

### **BUSHFIRE MANAGEMENT PLAN**

### Lot 102 Arabian Court, Champion Lakes

City of Armadale



Prepared by Ralph Smith smith.consulting@bigpond.com 0458 292 280

Site visited 29 July and 19 September 2022; Report completed 15 May 2023

# Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

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#### **Full Content Detail**

#### **Document control**

Report Version	Purpose	Author/reviewer and accreditation details	Date Submitted
1	Support the development application	Ralph Smith	29 August 2022
1.1	Revised text and maps	Ralph Smith	13 March 2023
1.2	Revised text and maps	Ralph Smith	16 March 2023
1.3	Revised text and maps	Ralph Smith	15 May 2023

#### **DISCLAIMER**

This Bushfire Management Plan has been prepared in good faith. It is derived from sources believed to be reliable and accurate at the time of publication. Nevertheless, this plan is distributed on the terms and understanding that the author is not responsible for results of any actions taken based on information in this publication or for any error or omission from this publication.

Smith Bushfire Consultants Pty Ltd has exercised due and customary care in the preparation of this Bushfire Management Plan and has not, unless specifically stated, independently verified information provided by others.

Any recommendations, opinions or findings stated in this report are based on circumstances and facts as they existed at the time Smith Bushfire Consultants Pty Ltd performed the work. Any changes in such circumstances and facts upon which this document is based may adversely affect any recommendations, opinions or findings contained in this plan.

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#### **Section 1: Proposal Details**

This Bushfire Management Plan (BMP) was developed to provide guidance for the planning and management of the potential bushfire threat on the proposed subdivision on Arabian Court, Champion Lakes. The Bushfire Management Plan is a supporting document for the Local Structure Plan application for the change of land use proposal. Arabian Court, Champion Lakes, is within the Metropolitan Region Scheme Zoning as 'Urban' and the Town Planning Scheme 4 – 'Rural Living 2'. The development site is close to, but separated from, the Bush Forever Site 260 which is within the river and to the west.

The subdivision site has been designated by the Fire and Emergency Services Commissioner as a bushfire prone area. As such, it is subject to, or likely to be subject to, bushfire attack. Therefore, additional planning and building requirements may apply to any new development resulting in construction within the subject lots. It should also be noted that the Department of Fire and Emergency Services (DFES) advise that it is an unreasonable expectation that a fire appliance will be available to protect every home during a bushfire emergency. It is therefore critical that all new residential buildings are constructed to an appropriate standard and the surrounding vegetation appropriately managed.



**Figure 1.** Aerial photo showing the subject site Arabian Court, Champion Lakes and surrounding lots as being designated bushfire prone. Source: SLIP.

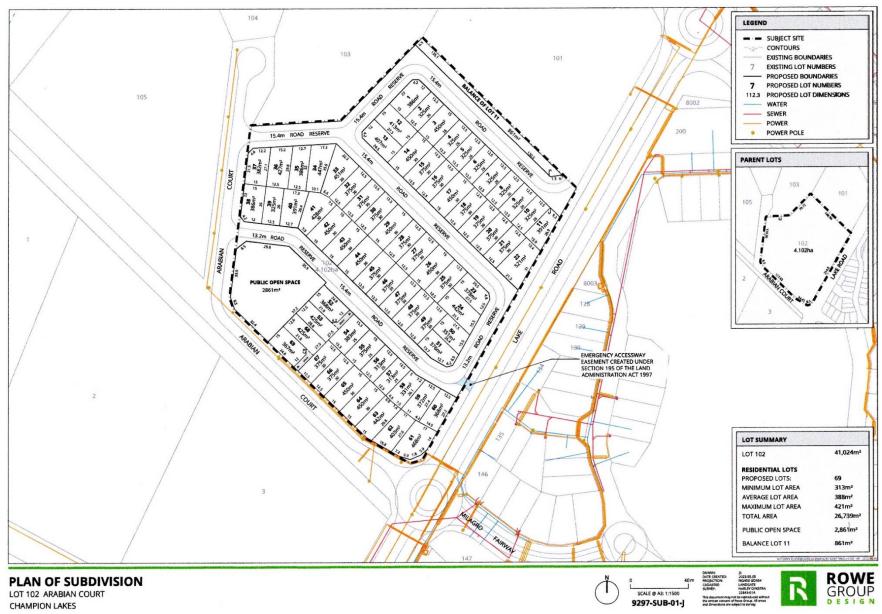


Figure 2. Plan of Subdivision.

