

APPENDIX C

BUSHFIRE

MANAGEMENT

PLAN



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Lot 1665 Wanneroo Road, Sinagra

Bushfire Management Plan (Structure Plan)

Prepared for
Stockland Development Pty Ltd
by Strategen

March 2019



Lot 1665 Wanneroo Road, Sinagra

Bushfire Management Plan

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March 2019

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Document control

Client: Stockland Development Pty Ltd

Report Version	Revision No.	Purpose	Strategen author	Reviewed by	Submitted to Client	
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Draft Report	A	For client review	C Turner	L Wears (BPAD19809)	Electronic (email)	18/01/2019
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1. Proposal details

1.1 Background

Subsequent to the lifting of 'Urban Deferred' zoning, Stockland Development Pty Ltd (Stockland) is now preparing to lodge an amendment to the existing East Wanneroo Cell 2 Structure Plan (SP) No. 4. for Lot 1665 Wanneroo Road (the site) in the City of Wanneroo (the City). The SP (Figure 1) identifies:

- residential land uses
- areas of Public Open Space (POS) and drainage
- a primary school
- internal road network.

The site forms part of East Wanneroo Cell 2 Adopted Structure Plan No. 4.

1.2 Site description

The site comprises approximately 40 ha and is surrounded by (see Figure 2):

- existing and proposed (under East Wanneroo Cell 2 Adopted Structure Plan No. 4) residential development to the north, with unmanaged vegetation currently existing to the east of Floresta Street
- landholdings zoned for City Centre development to the south (under Wanneroo Town Centre Adopted Structure Plan No. 23), with the adjacent lot to the south currently vegetated
- existing landholdings zoned Special Rural, to the east
- Wanneroo Road and existing residential land uses to the west

The majority of the site 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

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).

1.4 Other plans/reports

Other reports that have been prepared for the site include:

- *Environmental Due Diligence* (Strategen 2016)
- *Environmental Assessment Report* (Strategen 2018a)
- *Flora, vegetation and fauna survey* (360 Environmental 2017)
- Referral documentation *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; Strategen 2018b)

