



intelligent outcomes | respected experience

Kalamunda Activity Centre

Bushfire Management Plan (Strategic planning proposal)

Prepared for
City of Kalamunda
by Strategen

March 2019



Kalamunda Activity Centre

Bushfire Management Plan (Strategic planning proposal)

Strategen is a trading name of
Strategen Environmental Consultants Pty Ltd
Level 1, 50 Subiaco Square Road Subiaco WA 6008
ACN: 056 190 419

March 2019

Limitations

Scope of services

This report ("the report") has been prepared by Strategen Environmental Consultants Pty Ltd (Strategen) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen has also not attempted to determine whether any material matter has been omitted from the data. Strategen will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen. The making of any assumption does not imply that Strategen has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

Document control

Client: City of Kalamunda

Report Version	Revision No.	Purpose	Strategen author	Reviewed by	Submitted to Client	
					Form	Date
Draft Report	A	For client review	C Turner	Linden Wears (BPAD19809)	Electronic (email)	08/08/2018
Final Report	0	For submission to CoK	C Turner	Linden Wears (BPAD19809)	Electronic (email)	12/09/2018
Final Report	1	Updated with revised ACP- For submission to CoK	C Turner	Linden Wears (BPAD19809)	Electronic (email)	05/03/2019

Table of contents

1. Proposal details	1
1.1 Background	1
1.2 Site description	1
1.3 Purpose	2
2. Environmental considerations	4
2.1 Native vegetation – modification and clearing	5
2.2 Revegetation / Landscape Plans	5
3. Bushfire hazard level assessment	6
3.1 Assessment inputs	6
3.1.1 Classified vegetation and effective slope	6
3.2 Assessment outputs	6
4. Identification of bushfire hazard issues	9
4.1 Bushfire hazard levels	9
4.2 Bushfire hazard issues	9
5. Assessment against the bushfire protection criteria	10
5.1 Compliance table	10
6. Responsibilities for implementation and management of the bushfire measures	13
6.1 Statutory requirements	13
6.2 Planning stage requirements	13
6.2.1 Subdivision applications	13
6.2.2 Development applications	14
6.2.3 Building permits	14
6.3 Bushfire management measures	15
7. References	17

List of tables

Table 1: Summary of environmental values	4
Table 2: Summary of classified vegetation and exclusions	6
Table 3: Bushfire protection criteria	10
Table 4: Vehicular access technical requirements	12

List of figures

Figure 1: Location Plan	3
Figure 2: Pre-development vegetation class and effective slope	7
Figure 3: Pre-development Bushfire Hazard Level	8

List of appendices

Appendix 1 City of Kalamunda Activity Centre Plan
Appendix 2 Site photographs
Appendix 3 City of Kalamunda Fire Hazard Reduction Notice

1. Proposal details

1.1 Background

Urbis, on behalf of the City of Kalamunda are preparing an Activity Centre Plan (ACP) for the Kalamunda Town Centre, to guide future development within the ACP area (the project area; Figure 1). The ACP (Appendix 1) identifies the continuation and development of following land uses within the project area:

- residential
- mixed use
- local open space
- centre
- public purpose.

1.2 Site description

The project area is situated in the existing Kalamunda Town Centre locality, and is bound to the west by regional road; Kalamunda Road/Canning Road. The project area is surrounded by (see Figure 1):

- a primary school and local open space to the north-west
- predominantly residential land uses to the south-west, with isolated areas of local open space
- residential land uses and parks and recreation reserves to the east, including the Middle Helena Catchment Area and Jorgensen Park.
- residential land uses, Kalamunda District Community Hospital, parks and recreation reserves (Kalamunda National Park) and local open space to the north.

The entire project area is designated as bushfire prone on the *WA Map of Bush Fire Prone Areas* (DFES 2018; see Plate 1).

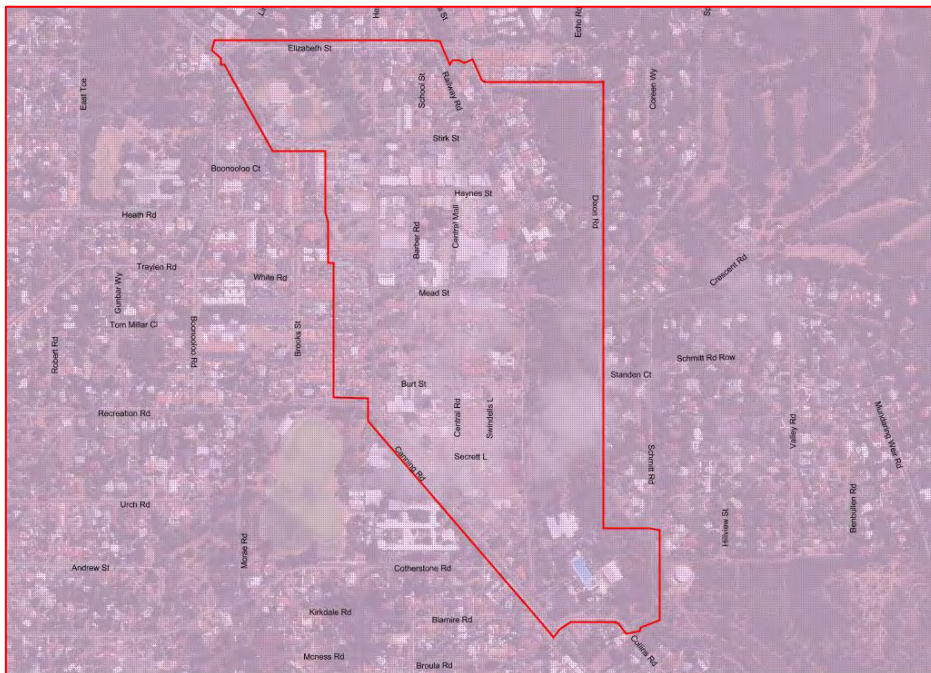


Plate 1: Bush Fire Prone Area mapping, as indicated in pink

1.3 Purpose

This Bushfire Management Plan (BMP) has been prepared to address requirements under Policy Measure 6.3 of *State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015) and *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017).