#### Section 2: Environmental Considerations

The State Planning Policy 3.7 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values. A desktop search has identified that the following are not registered for the development site or immediately surrounding area:

- Threatened and priority flora;
- Threatened and priority fauna;
- Contaminated site registration;
- Threatened ecological community;
- Black Cockatoo breeding sites buffered; and
- Carnaby Cockatoo confirmed roost sites.

The environmental sensitive area map shows some coverage over the development lot. The development lot also has Carnaby Cockatoo roosting sites buffered by one kilometre shown over it, but does not have any confirmed roosting areas on the lot.

#### Subsection 2.1: Native Vegetation – modification and clearing

There will be a need to clear areas of native scrub vegetation and tree overstorey cover as a component of this development. The majority of the current vegetation is largely reticulated grassland which is grazed by horses with multiple horse yards and shelter sheds.

#### Subsection 2.2: Re-vegetation/Landscape Plans

There is a landscape plan for the site, including the pubic open space (POS). The POS will be treated as a low fuel zone (in accordance with AS 3959 section 2.2.3.2 (c) multiple areas less than 0.25 ha and not within 20 metres of the site...) for the managed grassland and as a shrubland within the revegetation areas and swale. The verges will be mostly mulched and landscaped front gardens. There are occasional landscape pockets in the verges. The landscape concept plan key open space landscape treatment indicative plan is shown as Appendix 5.

There will be a pocket of forest retained in the south-west section of the POS. The Department of Biodiversity, Conservation and Attractions have identified that this vegetation is of ecological and hydrological significance.

#### **Section 3: Bushfire Assessment Results**

Any new dwellings located on the new lots have been assessed as being with a BAL rating of BAL–29 or less. The BAL ratings for any new dwelling align with the State Government criteria of not having new dwellings located in areas above BAL–29.

#### **Subsection 3.1: Assessment Inputs**

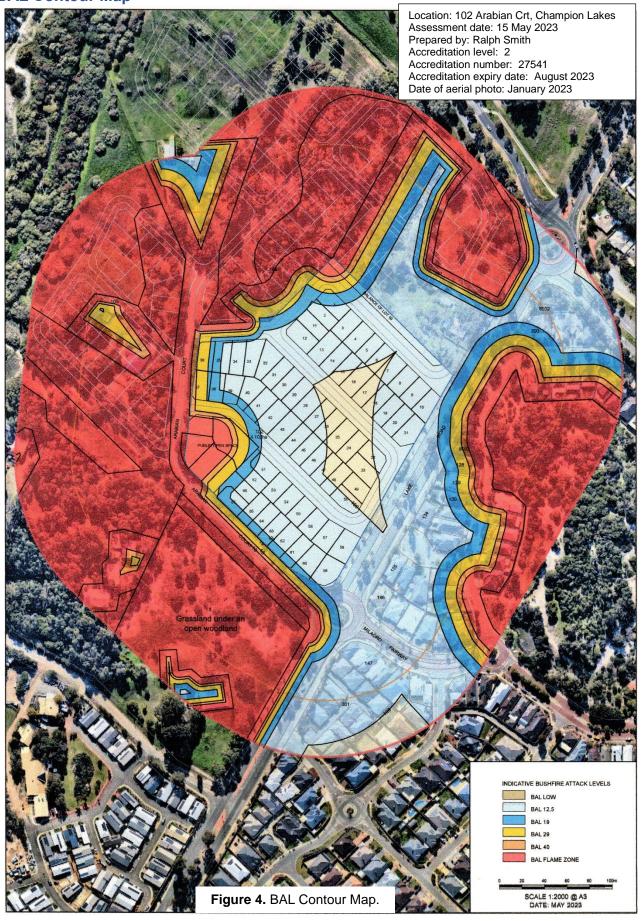
The assessment inputs are shown in the forthcoming pages and are supported by a vegetation assessment, photographic evidence and text to support the vegetation assessment and a BAL Contour Map.

#### **Site Assessment**

The assessment of the site was undertaken on 29 July and 19 September 2022 for the purpose of determining the Bushfire Attack Level in accordance with AS 3959 (Method 1).