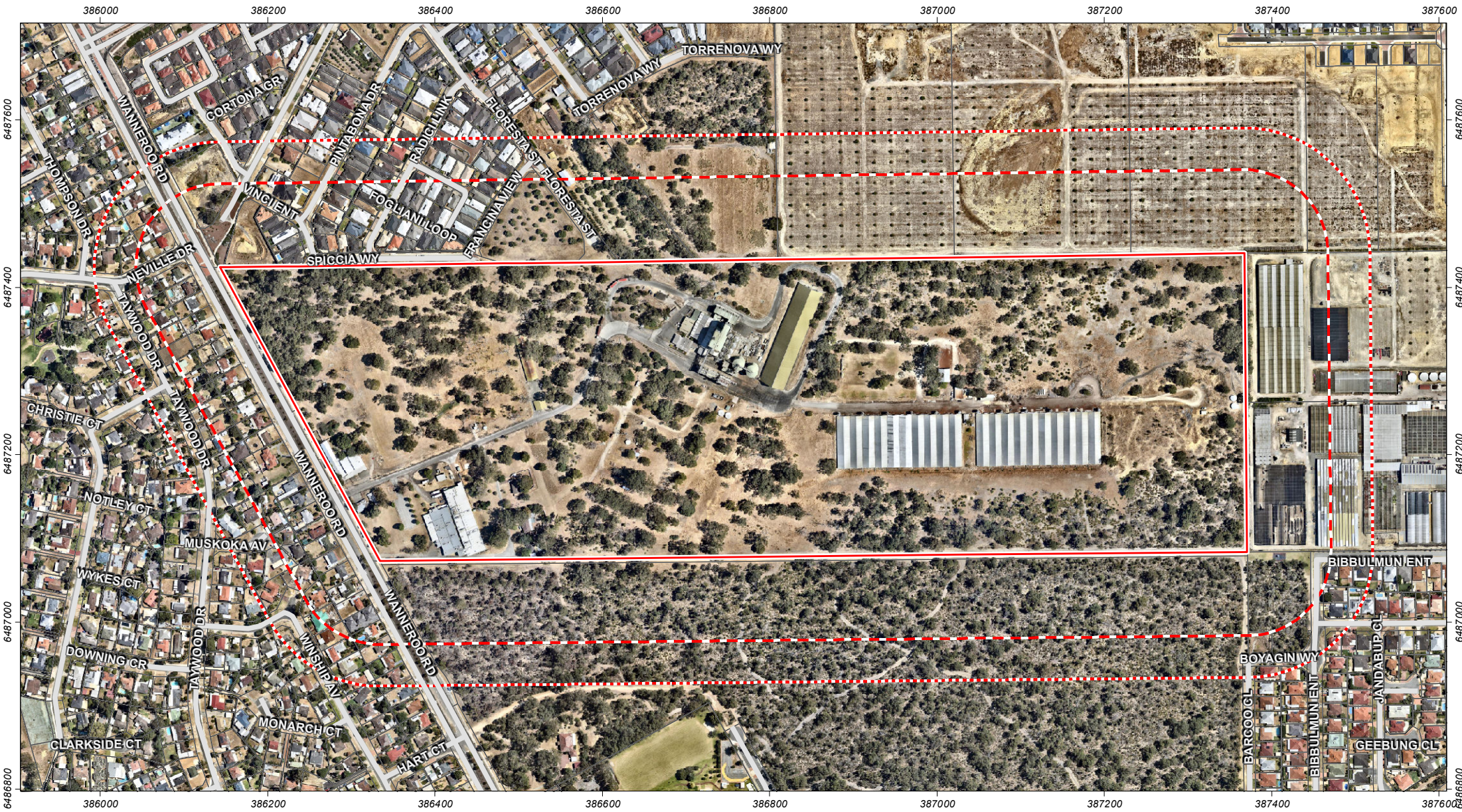


Figure 2: Site overview

Scale 1:6,000 at A4

Legend

- Roads
- Proposed development area
- 100m assessment area
- 150m assessment area
- Cadastre

Coordinate System: GDA 1994 MGA Zone 50
 Date: 16/01/2019
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2. Environmental considerations

Table 1 provides a summary of the environmental attributes potential occurring within the site, based on a search of publicly available environmental data. Given the high-level planning stage of the proposal, 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 site (Y/N)	Description
Environmentally Sensitive Area (ESA)	N	There are no mapped ESAs within the site.
Wetlands	N	There are no mapped geomorphic wetlands within the site.
Waterways	N	There are no mapped watercourses within the site.
Potential Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs)	N	No State listed TECs were identified within the site, however one PEC (Priority 3) was identified in all vegetation that had an overstorey of Banksia. This PEC is 'Banksia dominated woodlands of the Swan Coastal Plain' IBRA region'. Clearing of native vegetation within the site has been referred to the DoEE for assessment under the EPBC Act. Clearing will also be subject to assessment through the planning process (which provides an exemption from the requirement of a State clearing permit).
Potential for Threatened and Priority flora to occur	N	No Threatened species listed under the EPBC Act or gazetted as T/DRF (Threatened) pursuant to the <i>Wildlife Conservation Act 1950</i> were recorded during the 2017 survey undertaken by 360 Environmental. Additionally, no Priority flora was recorded during the survey.
Potential habitat for threatened fauna species	Y	The site contains suitable for black cockatoos and is likely to support the Priority 5 species; Southern Brown Bandicoot (<i>Isodon obesulus fusciventer</i>). Clearing of native vegetation within the site has been referred to the DoEE for assessment under the EPBC Act. Clearing will also be subject to assessment through the planning process (which provides an exemption from the requirement of a State clearing permit).
Bush Forever sites	N	There are no Bush Forever sites mapped within the site.
Swan Bioplan Regionally Significant Areas	N	N/A.
Local Natural Area (LNA)	Y	There are three pockets of vegetation that have been mapped as LNAs occurring in the north-west, north-east and south-east of the site (WALGA 2018).
Regional Ecological Linkages	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
DBCA land of interest (includes some areas of UCL, freehold purchased by State and some unvested Crown reserves)	N	N/A

Environmental value	Present within or adjacent to site (Y/N)	Description
Vegetation associations or complexes with <30% of Pre-European extent remaining outside of constrained areas, or 10% within constrained areas.	N	N/A

2.1 Native vegetation – modification and clearing

Vegetation within the survey area predominantly comprised the following vegetation types:

- Woodland of *Eucalyptus marginata*, *Corymbia calophylla*, *Allocasuarina fraseriana* and *Banksia attenuata* over *Xanthorrhoea preissii* and *Macrozamia riedlei*
- Mature trees of *Corymbia calophylla*, *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Eucalyptus gomphocephala*, *Xanthorrhoea preissii* over weeds
- Closed Forest of *Corymbia calophylla* over *Xanthorrhoea preissii* and *Macrozamia riedlei*.

The areas within the site proposed for future urban development will be predominantly cleared with the exception of trees and vegetation retained in POS and road verges (retained in a low-threat state in accordance with Clause 2.2.3.2 (f) of AS3959), or configured in a way that another vegetation exclusion applies.

The primary school site will be subject to future planning and design through a Development Application process. It is expected that this site will be cleared, managed to a low threat standard, or will retain vegetation in accordance with a relevant exclusion clause (2.2.3.2) under AS3959.

Retention of vegetation and trees is encouraged within POS and streetscapes, and can be determined in consultation with a qualified bushfire practitioner.