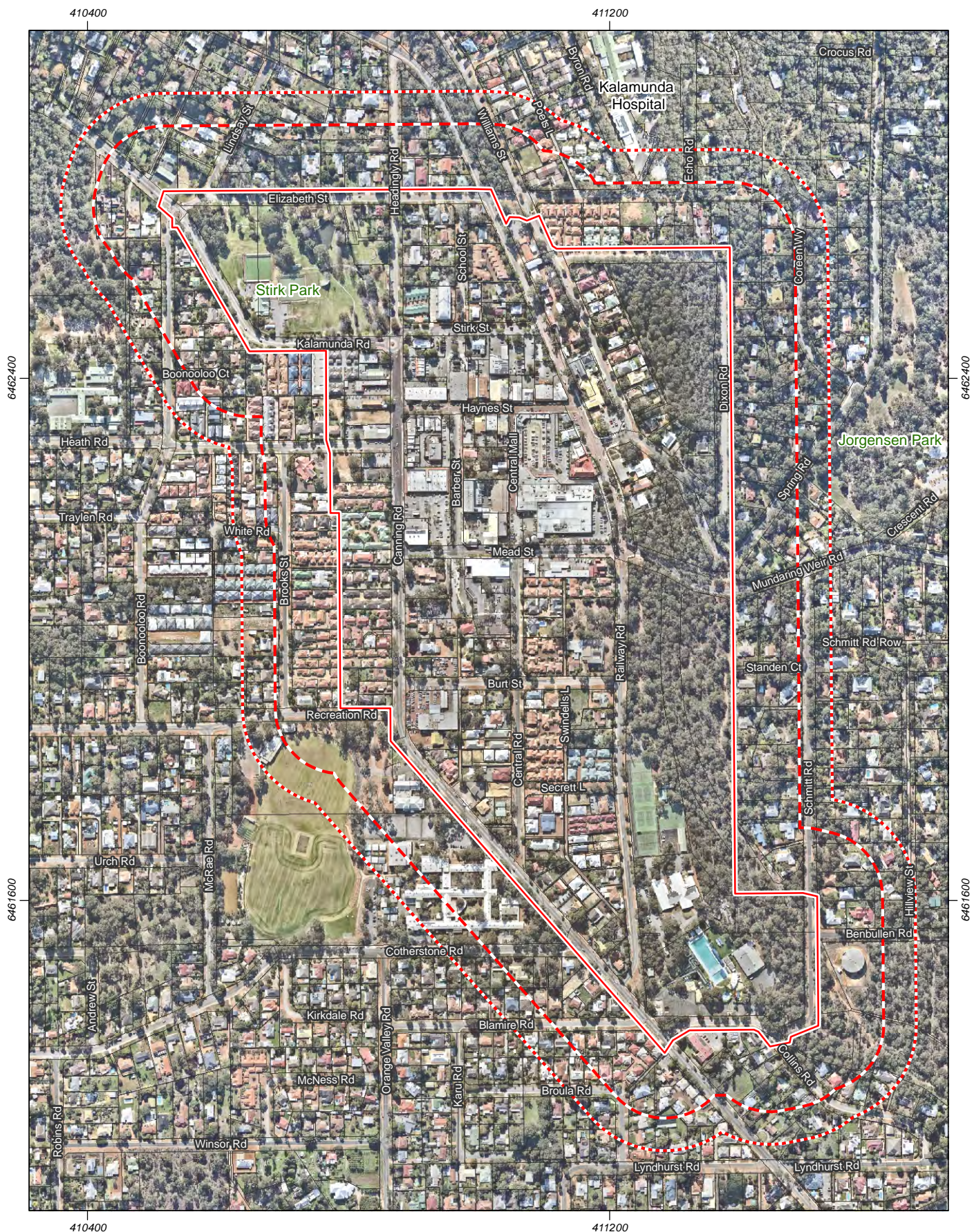


Figure 1: Site overview

Scale 1:8,000 at A4
 0 80 160 240 m

Coordinate System: GDA 1994 MGA Zone 50
 Note that positional errors may occur in some areas
 Date: 4/09/2018

Author: jcrute

Source: Nearmap: Aerial imagery, flown 06/2018. Client: Project area 09/2018.

Legend

- Cadastre
- Project area
- 100m assessment area
- 150m assessment area

strategen
 ENVIRONMENTAL

info@strategen.com.au
 www.strategen.com.au

2. Environmental considerations

Table 1 provides a summary of the environmental attributes potential occurring within the project area, based on a search of publicly available environmental data. Given the high-level planning stage of the ACP, it is anticipated that any impacts to ecological values will be determined and quantified at future planning stages where detailed development design is known.

Table 1: Summary of environmental values

Environmental value	Present within or adjacent to project area (Y/N)	Description
Environmentally Sensitive Area	N	N/A.
Wetlands	N	N/A.
Waterways	Y	<p>A drainage line is located within the project area within Stirk Park which directs drainage away from the project area, under Elizabeth St via culverts, and west toward the Swan River.</p> <p>Any future landscaping or revegetation within Stirk Park will need to give consideration to ensuring that a bushfire risk is not introduced to nearby residents.</p>
Potential Threatened Ecological Communities (TECs) listed under the EPBC Act	N	<p>Based on publicly available data, there are no known TECs within the project area.</p> <p>This may be confirmed through a flora and vegetation assessment prior to clearing of native vegetation (where necessary).</p>
Potential for Threatened and Priority flora to occur	Y	<p>According to a search of NatureMap (DBCA 2018) a total of 6 Threatened, 28 Priority flora species have been recorded within 5 km of the project area.</p> <p>Any clearing of native vegetation within the project area will be subject to assessment through the planning process, a native vegetation clearing permit application (Part V EP Act) and potentially under the EPBC Act (where applicable).</p>
Potential habitat for threatened fauna species	Y	<p>Vegetation within the project area contains habitat for Carnaby's black cockatoo (Endangered), Baudin's Black Cockatoo (Endangered) and the Forrest Red-tailed Black Cockatoo (Vulnerable) protected under the <i>Environment Conservation and Biodiversity Conservation Act 1999</i>, and <i>Wildlife Conservation Act 1950</i>.</p> <p>Vegetation within the project area may contain habitat for other conservation significant fauna. According to a search of NatureMap (DBCA 2018) a total of 7 Threatened, 7 Priority and 2 'other specially protected' fauna species have been recorded within 5 km of the project area.</p> <p>Any clearing of native vegetation within the project area will be subject to assessment through the planning process, a native vegetation clearing permit application (Part V EP Act) and potentially under the EPBC Act (where applicable).</p>
Bush Forever sites	N	N/A.
Swan Bioplan Regionally Significant Areas	N	N/A.
DBCA legislated lands and waters (includes National Park, Conservation Park, Nature Reserve, marine reserves, State forest and timber reserve)	N	N/A.

Environmental value	Present within or adjacent to project area (Y/N)	Description
DBCA land of interest (includes some areas of UCL, freehold purchased by State and some unvested Crown reserves)	N	N/A.
Vegetation associations or complexes with <30% of Pre-European extent remaining outside of constrained areas	N	Heddle Complex: Dwellingup D2 (82% remaining). Beard Association: West Darling 3 (86% remaining).

2.1 Native vegetation – modification and clearing

The majority of the project area comprises existing development and is either non-vegetated, or managed in a low-threat state (as per Clauses 2.2.3.2 (e) and (f) of AS3959 (SA 2009)). Remnant vegetation is limited to the eastern portion of the project area, and occurs in relatively large and intact parcels, as well as fragmented plots within private landholdings. While the northern parcel of remnant vegetation (northern portion of Plot 6; Figure 2) is proposed to be partially developed for residential purposes, the remaining areas of remnant vegetation within the project area are proposed to be retained as 'Local Open Space', with the exception of isolated clearing which may be required to accommodate appropriate asset protection zones (APZs) or vehicular access (as outlined in Table 3).

Potential environmental impacts resulting from implementation of the proposal will be addressed in accordance with standard State and Commonwealth legislative requirements under the *Environmental Protection Act 1986* and *Environment Protection and Biodiversity Conservation Act 1999*, during future planning and development processes.

In response to identification of the above environmental values, future development within the project area should aim to (where possible) avoid clearing of native vegetation through the strategic location of lot boundaries and building envelopes, as well as construction of dwellings to BAL-29 to minimise impacts from Asset Protection Zones (APZs).

2.2 Revegetation / Landscape Plans

No revegetation is proposed as part of the proposal.

A Public Realm Master Plan is being prepared by Urbis for the project area. Any landscaping proposed in the vicinity of habitable buildings will consist of low fuel managed gardens and street scaping, consistent with Clause 2.2.3.2 (f) of AS3959. Any exceptions to this should be assessed on a case-by-case basis to ensure that the landscaping works do not introduce a bushfire risk to adjacent development.

3. Bushfire hazard level assessment

The BHL assessment was undertaken in accordance with Appendix 2 of the Guidelines. The assessment methodology categorises the bushfire hazard level as low, moderate or extreme based on the vegetation and slope within 150 metres of a site. This provides an indication of the likely impact of a bushfire event associated with vegetation within and adjacent to the project area. The BHL provides an indication of the likely intensity of a bushfire and the likely level of bushfire attack on a site by categorising the hazard.

3.1 Assessment inputs

3.1.1 Classified vegetation and effective slope

Strategen assessed classified vegetation and exclusions within 150 m of proposed development through on-ground verification on 23 and 24 July 2018 in accordance with *AS 3959—2009 Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2009). Results are depicted Figure 2 and georeferenced site photos are contained in Appendix 2.

Strategen assessed effective slope under classified vegetation through on-ground verification in accordance with AS 3959. Results are depicted in Figure 2. The vegetation classifications assessed as part of the BHL will require further analysis at future planning stages to support the preparation of a BAL contour map in accordance with the requirements of SPP3.7, particularly in relation to vegetation within private landholdings east of the project area.

A summary of the assessed classified vegetation, effective slope and exclusions are provided in Table 2.

Table 2: Summary of classified vegetation and exclusions

Vegetation plot	Applied vegetation classification/exclusion	Effective slope under the classified vegetation (degrees)	Hazard Level
1	Class A forest	Flat/ upslope	Extreme
2	Class A forest	Downslope 0 to 5 degrees	Extreme
3	Class A forest	Flat/ upslope	Extreme
4	Class A forest	Downslope 0 to 5 degrees	Extreme
5	Class A forest	Downslope 15 to 20 degrees	Extreme
6	Class A forest	Downslope 5 to 10 degrees	Extreme
7	Class A forest	Flat/ upslope	Extreme
8	Class B woodland	Flat/ upslope	Extreme
9	Exclusion 2.2.3.2 (b)	N/A	Low (except where within 100 m of Extreme hazard)
10	Exclusion 2.2.3.2 (e) and (f)	N/A	Low (except where within 100 m of Extreme hazard)

3.2 Assessment outputs

The results of the BHL assessment are provided in Figure 3 and are discussed in Section 4.