#### **BAL Contour Map**



#### **Vegetation Classification**

All vegetation within 150 metres of the site as indicated on the site assessment plan was classified in accordance with the Western Australian Government criteria and Clause 2.2.3 of AS 3959 was applied. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below. AS 3959 only requires consideration of 100 metres between vegetation and the building and 50 metres between vegetation and the building for grassland.

Plot 1 Exclusion – Low threat vegetation and non-vegetated areas. Clause 2.2.3.2 (e) and (f).



Photo ID: Photo 1 Looking at the managed grassland, driveway and dwelling.



**Photo ID: Photo 2** Looking at the horse shelter and paddock under the tree overstorey cover.



Photo ID: Photo 3 Looking at the shed, horses facilities and path.



**Photo ID: Photo 4** Looking the grazing horses and managed grassland.



Photo ID: Photo 5 Looking at the neighbouring dwelling and yard.



Photo ID: Photo 6 Looking at Lake Road and the road reserve with the absence of surface vegetation.



with the absence of surface vegetation.



Photo ID: Photo 8 Looking at the neighbouring dwelling. Note the photograph was taken outside of the firebreak notice applicable period.

#### Plot 2 Class G - Grassland under an open woodland (AS 3959 classification G-06)



13/09/2022 2:22 18 PM (+8.0 hrs) Dir=SF Lat=-32 12022 Lon=115 9867 Alt=S3m MSL WGS 1984 **Photo ID: Photo 9** Looking at the grass horse paddocks and the forest vegetation in the background.





Photo ID: Photo 11 Looking at the grassland between the scrub and the neighbouring dwelling.





Photo ID: Photo 13 Looking at the grassland vegetation and the forest on the neighbouring property.



Photo ID: Photo 14 Looking at the grassland vegetation.





Photo ID: Photo 15 Looking at the forest west of the development site.



Photo ID: Photo 16 Looking at the forest vegetation.



**Photo ID: Photo 17** Looking at the forest vegetation east of Lake Road.



Photo ID: Photo 18 Looking at the forest vegetation east of

### Plot 4 Class D – Scrub (AS 3959 classification D–13)



Photo ID: Photo 19 Looking at the scrub vegetation.



**Photo ID: Photo 20** Looking at the scrub vegetation adjacent to Arabian Court.

#### **Notes to Accompany Vegetation Classification**

#### 1. Plot 1

Exclusion – Low threat vegetation and non-vegetated areas Clause 2.2.3.2 (e) & (f) includes the areas modified to 'low threat vegetation'.

This plot comprises the neighbouring properties with dwellings, sheds and managed and cultivated gardens. The plot also includes the road infrastructure within the locality. This plot also includes the horse stables, reticulated paddocks and managed grassland associated with the grazing horses.

This lot includes the POS which will be developed meeting the criteria of AS 3959:2018 clause 2.2.3. (c) where the multiple areas of vegetation are less than 0.25 ha area and not within 20 m of the site or other areas of classified vegetation.

#### 2. Plot 2

Class G – Grassland under an open woodland (AS 3959 classification G–06)

This plot of grassland features in a number of discrete areas. The grassland west and south of the development site is less managed that the other pockets of grassland. The grassland to the north of the development site appears to be associated with the grazing of horses, but there were no horses present at the time of the inspection and the precautionary principe has been applied.

#### 3. Plot 3

Class A – Forest (AS 3959 classification A–03)

This plot forest occurs on the property to west, south-west and north of the development site. The forest vegetation could not be directly accessed and therefor the precautionary principe has been applied and the vegetation classified as forest. The forest area east of Lake Road is a large area, but only a small portion features in the assessment area.

There will be a pocket of forest retained in the south-west section of the POS. The Department of Biodiversity, Conservation and Attractions have identified that this vegetation is of ecological and hydrological significance.

#### 4. Plot 4

Class D – Scrub (AS 3959 classification D–13)

This plot comprises the very small area of scrub adjacent to Arabian Court. This is bordeline classification of scrub and could be considered shrubland as much of the vegetation at this stage of development is less than 2 metres tall.

#### 5. Plot 5

Exclusion – Low threat vegetation Clause 2.2.3.2 (c)

This plot comprises the proposed POS managed vegetation that is on the south of the development site. The vegetation will be areas of classified vegetation that are less than 0.25 ha in area and not within 20 metres of each other or of other areas of vegetation being classified vegetation.