As outlined in Table 1, the site contains habitat for Threatened species protected under the EPBC Act. The environmental impacts resulting from implementation of the proposal will be addressed in accordance with standard State and Commonwealth legislative requirements through the State planning and development processes, as well as the Commonwealth EPBC Act.

In response to identification of the above environmental values, future development within the site will aim to (where possible) avoid clearing of native vegetation through:

- the strategic location of lot boundaries to minimise clearing impacts from Asset Protection Zones (APZs)
- the retention of vegetation and/or trees in POS, where said retention does not result in an unacceptable risk to future habitable buildings
- selective planting and/or revegetation within POS and streetscapes, where said planting does not result in an unacceptable risk to future habitable buildings.

2.2 Revegetation / Landscape Plans

The development proposes the retention of small isolated areas of vegetation and/or trees in POS consistent with a low threat vegetation exclusion under AS3959 Clause 2.2.3.2. Such exclusions may include:

- (b) single areas of vegetation < 1ha in area and not within 100 m of other areas of vegetation being classified
- (c) multiple areas of vegetation < 0.25ha in area and not within 20 m of the site of each other
- (d) strips of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other

- (f) low threat vegetation, including grassland managed in minimal fuel condition, maintained public reserves and parklands, nature strips.

Careful consideration will be given to any revegetation and landscaping to ensure that these works do not result in an unacceptable risk to future habitable buildings.

Landscaping plans will be prepared in consultation with a certified bushfire practitioner and will be provided as part of the subdivision process.

While landscape planting will occur in POS and road reserves, no rehabilitation planting is currently proposed.

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 site. 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 19 September 2018 in accordance with *AS 3959—2009 Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2009). Results are depicted in Figure 3 and georeferenced site photos are contained in Appendix 1.

Strategen assessed effective slope under classified vegetation through on-ground verification in accordance with AS 3959. Results are depicted in Figure 3.

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

Table 2: Summary of pre-development classified vegetation and exclusions

Vegetation plot	Applied vegetation classification/exclusion	Effective slope under the classified vegetation (degrees)
1	Class G grassland	Downslope 0 to 5 degrees
2	Class A forest	Downslope 0 to 5 degrees
3	Class B woodland	Downslope 0 to 5 degrees
4	Class G grassland	Downslope 0 to 5 degrees
5	Class G grassland	Downslope 0 to 5 degrees
6	Class A forest	Downslope 0 to 5 degrees
7	Class B woodland	Downslope 0 to 5 degrees
8	Class G grassland	Downslope 0 to 5 degrees
9	Class G grassland	Downslope 10 to 15 degrees
10	Class A forest	Downslope 0 to 5 degrees
11	Excluded under Clauses 2.2.3.2 (e) and (f)	N/A
12	Class A forest	Flat/ upslope
13	Class B woodland	Flat/ upslope
14	Class G grassland	Flat/ upslope
15	Class B woodland	Flat/ upslope

3.1.2 Post-development inputs

Following development works, vegetation within the project area will be either completely cleared, or configured/ managed in accordance with an exclusion under Clause 2.2.3.2 of AS3959.

The post-development vegetation classifications for all land external to the project area are expected to remain the same in the short term, however as discussed in Section 1.2, land to the north and south of the site is expected to be cleared and developed in accordance with approved Structure Plans, consistent with non-vegetated and low-threat areas (Clauses 2.2.3.2 (e) and (f) of AS3959). In addition, the small patches of Class G grassland to the north-west of the project area will become small and isolated following development of the project area, and will be excludable under Clause 2.2.3.2 (b) of AS3959. If external vegetation is altered prior to future planning stages, the change in vegetation condition is to be captured through a future BAL contour assessment.

3.2 Assessment outputs

The results of the pre-development BHL assessment are provided in Figure 4 and are discussed in Section 4. The post-development BHL assessment is presented in Figure 5 and has been based on the proposed vegetation modification and clearing discussed in Section 2.1.

3.2.1 Bushfire Hazard Level (BHL) assessment

Pre and post-development vegetation extents have been assigned a bushfire hazard level in accordance with the methodology detailed in Appendix Two of the Guidelines as follows:

- all Class A Forest has been assigned a bushfire hazard level of Extreme
- all Class B Woodland has been assigned a bushfire hazard level of Extreme
- all Class G Grassland has been assigned a bushfire hazard level of Moderate
- all vegetation/land excluded under AS 3959 Clauses 2.2.3.2 (e) and (f) has been assigned a bushfire hazard level of Low
- land that has a Low bushfire hazard level but is within 100 m of Extreme or Moderate bushfire hazard level vegetation has been assigned a Moderate bushfire hazard level.

The site was identified to have combination of 'Extreme' and 'Moderate' BHL attributed to the presence of classified vegetation, including (Figure 4):

- Class A forest
- Class B woodland
- Class G grassland

As discussed in Section 2.1, vegetation modification and clearing is proposed as part of development. As a result of the proposed clearing and modification, the BHL across the site will substantially reduce following development works. The post-development BHL is depicted in Figure 5 and is predominantly 'Low', with the exception of vegetation to the south of the site within Lot 9000 which will remain temporarily until development is progressed in accordance with the Wanneroo Town Centre Adopted Structure Plan No. 23.