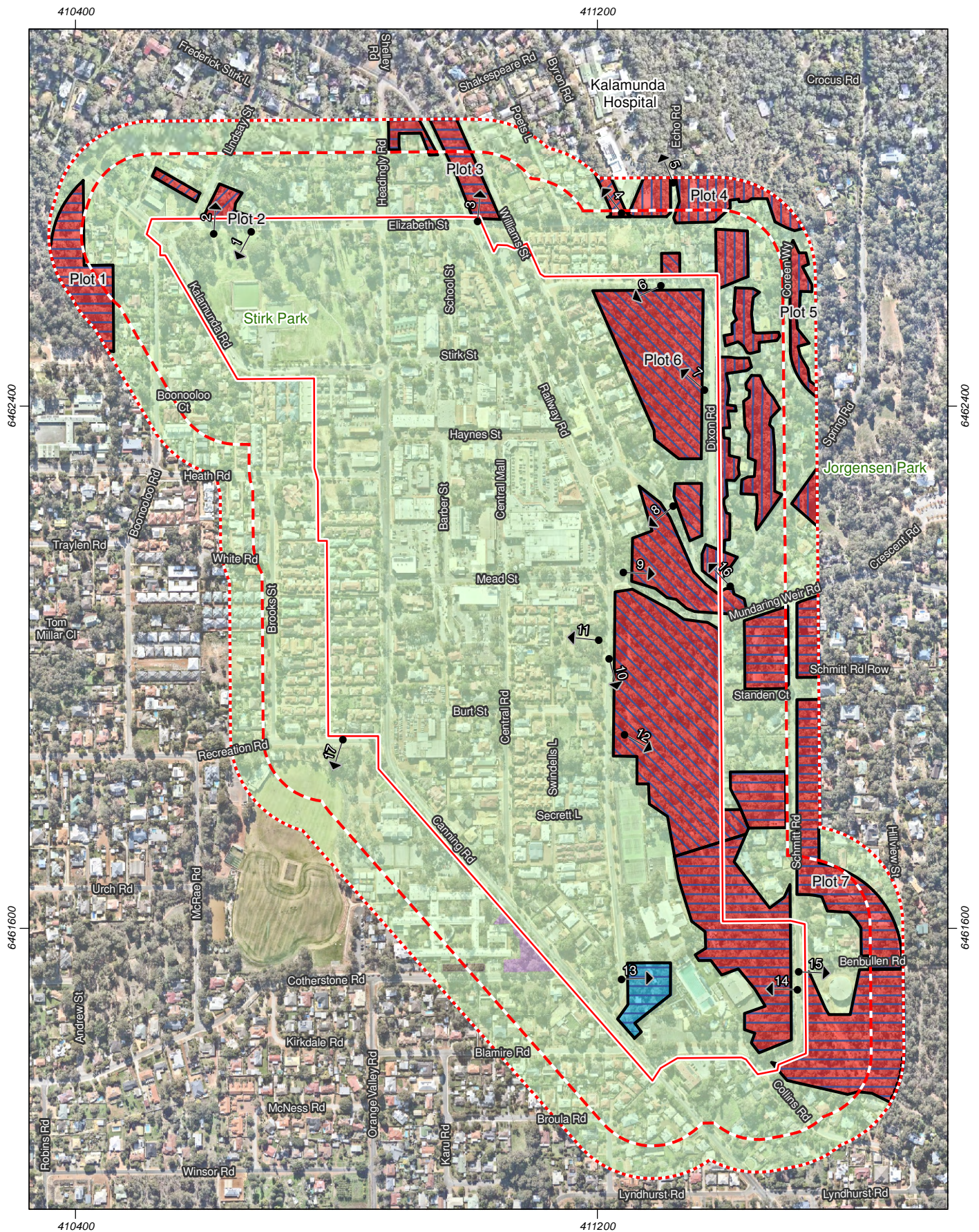


Figure 2: Pre-development vegetation class and effective slope

Scale 1:8,000 at A4

0 80 160 240 m

Coordinate System: GDA 1994 MGA Zone 50

Note that positional errors may occur in some areas

Date: 4/09/2018

Author: jcorute

Source: Nearmap: Aerial imagery, flown 06/2018. Client: Project area 09/2018.

Legend

- Photo direction
- Project area
- 100m assessment area
- 150m assessment area
- Vegetation Plot

Slope

- Flat/Upslope
- Downslope >0 to 5°
- Downslope >5 to 10°
- Downslope >15 to 20°

Vegetation class

- Class A Forest
- Class B Woodland
- AS 3959 exclusion
- Clause 2.2.3.2 (b)
- Clause 2.2.3.2 (e) & (f)

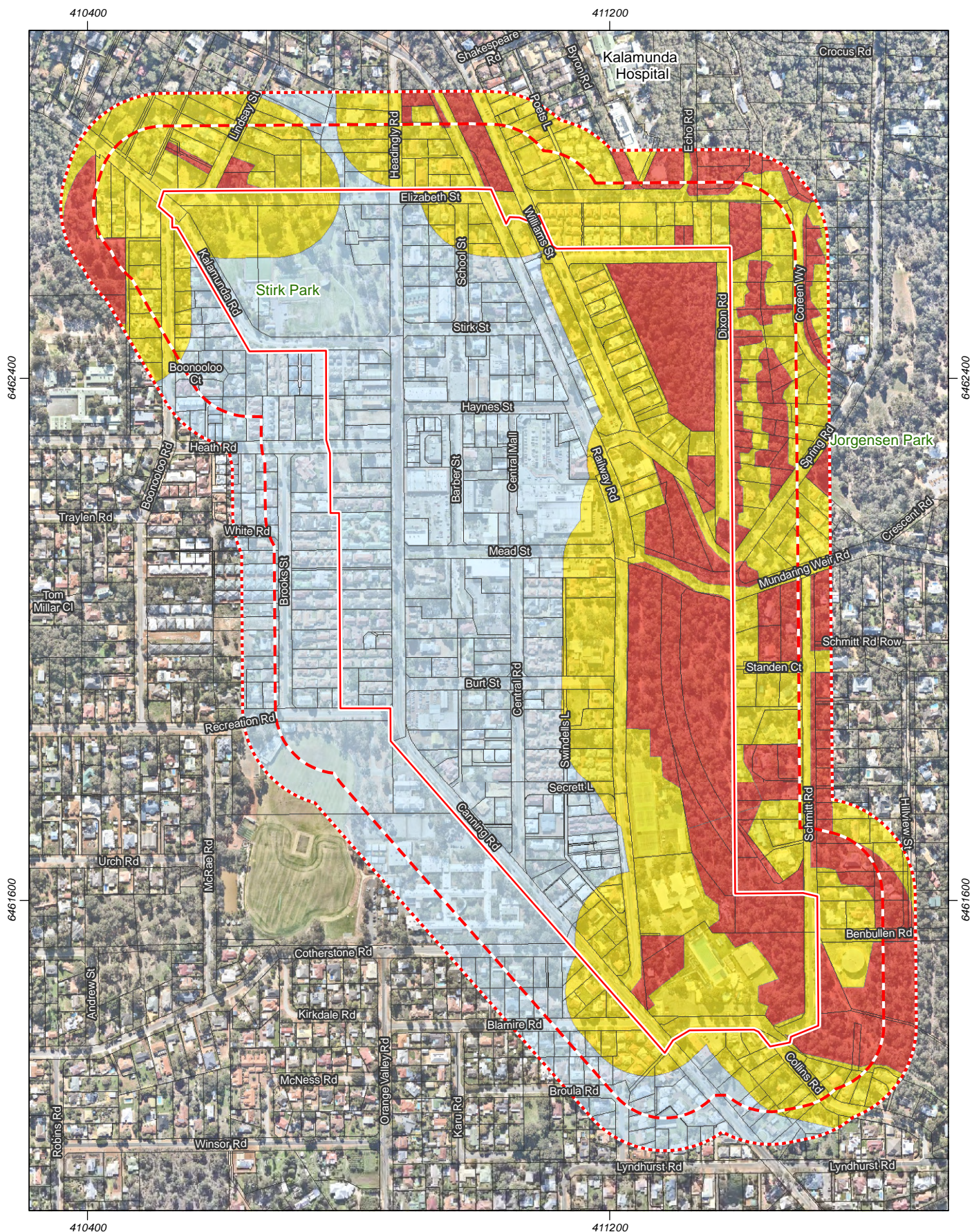


Figure 3: Pre-development Bushfire Hazard Level

Scale 1:8,000 at A4
 0 80 160 240 m
 Coordinate System: GDA 1994 MGA Zone 50
 Note that positional errors may occur in some areas
 Date: 4/09/2018
 Author: vdrinh

Source: Nearmap: Aerial imagery, flown 06/2018. Client: Project area, 09/2018.