#### **Slope**

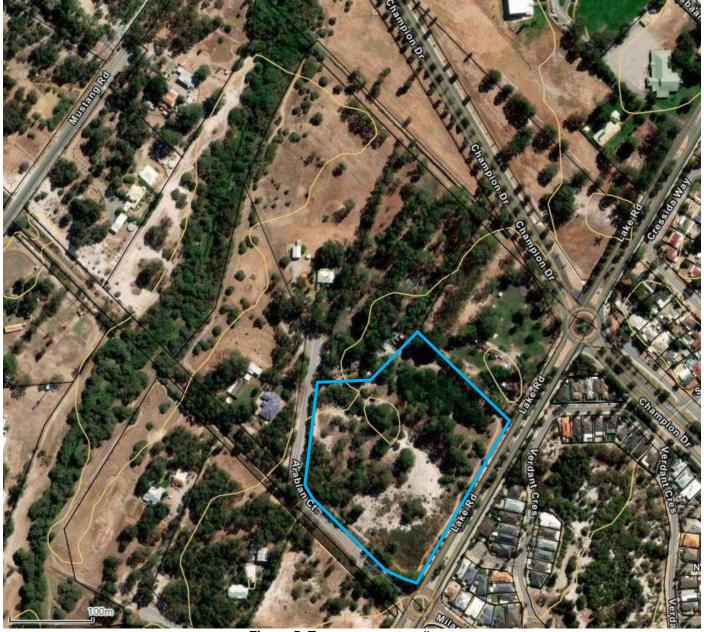


Figure 5. Two-metre contour lines.

The slope is generally upward from the Wungong River that runs north-west of the property. The slope is negligible and effectively flat.

#### **Subsection 3.2: Assessment outputs**

Plot	Applied Vegetation Classification	Effective Slope Under the Classified Vegetation (degrees)	Separation Distance to the Classified Vegetation (metres)	BAL Contour
1	Exclusion – Low threat vegetation and non-vegetated areas Clause 2.2.3.2 (e) & (f)	Not applicable	Not applicable	LOW
2	Class G – (Grassland under an open woodland (AS 3959	Flat	17	12.5
3	Class A – Forest (AS 3959 classification A–03)	Flat	33	29
4	Class D – Scrub (AS 3959 classification D–13)	Flat	13	19
5	Exclusion – Low threat vegetation Clause 2.2.3.2 (c)	Not applicable	Not applicable	LOW

Note: The BAL rating is to the lot boundary. There is an opportunity for a lower BAL rating for a future dwelling when the actual location of the dwellings on the lot is known

#### Section 4: Identification of bushfire hazard issues

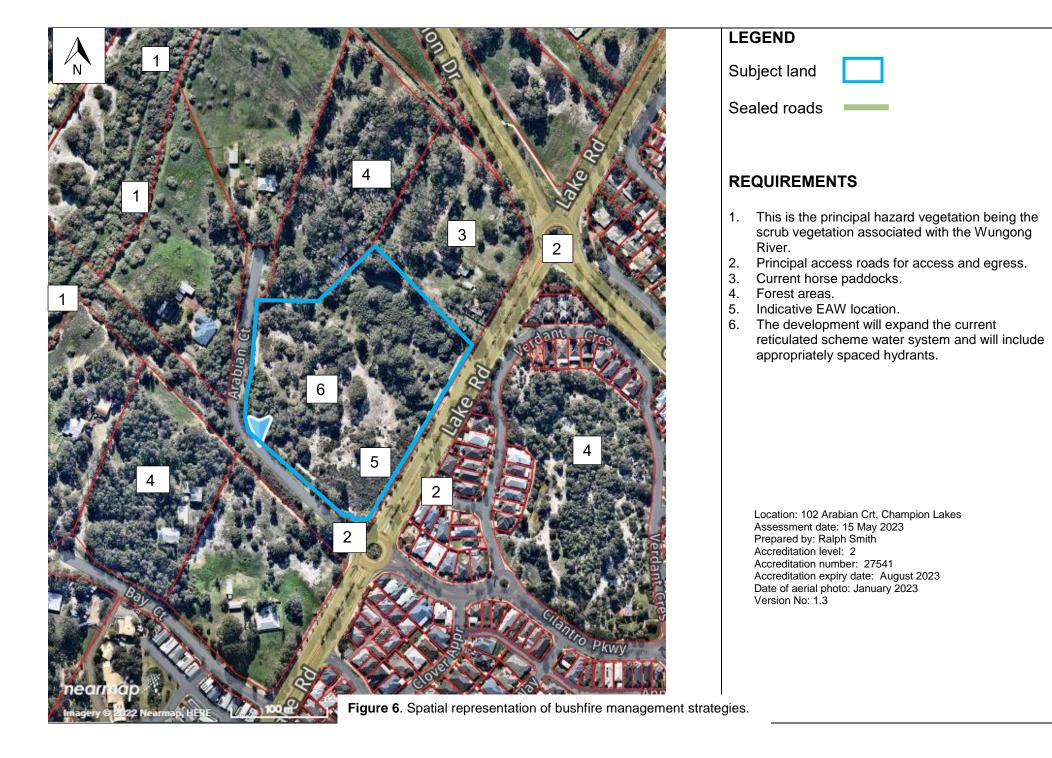
The most significant bushfire hazard is the scrub vegetation associated with the Wungong River riparian zone. The private property adjacent to the riparian zone with its dwellings, APZ and grassland between the scrub associated with the river and the subdivision site diminishes the potential bushfire threat, but does not eliminate the threat.

