadows Station	(08) 9037 5910	0427 375 911
Graham Wallace	Yundamindra Station	(08) 9031 3012	
Keith Mader	Walling Rock Station	(08) 9037 1100	0487 744 786