Legend

- | | | |
|--------------|----------------------|------------------------------|
| Cadastre | 100m assessment area | Bushfire Hazard Level |
| Project area | 150m assessment area | |
| Extreme | Moderate | |
| | | Low |

4. Identification of bushfire hazard issues

4.1 Bushfire hazard levels

The eastern portion of the project area was identified to have a predominantly 'Extreme' BHL attributed to the presence of Class A forest and Class B woodland within areas proposed as 'Parks and Recreation' and 'Residential' within the ACP. Low-threat and non-vegetated areas within 100 m of Class A forest and Class B woodland vegetation are considered to have a 'Moderate' BHL as a result of their proximity to bushfire fuels.

The eastern portion of the project area is predominantly non-vegetated or in a low-threat managed state. As such these areas have a 'Low' BHL'.

4.2 Bushfire hazard issues

Classified vegetation has been identified within the project area and surrounding local area which has the potential to have a significant bushfire impact on proposed development if unmanaged. There is a considerable bushfire hazard associated with vegetation in the eastern portion of the project area within areas proposed to be retained as 'Local Open Space', as well as private landholdings to the east of the project area. Given the vast areas of national parks and State forest east of the project area, there is also significant landscape scale bushfire risk to the project area with the potential for extended fire runs through heavily vegetated forest.

As such, future development within 100 m of classified vegetation should incorporate suitable levels of defensible space, compliant APZs, access provisions, fire fighting water supply and increased building construction standards at the various bushland interfaces outlined above.

Following provision of these design measures, Strategen considers the bushfire risk and associated hazards are manageable through adoption of standard Guideline acceptable solutions.

5. Assessment against the bushfire protection criteria

5.1 Compliance table

An acceptable solutions assessment against the bushfire protection criteria is provided in Table 3.

Table 3: Bushfire protection criteria

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
Element 1: Location	A1.1 Development location	<p>Prior to subdivision of lots or development of new habitable buildings, a BAL assessment (or BAL contour assessment) will be undertaken to ensure that proposed buildings are able to accommodate appropriate setbacks and have the capacity to achieve minimum APZ requirements for a rating of BAL-29 or lower.</p> <p>Particular consideration will need to be given to the area proposed to accommodate 'Residential' land uses, at the northern end of Plot 6 (refer to Figure 2), which will potentially be exposed to elevated BAL ratings from Class A forest vegetation within Plot 5 to the east.</p>
Element 2: Siting and design	A2.1 Asset Protection Zone	<p>Prior to subdivision of lots or development of new habitable buildings, a BAL assessment (or BAL contour assessment) will be undertaken to determine the minimum APZ requirements for a building to achieve a rating of BAL-29 or lower.</p> <p>APZs will be subject to ongoing management in accordance with standards outlined in the Guidelines (see Appendix 2) and any requirements of the City's annual Fire Hazard Reduction Notice (Appendix 3).</p>
Element 3: Vehicular access	A3.1 Two access routes.	<p>The existing public road network within and adjacent to the project area provides occupants with the option of travelling to more than two different destinations including north-west along Kalamunda Road, and south-east along Canning Road.</p> <p>Any future development within 100 m of classified vegetation, such as subdivision of the proposed residential area (northern portion of Plot 6; Figure 2), will need to ensure that the road network is designed to provide two different vehicular access routes which connect to the public road network and provide safe access/ egress to two different destinations.</p>
	A3.2 Public road	Any new public roads proposed will need to be constructed to relevant technical requirements under the Guidelines (see Table 4).
	A3.3 Cul-de-sac (including a dead-end-road)	Cul-de-sacs should be avoided in bushfire prone areas. Where they cannot be avoided, any proposed cul-de-sacs (at future planning stages) will need to be less than 200 m in length, will include minimum 17.5 m diameter turn-around heads and will be constructed to relevant technical requirements under the Guidelines (see Table 4).
	A3.4 Battle-axe	Any battle-axe lots proposed as part of future planning and development proposals, will need to have access-legs less than 600 m in length and will be constructed to relevant technical requirements under the Guidelines (see Table 4), including passing bays at 200 m intervals and turn-around areas for fire appliances where battle-axes are longer than 500 m.

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
	A3.5 Private driveway longer than 50 m	Any private driveways longer than 50 m proposed as part of future planning and development proposals, will be constructed to relevant technical requirements under the Guidelines (see Table 4), including passing bays if driveways are longer than 200 m and turn-around areas for fire appliances where driveways are longer than 500 m.
	A3.6 Emergency access way	<p>Where a vehicular route does not provide through access to a public road, an emergency access way is to be provided as an alternative link to a public road during emergencies.</p> <p>Any emergency access ways (EAWs) proposed as part of future planning and development proposals, will need to be constructed to relevant technical requirements under the Guidelines (see Table 4), and will need to be signposted and gates kept unlocked at all times. Each respective landowner will be responsible for maintaining the EAW where it occurs on their land OR following establishment the City will responsible for maintaining the EAW.</p> <p>In accordance with Acceptable Solution A3.6 the EAW will need to be no further than 600 m from a public road at any single point.</p>
	A3.7 Fire service access routes (perimeter roads)	Where necessary as part of future planning and development proposals, fire service access routes should 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 firefighting purposes. Fire service access routes are to be signposted and located no further than 600 m from a public road, and must meet the requirements of the Guidelines (see Table 4), including turn around points every 500 m.
	A3.8 Firebreak width	<p>Land owners/ managers are required to install and maintain firebreaks in accordance with the City's annual Fire Hazard Reduction Notice (Appendix 3).</p> <p>Future planning and development proposals which will have a lot size greater than 0.5 ha will be required to have a minimum 3 m firebreak installed and maintained in accordance with the requirements of the Guidelines.</p>
Element 4: Water	A4.1 Reticulated areas	<p>Future development will need to be either:</p> <ul style="list-style-type: none"> connected to reticulated water with water hydrants located at 200 m intervals along any proposed public road networks in accordance with the Water Corporation's No. 63 Water Reticulation Standard (A4.1), or install a dedicated 50 kL fire fighting emergency water tank (one per 25 lots) to be vested with the City, with turn-around points as per the Guidelines (A4.2), or install a dedicated 10 kL fire fighting emergency water tank, to be maintained by prospective landowners (applicable to developments creating 1 additional lot only; A4.3).
	A4.2 Non-reticulated areas	
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	

Table 4: Vehicular access technical requirements

Technical requirement	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5

* Refer to E3.2 Public roads: Trafficable surface

6. Responsibilities for implementation and management of the bushfire measures

Development within the project area may occur over a long-term timeframe. The below information provides guidance on bushfire assessment and planning requirements specific to each future planning stage.

6.1 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.

6.2 Planning stage requirements

6.2.1 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 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.
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.

6.2.2 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 1,100 m².

SPP 3.7 policy measure 6.5 requires development applications 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 high-risk or vulnerable land-uses (proposed in future), will need to comply with Policy Measure 6.6 of SPP 3.7 which requires them to be accompanied by a Bushfire Risk Management Plan and Bushfire Emergency Evacuation Plan (BRMP, BEEP; respectively).

High-risk land uses as defined under the Guidelines include (for example) service stations, landfill sites, bulk storage of hazardous materials, fuel depots and certain heavy industries. Vulnerable as defined under the Guidelines include hospitals, nursing homes and aged care facilities, childcare centres, educational establishments and tourist accommodation.