The other significant bushfire hazard is the forest vegetation associated with the retained forest within the Arabian Court road reserve within the Wungong River and also within the POS.

The protection for any future dwelling on the development site will be enhanced by constructing to the appropriate standard (AS 3959) in accordance with the BAL rating.

## Section 5: Assessment against the Bushfire Protection Criteria Subsection 5.1: Compliance Table

Bushfire	Method of Compliance		
protection criteria	Acceptable solutions	Proposed bushfire management strategies	
Element 1: Location	A1.1 Development location	The potential future dwellings will be located in an area that is restricted to the BAL rating BAL-29 or less.	
Element 2: Siting and design	A2.1 Asset Protection Zone (APZ)	There is no requirement for an APZ associated with any new dwellings within the development.	
Element 3: Vehicular	A3.1 Two access routes	Access via Arabian Court and the EAW will provide access options to the substantial bitumen road network. Appendix 4 shows the external access route options.	
Access	A3.2 Public road	There will be new roads developed as a component of this development. The roads will all be compliant with the Guidelines. This stage of the development will have a temporary no-through road. This no-through road is compliant with the Guidelines with the road available post the creation of the residential built out area.	
	A3.3 Cul-de-sac (including a dead-end-road)	There will be a cul-de-sac with the appropriate head construction standards.	
	A3.4 Battle-axe	Not applicable.	
	A3.5 Private driveway longer than 70 m	There will be no driveways longer than 50 m constructed with this development.	
	A3.6 Emergency access way	The EAW provides a second entry/egress option which links to Lake Road. The road network will be constructed during this stage of the subdivision up to the EAW.	
	A3.7 Fire service access routes (perimeter roads)	There will be a perimeter road which will be constructed with this development that separates the lots from any vegetation, including the POS.	
	A3.8 Firebreak width	During establishment, and after subdivision, firebreaks and fuel loads will be maintained so as to comply with the City's firebreak and fuel order.	
Element 4: Water	A4.1 Reticulated areas	The site is serviced by reticulated scheme water. The fire hydrants will be located in accordance with the Water Corporation standards as recorded in Design Standard No 63.	
	A4.2 Non-reticulated areas	Not applicable.	
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	Not applicable.	



#### Section 6: Responsibilities for Implementation and Management of the Bushfire Measures

This section is to set out the responsibilities of the developer/s, landowner/s and local government with regards to the initial implementation and ongoing maintenance of the required actions.

	DEVELOPER – PRIOR TO ISSUING TITLES
No.	Implementation Action
	A notification pursuant to Section 165 of the <i>Planning and Development Act 2005</i> , is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating or 12.5 or above, advising the existence of a hazard or other factor.
	Notice of this notification is to be included in the diagram or plan of survey (deposited plan).
1	The notification is to state as follows:
	"This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land" (Western Australian Planning Commission).
2	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.
3	Construct the new scheme water fire hydrants to comply with the State's requirements and in accordance with the Water Corporation standards as recorded in Design Standard No 63.
4	Construct the roads to the required standards as specified in the Guidelines.
5	Construct the EAW to the required standards as specified in the Guidelines.