Following development works no habitable buildings will be located in areas identified as having an Extreme BHL.

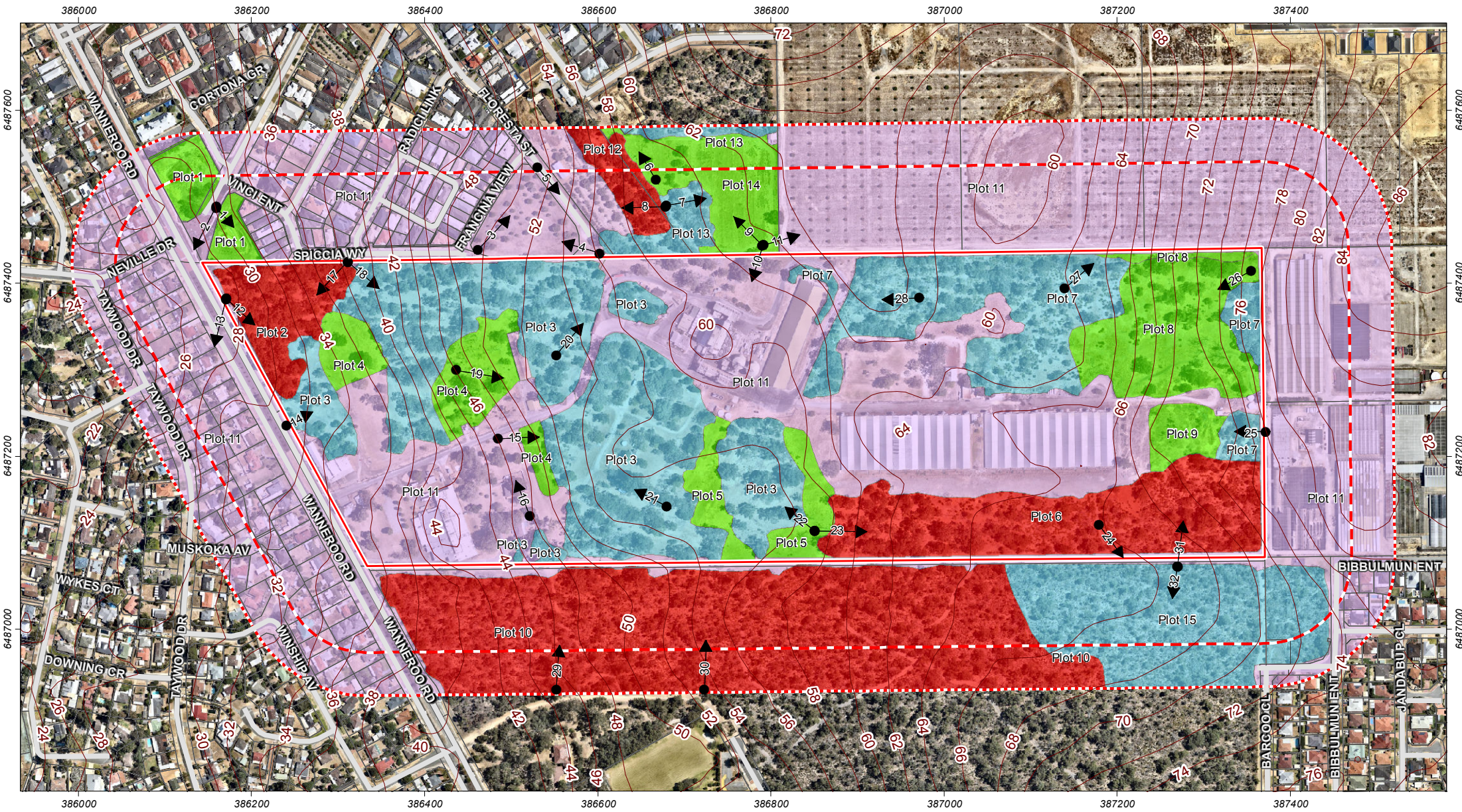
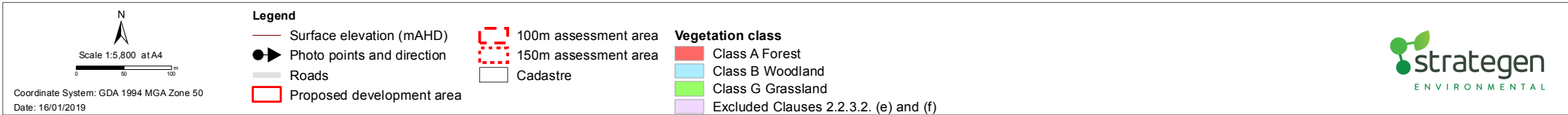