6.2.3 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 1,100 m² or greater, other habitable buildings¹ (other than a single house or ancillary dwelling) or specified buildings² 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.

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.

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.

The bushfire construction provisions of the BCA do not apply to Class 4 - Class 9 buildings (mixed use, commercial, industrial buildings or public facilities). If planning approval is required for this type of development, the planning process will apply the bushfire protection criteria to ensure that the optimal outcome is achieved for bushfire protection, such as appropriate siting of buildings, provision of water supply etc. For Class 4 – Class 9 buildings, applicants have the discretion to utilise none, any or all of the elements of AS3959-2009 in the construction of buildings.

6.3 Bushfire management measures

Given that the entire project area is currently identified as a bushfire prone area, any future strategic planning documents, strategic planning proposals, subdivision and development applications located within the project area will need to comply with the requirements of SPP 3.7 and the associated Guidelines.

Ensuring compliance with SPP3.7 and the Guidelines will require implementation of the following measures:

- undertaking a BAL assessment (or BAL contour assessment) to support future subdivision and development applications, or building licences (developer/ landowner)
- ensuring future lots/ habitable buildings are located in an area which is not subject to a rating higher than BAL-29 (developer/ landowner)
- ensuring future lots/ habitable buildings can accommodate appropriate APZs (developer)
- ensuring occupants of future development areas are provided with two different vehicular access routes which connect to the public road network and provide safe access/ egress to two different destinations (developer)
- ensure that proposed public and private road/ driveway infrastructure is constructed in accordance with A3.1 to A3.7 of the Guidelines (where applicable; developer)
- ensure that firebreaks are installed in accordance with the Guidelines and the City's Fire Hazard Reduction Notice (developer/ landowner)
- ensure an appropriate water supply is provided to any future lots/ habitable buildings through either reticulated water supply or water tanks, in accordance with A4.1, A4.2 or A4.3 of the Guidelines (developer).

In addition, the following management measures may apply, depending on the nature of any future proposals within the project area:

- On-site staging buffers: if future development (and therefore clearing) is to occur on a staged basis, clearing in advance of adjacent areas may need to occur to ensure building construction is not inhibited by a temporary vegetation extent located within adjacent development stages yet to be cleared. This can be achieved by ensuring that each approved stage subject to construction is surrounded by a 100 m wide (or other distance confirmed by an accredited bushfire practitioner), on-site cleared or low threat buffer prior to development (not including vegetation proposed to be retained). Once the buffers are created, they will need to be maintained on a regular and ongoing basis at a fuel load less than 2 t/ha to achieve a low threat minimal fuel condition all year round until such time that the buffer area is developed as part of the next development stage. This will assist in managing the current on-site temporary vegetation hazards.
- Vehicle access staging: if development (and therefore construction of vehicle access) is to occur on a staged basis, vehicle access arrangements will need to ensure that all occupiers and visitors are provided with at least two vehicular access routes at all stages. This can be achieved via construction of access in advance of stages or through provision of temporary emergency access ways until two formal access roads are available.

- Fuel management within cleared vacant lots: cleared lots awaiting development may need to be managed on a regular and ongoing basis to ensure that no bushfire hazard is introduced to adjacent lots/ buildings.
- Road verge fuel management: surrounding road verges that have been excluded as low-threat (Clause 2.2.3.2 (f) of AS3959) will need to continue to be managed to ensure the understorey and surface fuels remain in a low threat, minimal fuel condition in accordance with Clause 2.2.3.2 (f) of AS 3959. Ongoing road verge management is the responsibility of the City.
- Restrictive covenant on lots with areas of BAL-40 and/or BAL-FZ: development of habitable buildings within portions of lots impacted by areas of BAL-40 and/or BAL-FZ will be restricted via application of a subdivision condition, such as:

A restrictive covenant to the benefit of the local government, pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of the land within areas that have been assessed as BAL-40 or BAL-Flame Zone. Notice of this restriction is to be included on the diagram or plan of survey (deposited plan). The restrictive covenant is to state as follows: 'No habitable buildings are to be built within areas identified as BAL-40 or BAL-Flame Zone.'

- Notification on title: notification is to be placed on the Title of proposed lots subject to BAL-12.5 or higher (either through condition of subdivision or other head of power) to ensure landowners/proponents and prospective purchasers are aware that their lot is subject to an approved BMP and BAL assessment, however, since the lot is situated within a designated bushfire prone area (at creation of title), the BAL for proposed buildings may, at the discretion of the City, need to be confirmed at the development application or building permit stage.
- BAL assessment at future stages: a BAL assessment will be required for any proposed development within a bushfire prone area, to determine the separation distances, APZs and construction standards required to mitigate the bushfire hazard.
- Building construction standards: Class 1a, Class 1b, Class 2 or Class 3 residential buildings, and any associated Class 10a buildings, in bushfire prone areas will be required to meet the applicable construction requirements of AS 3959. It is recommended that where practical, non-residential (building classes other than those listed above) habitable buildings also adopt bushfire construction measures relevant to the assessed BAL.
- High risk and vulnerable land uses: where high-risk or vulnerable land-uses are proposed in future, planning and development applications will need to comply with Policy Measure 6.6 of SPP 3.7 which requires them to be accompanied by a Bushfire Risk Management Plan and Bushfire Emergency Evacuation Plan (BRMP, BEEP; respectively).
- Compliance with annual firebreak notice: developers, land managers and prospective land purchasers are to comply with the City's annual firebreak notice (refer to Appendix 3)
- BAL compliance and/or individual lot BAL assessment at future stages: a BAL compliance report and/or individual lot BAL assessment may be prepared at the discretion of the City/WAPC following completion of subdivisional works and prior to lot title to validate and confirm the accuracy of BAL assessments depicted in the BMP or demonstrate any change in the assessed BAL or other management measures documented in this BMP, which may occur as a result of changes in building location, vegetation class or bushfire management approach.

7. References

DBCA 2018, NatureMap online database, Government of Western Australia. Access 07/08/18 via <https://naturemap.dpaw.wa.gov.au/>.

Department of Fire and Emergency Services (DFES) 2018, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <https://maps.slip.wa.gov.au/landgate/bushfireprone/>

Standards Australia (SA) 2009, *Australian Standard AS 3959–2009 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

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
City of Kalamunda Activity Centre Plan

PATH: T:\003 Projects\Current\PA 1490 - Kalamunda Activity Centre Plan\08 Design\PA 1490 Kalamunda Activity Centre_Plan.dwg PLOT DATE: 28.02.2019 PLOTTED BY: LARA VARTOUMIAN PAGE SETUP: --- PLOT STYLE: URBIS.A3.ctb



KALAMUNDA ACTIVITY CENTRE DRAFT

ACTIVITY CENTRE PLAN

Level 14, The Quadrant, 1 William Street | Perth WA 6000 Australia | +61 8 9346 0500 | URBIS Pty Ltd | ABN 50 105 256 228

DISCLAIMER

Copyright by URBIS Pty Ltd. This drawing or parts thereof may not be reproduced for any purpose or used for another project without the consent of URBIS. The plan must not be used for ordering, supply or installation and no relevance should be placed on this plan for any financial dealing of the land. This plan is conceptual and is for discussion purposes only and subject to further detail study, Council approval, engineering input, and survey. Cadastral boundaries, areas and dimensions are approximate only. Written figured dimensions shall take preference to scaled dimensions.

CLIENT

•
•
•



PROJECT NO.
PA1490
DRAWING NO.