LAND	LANDOWNER/OCCUPIER - ONGOING		
No.	Management Action		
1	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.		
2	Maintain the dwellings in good order and condition.		

LOCAL GOVERMENT – ONGOING		
No.	No. Management Action	
1	Enforcement of fire management notice and asset protection zones.	
2	Make a copy of this bushfire management plan available to new owners.	

### Appendix 1

Location of the environmentally sensitive areas on the development lot and in the general area of the development.



#### Appendix 2

Map showing the Black Cockatoo roosting sites buffered by a kilometre. There are no Black Cockatoo roosting sites shown on the DPLH website on the actual development property.



Extracts of the City of Armadale Fire-break and Hazard Reduction Notice 2022/23.

## Notice to all owners and occupiers of land situated within the City Of Armadale

#### **BUSH FIRES ACT 1954**

Notice is hereby given to all owners and/or occupiers of land within the City of Armadale that pursuant to the powers conferred in Sections 33(1), 25(1a) and 24G(2) of the *Bush Fires Act* 1954 the following requirements apply to prevent the outbreak, spread or extension of a bush fire within the district and deal with other fire related preparedness and prevention matters.

Pursuant to Section 33(1) of the *Bush Fires Act 1954*, all owners and/or occupiers of land are required to carry out fire prevention work in accordance with the requisitions of this Notice on or before the 30th day of November 2022, or within fourteen days of becoming the owner or occupier of land should this be after the 30th day of November 2022, and maintain the required fire prevention work up to and including the 31st day of March 2023.

#### 1. Definitions

**Authorised Officer** means an employee of the City of Armadale appointed as a Bush Fire Control Officer.

**Bushfire Management Plan** means a plan that has been developed in accordance with *State Planning Policy 3.7*, and approved by the City of Armadale to reduce and mitigate fire hazards within a particular subdivision, lot or other area of land anywhere in the district.

**Driveway** means a point of access to a Habitable Building accessible for both conventional two wheel drive vehicles and firefighting appliances that is totally clear of Inflammable Matter and other objects or things.

Fire-break means an area of land constructed to a Trafficable surface and maintained totally clear of all Inflammable Matter leaving bare mineral earth, and includes the pruning and removal of any living or dead trees, scrub or any other material encroaching into the Vertical Axis of the fire-break area. Such fire-breaks may be constructed by one or more of the following methods: ploughing, cultivating, scarifying, raking, burning, chemical spraying or other method as approved by an Authorised Officer.

**Fire Management Plan** has the same meaning as Bushfire Management Plan.

**Fuel Depot / Fuel Storage Area** means an area of land, building or structure where fuel (i.e. petrol, diesel, kerosene, or any other hydrocarbon liquid) is kept, excepting where the quantities of fuel being stored are considered "minor storage quantities" under Table 2.1 of *Australian Standard AS1940* The storage and handling of flammable and combustible liquids.

**Habitable Building** means a dwelling, workplace, place of gathering or assembly and includes a building used for storage or display of goods or produce for sale by wholesale in accordance with classes 1 — 9 of the *Building Code of Australia*.

**Haystack** means any collection of hay including fodder rolls placed or stacked that exceeds 100m<sup>3</sup> in size (e.g. five (5) metres x five (5) metres x four (4) metres), whether in a shed, other structure or in the open air.

**Inflammable matter** means any tree, bush, plant, grass, mineral, vegetable, substance, object, thing or material (except for living trees, shrubs, plants and lawns under cultivation) or any other thing deemed by an Authorised Officer to be capable of combustion that may, or is likely to, catch fire and burn.

**Trafficable** means to be able to travel from one point to another in a four-wheel drive fire appliance on a clear surface, unhindered without any obstruction that may endanger such fire appliances. A Fire-break is not to terminate, or lead to a dead end without provision for egress to a safe place or a cleared turn around area of 17.5 metre radius.

**Vertical Axis** means a continuous vertical uninterrupted line at a right angle to the horizontal line of the Fire-break.