Figure 3: Pre-development classified vegetation and topography



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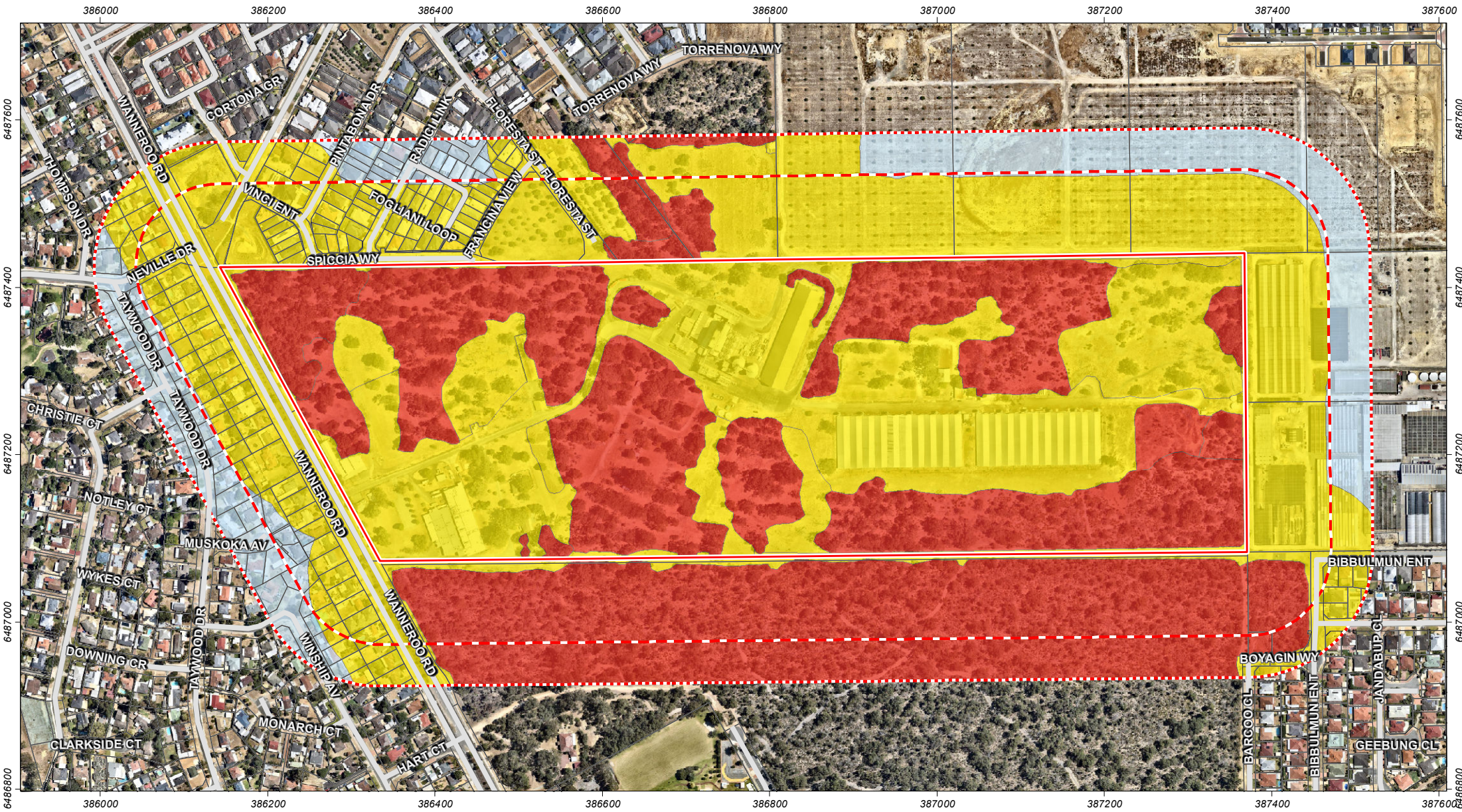