DATE
28.02.19
REVISION

1:4,000 @ A3
0 10 50 100m

LEGEND

ACTIVITY CENTRE BOUNDARY (70.72 HECTARES)

LAND USE

- RESIDENTIAL (7.92 ha)
- CENTRE (13.58 ha)
- MIXED USE (11.14 ha)
- LOCAL PUBLIC OPEN SPACE (14.93 ha)
- PUBLIC PURPOSE (5.58 ha)
 - CO - COUNCIL OFFICE
 - AQ - AQUATIC
 - K - KINDERGARTEN

MOVEMENT

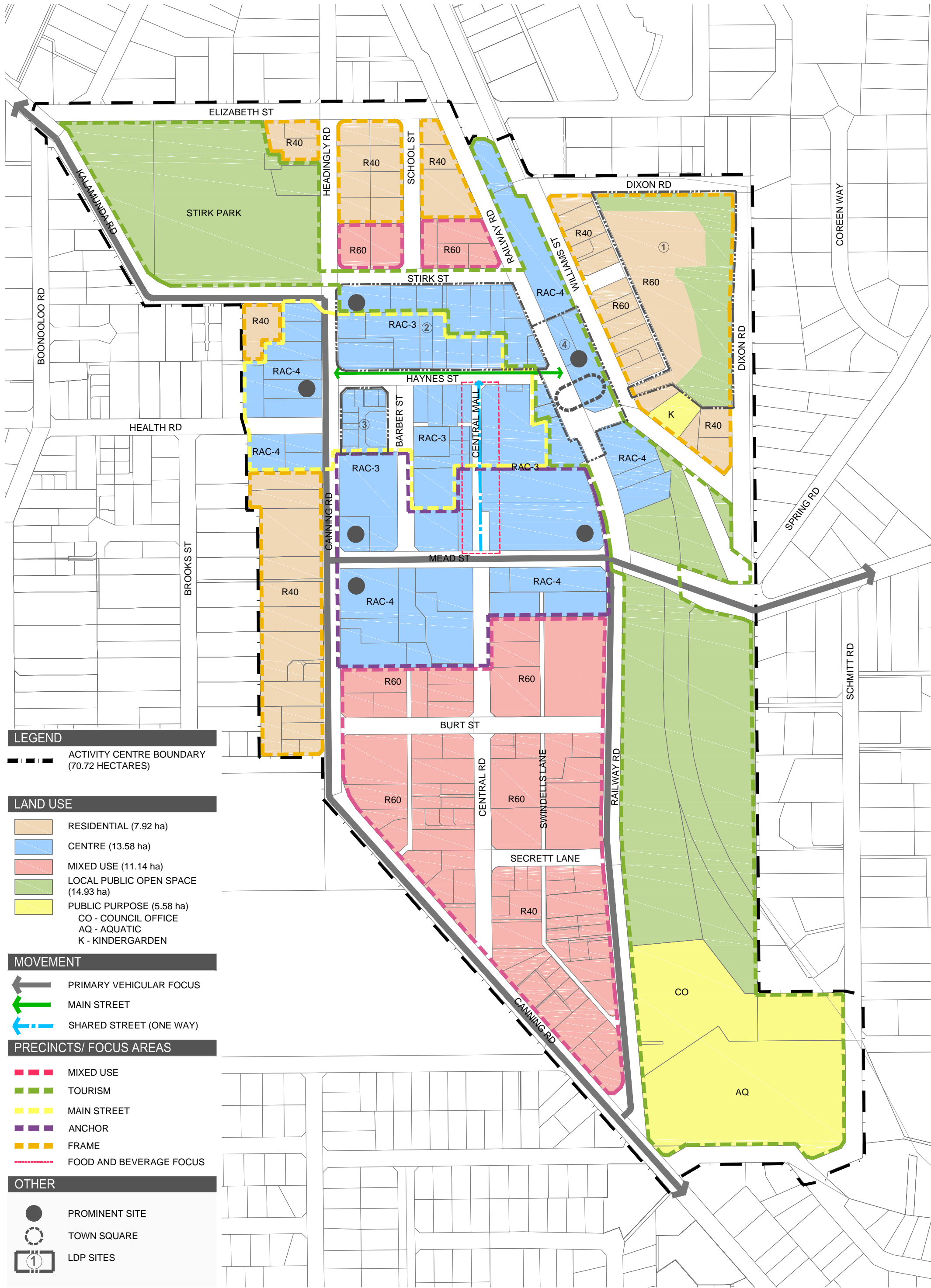
- PRIMARY VEHICULAR FOCUS
- MAIN STREET
- SHARED STREET (ONE WAY)

PRECINCTS/ FOCUS AREAS

- MIXED USE
- TOURISM
- MAIN STREET
- ANCHOR
- FRAME
- FOOD AND BEVERAGE FOCUS

OTHER

- PROMINENT SITE
- TOWN SQUARE
- LDP SITES



Appendix 2

Site photographs



Photo Point 1: Managed low-threat vegetation excluded under Clause 2.2.3.2 (f)

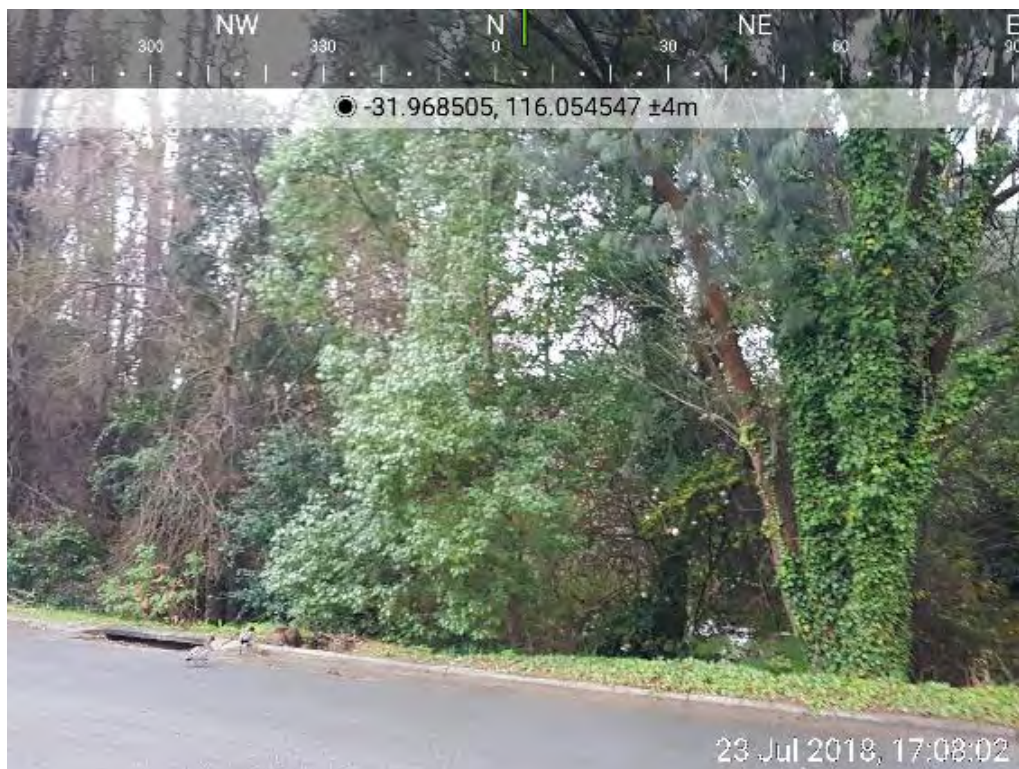


Photo Point 2: Class A forest within private property north of Elizabeth Street



Photo Point 3: Class A forest within the Railway Road reserve

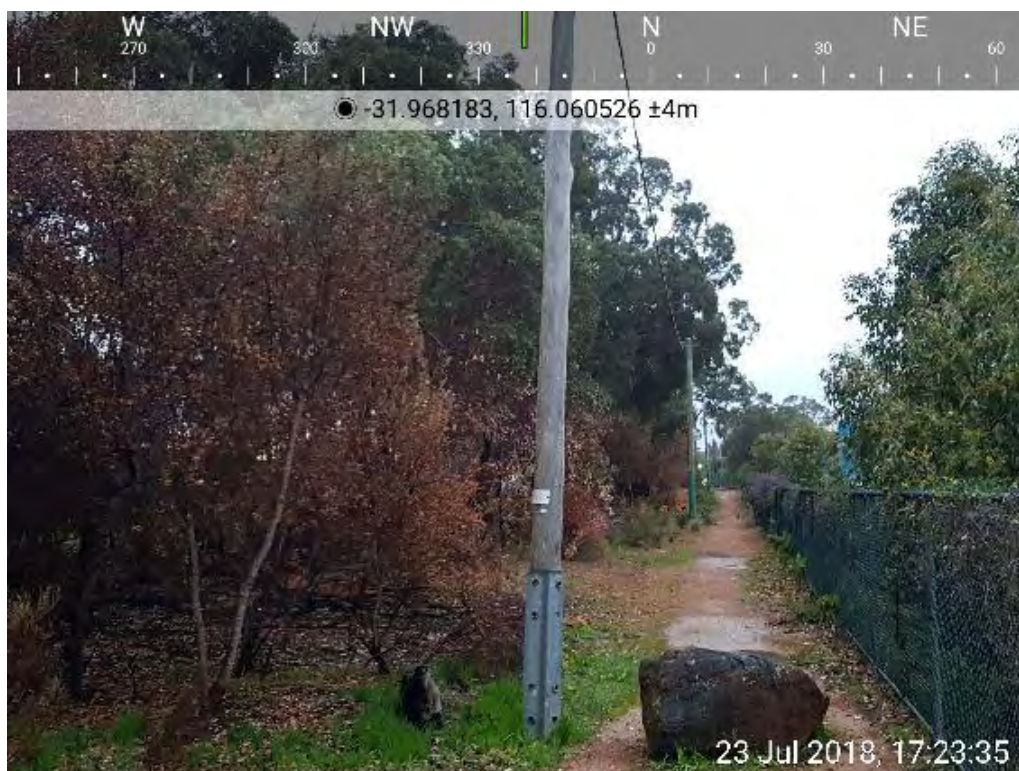


Photo Point 4: Class A forest within Byron Road reserve (recently burnt)