#### 2. All Land greater than 5,000m<sup>2</sup>

- a. A three (3) metre wide Fire-break with a four (4) metre high Vertical Axis is to be constructed and maintained as close as practicable inside the property boundary but no more than ten (10) metres from the boundary around the entire perimeter of the property. Reticulated and maintained green lawn may be accepted in lieu of a Fire-break; and
- b. A three (3) metre wide Fire-break with a four (4) metre high Vertical Axis is to be constructed and maintained immediately surrounding all outbuildings, sheds, haystacks and groups of buildings situated on the land; and
- c. A three (3) metre wide driveway with a four (4) metre high Vertical Axis is to be installed and maintained.

#### 3. All Land 5,000m2 or less

- a. All Inflammable Matter on the entire property (noting that this does not include living trees, shrubs, plants and lawns under cultivation) is to be reduced and maintained to a height of less than five (5) centimetres; and,
- A three (3) metre wide driveway with a four (4) metre Vertical Axis is to be installed and maintained.

#### 4. Fuel Depot / Fuel Storage Areas

- a. All Inflammable Matter within the Fuel Depot / Fuel Storage Area is to be cleared leaving bare mineral earth; and
- A three (3) metre wide Fire-break with a four (4) metre Vertical Axis is to be installed and maintained immediately surrounding the Fuel Depot / Fuel Storage Area.

#### 5. Hazard Reduction

The requirements of this Notice are considered to be the minimum requirement for fire prevention work, not only to protect individual properties but the district in general.

A separate Hazard Reduction Notice may be issued to individual landowners pursuant to Section 33 of the *Bush Fires Act 1954* to carry out further hazard reduction works with respect to anything upon the land, where in the opinion of an Authorised Officer, it is likely to be conducive to the outbreak and/or the extension of a bushfire.

#### Application to Vary Fire-break and Hazard Reduction Notice Requirements

If you consider, for any reason, that it is impractical to meet the requirements of this Notice, you may apply in writing to the City of Armadale, or its duly Authorised Officers, **no later than the 1st day of October 2022**, requesting authorisation to employ other methods of fire prevention. If permission is not granted by the City you must comply with the requirements of this Notice.

In some instances naturally occurring features such as rocky outcrops, natural watercourses or landscaping such as reticulated gardens, lawns or driveways may be an acceptable substitute for a Fire-break.

If approved the requirements of all approved variations to the Fire-break and Hazard Reduction Notice will need to be established on or before the 30th day of November 2022 (or within 14 days of you becoming the owner or occupier should this occur after that date) and be maintained up to and including the 31st day of March 2023.

Note: No Fire-break exemptions will be given. Please apply for a Variation if an alternative location for Fire-break installation is required.

#### 7. Bushfire Management Plans

Where an approved Bushfire Management Plan (BMP), exists for an individual or group of properties as part of a development or subdivision approval, the owners and/or occupiers of those properties shall comply with the requirements and responsibilities of that BMP in its entirety. Some BMPs may also require compliance with this Notice.

BMPs can be viewed on the City's website via https://www.armadale.wa.gov.au/bushfire-management-plans. If you have trouble accessing your BMP please contact the City's Customer Service Team on 9394 5000.

#### 8. Bushfire Attack Level (BAL) Assessments

Where an approved Bushfire Attack Level assessment (BAL) has been developed in accordance with *Australian Standard 3959* as part of a development application, compliance with the requisitions of the BAL assessment is required in addition to the requirements contained within this Notice.

#### 9. Camp or Cooking Fires

In accordance with the provisions of Section 25(1a) of the *Bush Fires Act 1954* the lighting of camp or cooking fires is prohibited on all land within the City of Armadale during the Prohibited Burning Time. This prohibition does not apply to a gas appliance that does not consume solid fuel comprising of a fire, the flame of which is encapsulated by the appliance.

#### 10. Burning of Garden Refuse & Rubbish

For the purposes of this clause, "Limited Burning Time" means the 1st day of October 2022 through until the 31st day of May 2023 (inclusive and as varied pursuant to Sections 17 and 18 of the Bush Fires Act 1954) and the "Prohibited Burning Time" means the 1st day of December 2022 through until the 31st day of March 2023 (inclusive and as varied pursuant to Section 17 of the Bush Fires Act 1954).