Figure 4: Pre-development bushfire hazard level

<p>Scale 1:6,000 at A4</p>	<p>Legend</p> <ul style="list-style-type: none"> Roads Proposed development area 100m assessment area 150m assessment area Cadastre 	<p>Bushfire hazard level</p> <ul style="list-style-type: none"> Extreme Moderate Low 	
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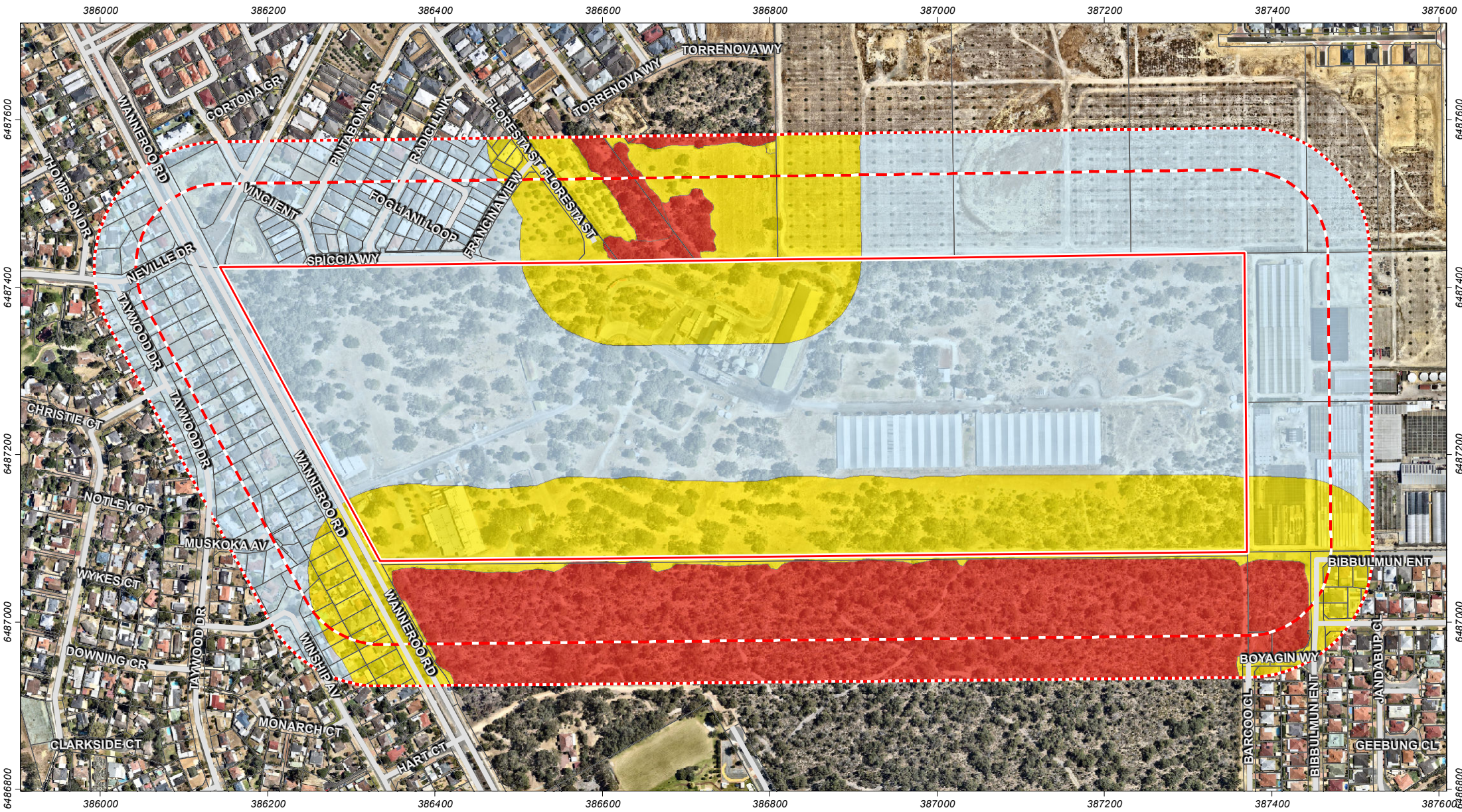


Figure 5: Post-development bushfire hazard level

<p>Scale 1:6,000 at A4</p>	Legend		Bushfire hazard level Extreme Moderate Low
	 Roads Proposed development area Cadastre	 100m assessment area 150m assessment area	



Coordinate System: GDA 1994 MGA Zone 50
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 Data source: Nearmap; Aerial image, flown 12/2018. Landgate; Cadastre, 07/2018. Stockland. Development layout, 1/2019. Created by: jcrute

4. Identification of bushfire hazard issues

4.1 Bushfire hazard issues

Classified vegetation has been identified within the site and surrounding local area which has the potential to have a bushfire impact on proposed development if unmanaged. Following development works the entire site will comprise of non-vegetated areas and low-threat vegetation. As such, the predominant bushfire hazards within 150 m of the site will likely include:

- Class A forest, Class B woodland and Class G grassland vegetation to the north of the site within Lots 9500 and 9001
- Class A forest vegetation to the south of the site within Lot 9000

As outlined in Section 1.2, areas both north and south of the site will be developed as part of ASPs (City of Wanneroo Adopted Structure Plan No. 4 and No. 23) and therefore it is expected that bushfire hazards associated with classified vegetation in these areas poses only a temporary hazard.

Although classified vegetation within 150 m of the site only presents a temporary hazard, 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. This may include temporarily quarantining of lots which cannot achieve a compliant BAL-rating (BAL-29 or lower), until the bushfire hazards have been permanently removed or managed to achieve a relevant exclusion under Clause 2.2.3.2 of AS3959. These measures have been incorporated into the development design, and are detailed in Table 3 and Section 5.2.