Photo Point 5: Class A forest on steep slopes west of Echo Road



Photo Point 6: Class A forest along Dixon Road



Photo Point 7: Class A forest along Dixon Road

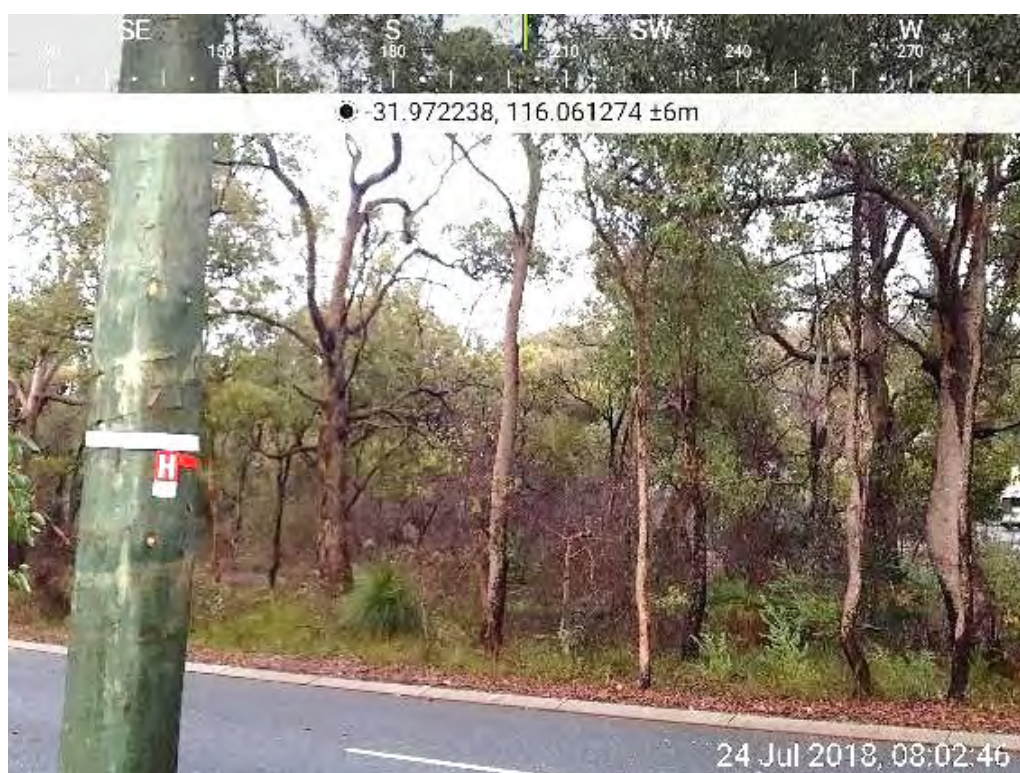


Photo Point 8: Class A forest west of Spring Road

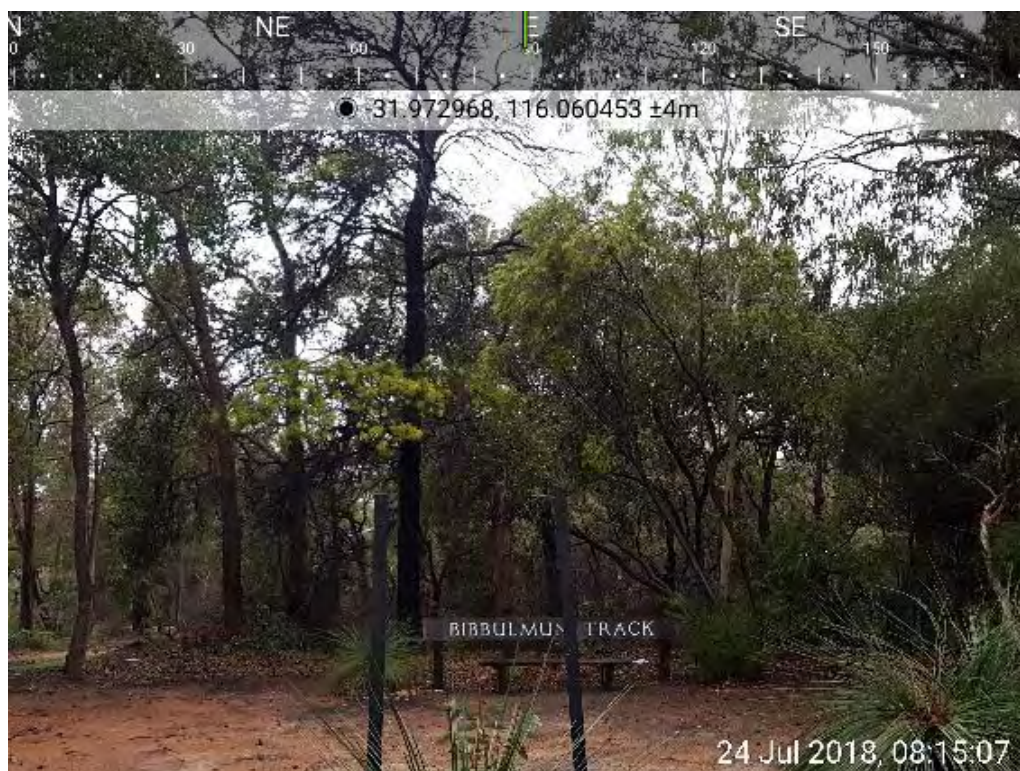


Photo Point 9: Class A forest east of Railway Road

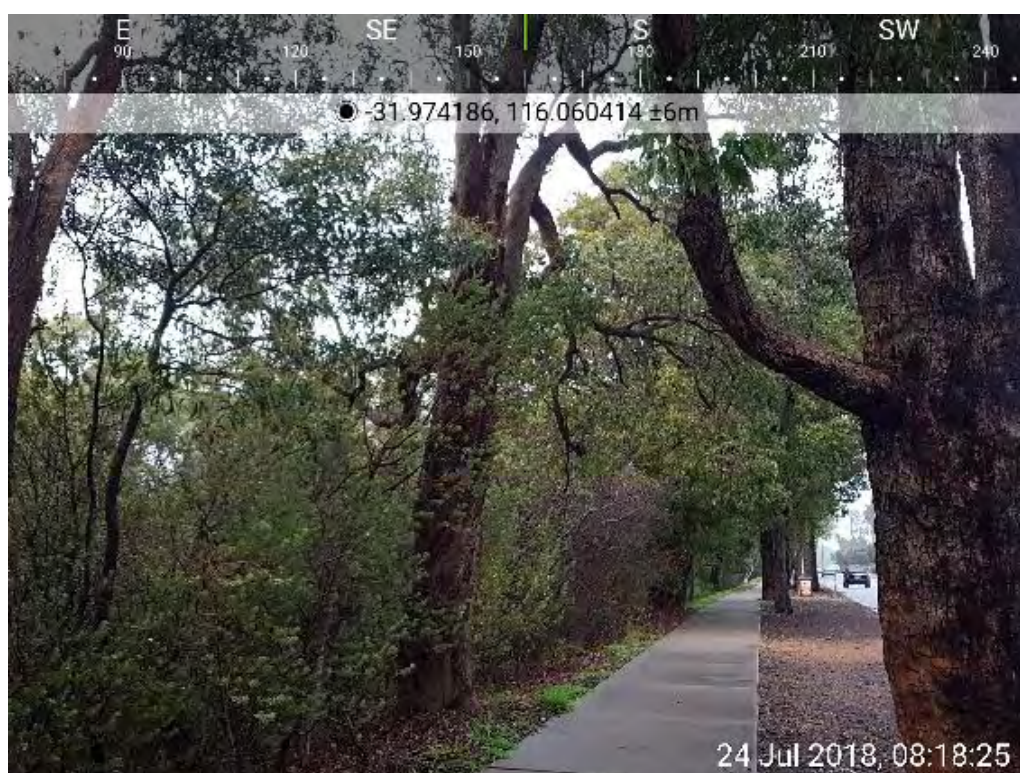


Photo Point 10: Class A forest east of Railway Road



Photo Point 11: Managed vegetation excluded under Clause 2.2.3.2 (f) of AS3959



Photo Point 12: Class A forest within 'Parks and Recreation' reserve east of Railway Road