- a. In accordance with the provisions of Section 24G of the Bush Fires Act 1954 the burning of garden refuse or rubbish in an incinerator or on the ground that would otherwise be permitted under Section 24F is absolutely prohibited
  - i. on land 1,200m<sup>2</sup> in size or less, during the Limited Burning Time; and
  - ii. on land larger than 1,200m² in size, during the Prohibited Burning Time.

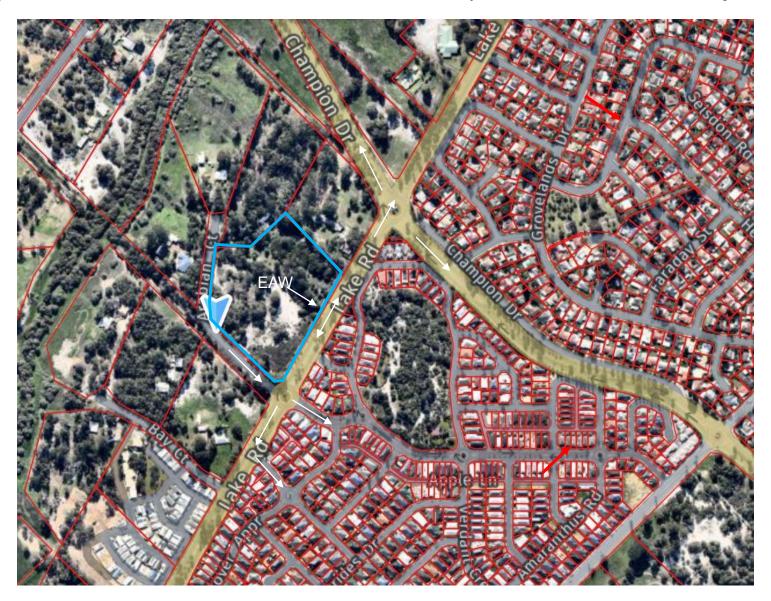
The effect of this clause is that the burning of garden refuse or rubbish in an incinerator or on the ground on land that is 1,200m² or less in size is prohibited during the Limited Burning Time and the burning of garden refuse or rubbish in an incinerator or on the ground is prohibited on all land within the district during the Prohibited Burning Time.

- In addition to the restrictions under Clause 10(a), garden refuse or rubbish in an incinerator or on the ground must be burnt in accordance with the following conditions –
  - i. There is no inflammable matter (other than that being burnt) within five (5) metres of the fire at any time while the fire is burning; and

Fire-break and Hazard Reduction Notice 2022/2023

Appendix 4

External access options. Arabian Court and the EAW link to Lake Road, which is major arterial road and links to other significant roads.



#### Appendix 5

An extract of the landscape concept plan for the public open space. The areas of classified vegetation are less than 0.25 ha in area and not within 20 metres of each other or of other areas of vegetation being classified vegetation.



#### Appendix 6

Extract form Design Standard DS 6.3 Water Reticulation Standard showing the required hydrant requirements.

Design Standard DS 63 Water Reticulation Standard



#### 2.2.1.5 Appurtenances

#### (b) Hydrants

Hydrants shall be screw-down hydrant with built-in isolation valve and installed only on DN100 or larger pipes. Hydrants shall be located:

- so that the maximum distance between a hydrant and the rear of a building envelope, (or in the absence of a building envelope the rear of the lot) shall be 120m and the hydrants shall be no more than 200m apart;
- · a maximum of 100m spacing in Industrial and Commercial areas;
- hydrant spacing in rural residential areas where minimum site areas per dwelling is 10,000 m<sup>2</sup> (1ha), a maximum 400m hydrant spacing be applied. If area is further subdivided to land parcels less than 1ha, then the residential standard (200m) is to be applied;
- · centrally along the frontage of a lot to avoid being under driveways;
- where appropriate at the truncation of road junctions or intersections so that they can serve more than one street and can be readily located;
- on both sides of the major roads at staggered intervals where there are mains on both sides of the road;
- at major intersections on dual multi-lane roads, where two hydrants are to be sited on diagonally opposite corners;
- hydrants should be located at least 20m from traffic calming devices i.e. median slow points or chokers, chicanes, mini traffic circles, and intersection 'pop-outs' to ensure traffic is not impeded;
- in a position not less than 10m from any high voltage main electrical distribution equipment such as transformers and distribution boards. AS 2419.1-2005
- hydrants with washout bends shall be used only in cul-de-sac situations.

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