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

Given the proposed reduction in vegetation within the site, and the isolated nature of vegetation south of the site (within Lot 9000 zoned for development as a City Centre), the is not considered to be a landscape scale bushfire risk to the site.

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>The post-development BHL assessment (Figure 5) identifies that on completion of development, all developable land will comprise either a Low or Moderate bushfire hazard level.</p> <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>The provision of roads and low-threat/ non-vegetated areas (in accordance with AS3959 Clause 2.2.3.2) provide a level of separation between temporary bushfire hazards to the north and south of the site, and will ensure that habitable buildings in most areas are not located in an area of unacceptable bushfire risk (i.e. buildings will be subject to a rating of BAL-29 or lower).</p> <p>For lots which directly interface existing vegetation (without road reserve or POS separation), temporary quarantining of lots will occur until the bushfire hazard is removed. Any lots which are quarantined will be maintained in a managed low-threat state until developed to ensure separation between inhabited lots and classified vegetation.</p>
Element 2: Siting and design	A2.1 Asset Protection Zone (APZ)	<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>Based on the existing vegetation to the north and south of the site, the following APZs may be required for lots adjacent to classified vegetation:</p> <ul style="list-style-type: none"> • 21 m to Class A forest (flat/ upslope) • 27 m to Class A forest (downslope 0 to 5 degrees) • 14 m to Class B woodland (flat upslope) • 8 m to Class G grassland <p>APZs may comprise of non-vegetated and managed road reserves as well as managed POS. APZs will be to subject to ongoing management in accordance with standards outlined in the Guidelines (see Appendix 2) and any requirements of the City's annual City of Wanneroo Firebreak and Fuel Hazard Reduction Notice (Appendix 3).</p>

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
Element 3: Vehicular access	A3.1 Two access routes.	<p>A combination of existing perimeter roads and the proposed internal vehicle access network will provide all occupants with the option of travelling to more than two different destinations. The Structure Plan proposes:</p> <ul style="list-style-type: none"> • a main entry/ egress connection to Wanneroo Road (existing) to the west • two public road connections to future development south of the site • multiple public road connections to existing and future development north of the site including Spiccia Way (existing) • multiple public road connections to future development east of the site. <p>In the event that future development within the site is staged, or development of the site precedes development to the north and south, the developer will ensure that all active lots are provided with access/ egress routes to two different destinations. This will be achieved through ensuring connectivity of the proposed road network, or via a temporary emergency access-ways to the satisfaction of the City (see A3.6).</p>
	A3.2 Public road	All public roads will be constructed to relevant technical requirements under the Guidelines (see Table 4).
	A3.3 Cul-de-sac (including a dead-end-road)	<p>The Structure Plan does not currently propose any cul-de-sacs or dead-end-roads.</p> <p>Where cul-de-sacs cannot be avoided at future development stages (subdivision), any cul-de-sacs or dead-end-roads will be constructed in accordance with the technical requirements for cul-de-sacs specified in Table 4 below, and will include 17.5 m turn-around-heads.</p> <p>All dead-end-roads will be less than 200 m in length.</p> <p>In addition, where development of the site precedes adjacent development and public roads do not provide through access (i.e. temporary dead-end roads are created), temporary turn-around points will be provided, as will also be constructed in accordance with the requirements specified in Table 4 below.</p>
	A3.4 Battle-axe	<p>N/A</p> <p>No battle-axe lots are currently proposed.</p>
	A3.5 Private driveway longer than 50 m	<p>N/A</p> <p>No private driveways longer than 50 m are currently proposed.</p>
	A3.6 Emergency access way	<p>Where a vehicular route does not provide through access to a public road, such as during staging of development, an emergency access way is to be provided as an alternative link to a public road during emergencies.</p> <p>Any temporary 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. The developer will be responsible for maintaining the temporary EAW and will require landowner/manager permission to construct and maintain the EAW where it does not occur on the proponent's land.</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)	Fire service access routes are not proposed as part of this development.

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
	A3.8 Firebreak width	<p>Land owners/ managers are required to install and maintain firebreaks in accordance with the City's City of Wanneroo Firebreak and Fuel Hazard Reduction Notice (Appendix 3).</p> <p>Future lots created as part of the subdivision process which 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> <p>Post development works, it is anticipated that the site will comprise of low-threat and non-vegetated elements, in which case, firebreaks are not considered necessary.</p> <p>However, in the event that significant vegetated areas remain post-development, compliance with the City's firebreak notice (Appendix 3) will be required. The City's firebreak notice shall also be complied with during construction of the development.</p>
Element 4: Water	A4.1 Reticulated areas	Future development will be connected to reticulated water supply via surrounding development in accordance with Water Corporations Design Standard No. 63 requirements. Existing water hydrants are located at 200 m intervals along existing public roads to the north and west of the site, including Wanneroo Road to the west and Francina View and Floresta Street to the north.
	A4.2 Non-reticulated areas	N/A
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A