Photo Point 13: Class B woodland south of City of Kalamunda chambers



Photo Point 14: Class A forest west of Schmitt Road



Photo Point 15: Areas excluded form classification under Clause 2.2.3.2 (e) and (f) of AS3959



Photo Point 16: Class A forest within the Standen Court road reserve and private property



Photo Point 17: Managed vegetation north of Kalamunda Senior Highschool

Appendix 3
City of Kalamunda Fire Hazard
Reduction Notice

FIRE HAZARD REDUCTION NOTICE

Bush Fires Act 1954

Notice to Owners and/or Occupiers of Land situated within the City of Kalamunda



As a measure to assist in the control and prevention of bushfires and pursuant to the powers contained in Section 33 of the *Bush Fires Act 1954 (WA)*, as the property owner or occupier of land within the City of Kalamunda, you are hereby required **before 1 November 2018** to comply with the below conditions.

The applicable works outlined below, **must be completed before 1 November 2018** and maintained **up to and including 31 March 2019**.

Persons who fail to comply with the requirements of this Notice may be issued with an infringement notice penalty (\$250) or prosecuted with an increased penalty (Maximum penalty \$5,000). Additionally, the City of Kalamunda may carry out the required work at cost to the owner/occupier.

ALL VACANT LAND

☐ SLASH GRASS

Have all flammable matter except living trees, shrubs and plants under cultivation, slashed, mowed or trimmed down by other means to a height no greater than 50mm across the entire property.

VACANT LAND OVER 2000m²

☐ SLASH GRASS

Have all flammable matter except living trees, shrubs and plants under cultivation, slashed, mowed or trimmed down by other means to a height no greater than 50mm across the entire property.

☐ INSTALL FIRE BREAK

Install and maintain a 3m wide by 4m high clearance, bare mineral earth, trafficable fire break immediately inside the entire perimeter. A reticulated and maintained green lawn may be accepted in lieu of a fire break.

PROPERTIES 4000m² AND UNDER

☐ SLASH GRASS

Have all flammable matter except living trees, shrubs and plants under cultivation, slashed, mowed or trimmed down by other means to a height no greater than 50mm across the entire property.

☐ CLEAN GUTTERS

Ensure the roofs, gutters and walls of all buildings are free of flammable matter.

☐ REMOVE DFM (Dead Flammable Material)

Maintain all dead flammable material below 8 tonne per hectare. (See definition fuel load)

PROPERTIES OVER 4000m²

☐ SLASH GRASS

Have all flammable matter except living trees, shrubs and plants under cultivation, slashed, mowed or trimmed down by other means to a height no greater than 50mm across the entire property.

☐ CLEAN GUTTERS

Ensure the roofs, gutters and walls of all buildings are free of flammable matter.

☐ REMOVE DFM (Dead Flammable Material)

Maintain all dead flammable material below 8 tonne per hectare. (See definition fuel load)

☐ INSTALL FIRE BREAK

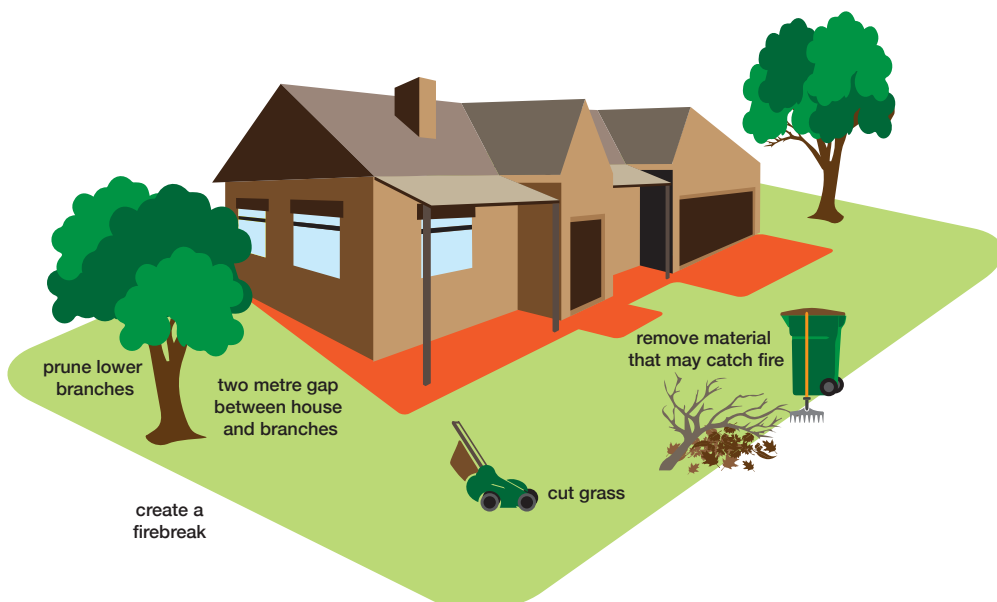
Install and maintain a 3m wide by 4m high clearance, bare mineral earth, trafficable fire break immediately inside the entire perimeter. A reticulated and maintained green lawn may be accepted in lieu of a fire break.

☐ ASSET PROTECTION ZONE (APZ)

Install and maintain an APZ 20m fuel reduced zone, around buildings or an asset of value which extends from the outermost point, whether residential, commercial, industrial or environmental. Fuel reduced is a reduction in the vegetation sufficient to reduce the impact of bushfire onto that asset.

- Trees over 5m in height must be under pruned to a height of 2m from the ground.
- Trees or shrubs within 2m of the asset, must be pruned to a height no greater than 2m.
- Fuel load within 20m of the asset must be kept to a minimum.

City of Kalamunda 2018/2019 Fire Hazard Reduction Notice



ADDITIONAL WORKS

In addition to the noted requirements, regardless of land size and location, the City of Kalamunda or its duly authorised officer(s) may require you to undertake additional works on your property to improve access and/ or undertake further hazard reduction (Additional Works) where, in the opinion of the officer, such Additional Works are necessary to prevent the outbreak and/or the spread of a bush fire.

FIREBREAK VARIATIONS

If you consider for any reason that it is impractical to clear firebreaks as required by this Notice, or if natural features render firebreaks unnecessary, you may apply in writing to the City of Kalamunda or its duly authorised officers, not later than 1 October 2018, for alternative positions, or other methods of fire prevention on your land.

If permission is not granted, you must comply with the requirements of this Notice. This applies to variations to the Asset Protection Zone as well. The Chief Bush Fire Control Officer reserves the right to review and revoke any variation granted at any time.



FUEL DUMPS AND DEPOTS

You are required to remove all flammable matter within (10) metres of where fuel drums, fuel ramps or fuel dumps are located, and where fuel drums, whether containing fuel or not, are.

By order of the City of Kalamunda.

Rhonda Hardy
CHIEF EXECUTIVE OFFICER

Phone 9257 9999

Email enquiries@kalamunda.wa.gov.au

Web www.kalamunda.wa.gov.au/fire

DEFINITIONS

Fuel load

This is the leaf litter on the ground inclusive of leaves, twigs (up to 6mm diameter) and bark. A litter depth of 15mm from the top of the layer to the mineral earth beneath is indicative of approximately 8 tonnes per hectare.



city of
kalamunda