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

5.2 Additional bushfire management measures

Given that the entire site is currently identified as a bushfire prone area, any future subdivision and development applications located within the site 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
- ensuring future lots/ habitable buildings are located in an area which is not subject to a rating higher than BAL-29
- ensuring future lots/ habitable buildings can accommodate appropriate APZs
- 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
- ensure that proposed public and private road/ driveway infrastructure is constructed in accordance with A3.1 to A3.7 of the Guidelines
- ensure that firebreaks (where required) are installed in accordance with the Guidelines and the City's Fire Hazard Reduction Notice
- 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 site:

- 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 cleared / low threat buffer (distance confirmed by an accredited bushfire practitioner) to ensure a suitable, on-site buffer prior to development (not including any trees or 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.
- Temporary quarantining of lots: lots adjacent to temporary bushfire hazards (such as those along the southern project area boundary) that are subject to a temporary rating of BAL-40 and BAL-FZ will be unable to facilitate a compliant building envelope until the bushfire hazard is removed. Staged development, will ensure that these lots are quarantined until safe development and compliance with the Guidelines can be achieved.
- 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.
- 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). The proposed Primary School is an example of a vulnerable land use that will require a BEEP to accompany the BMP to support the Development Application.
- Compliance with annual firebreak notice: developers, land managers and prospective land purchasers are to comply with the Shire's annual Firebreak Fuel Load 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.

6. Responsibilities for implementation and management of the bushfire measures

Development within the site will involve a variety of planning and development approvals including subdivision of lots and development applications for proposed school sites. 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 site 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.

7. References

- Department of Biodiversity, Conservation and Attractions 2018, *Naturemap* database, Department of Biodiversity, Conservation and Attractions, Kensington.
- Strategen 2016, *Lot 48 Stoneville Road Stoneville: Environmental Due Diligence advice* unpublished memorandum prepared for Satterley Property Group.
- Strategen 2017, *Lot 48 Stoneville Road Stoneville: Flora, Vegetation and Fauna Survey*, unpublished report prepared for Satterley Property Group.
- Strategen 2018a, *Lot 48 Stoneville Road Stoneville: Environmental Assessment Report*, unpublished report prepared for Satterley Property Group.
- Strategen 2018b, *Lot 48 Stoneville Road Stoneville: EPBC Act referral documentation*, unpublished report prepared for Satterley Property Group.
- Western Australian Local Government Association (WALGA) 2018. *Administrative Planning Categories* spatial dataset. Available from: WALGA Environmental Planning Tool.

Appendix 1
Site photographs

North West Elevation

☉ 136°SE (T) ● 31°44'32"S, 115°47'50"E ±213.3ft ▲ 148ft



Photo Point 1: Class G grassland which will be excludable under Clause 2.2.3.2 (b) of AS3959 following development works

North East Elevation

☉ 236°SW (T) ● 31°44'31"S, 115°47'50"E ±213.3ft ▲ 148ft



Photo Point 2: Managed road verge excludable under Clauses 2.2.3.2 (e) and (f) of AS3959

South West Elevation

☉ 59°NE (T) ● 31°44'34"S, 115°48'5"E ±98.4ft ▲ 172ft



Photo Point 3: Managed parkland excluded under Clause 2.2.3.2 (f) of AS3959

South East Elevation

☉ 294°NW (T) ● 31°44'34"S, 115°48'10"E ±32.8ft ▲ 195ft



Photo Point 4: Managed parkland excluded under Clause 2.2.3.2 (f) of AS3959

West Elevation

📍 103°E (T) ● 31°44'31"S, 115°48'7"E ±32.8ft ▲ 178ft



Photo Point 5: Managed orchard excludable under Clause 2.2.3.2 (f) of AS3959

South Elevation

📍 349°N (T) ● 31°44'32"S, 115°48'12"E ±164.1ft ▲ 171ft



Photo Point 6: Class G grassland and Class B woodland north of the site

West Elevation

📍 90°E (T) 📍 31°44'32"S, 115°48'13"E ±98.4ft ▲ 210ft



17 Dec 2018, 08:40

Photo Point 7: Class B woodland, north of the site

North East Elevation

📍 224°SW (T) 📍 31°44'32"S, 115°48'13"E ±32.8ft ▲ 212ft



17 Dec 2018, 08:41

Photo Point 8: Class A forest, north of the site

South East Elevation

📍 308°NW (T) 📍 31°44'34"S, 115°48'18"E ±32.8ft ▲ 207ft



17 Dec 2018, 08:35

Photo Point 9: Class G grassland north of the site

North Elevation

📍 193°S (T) 📍 31°44'34"S, 115°48'18"E ±32.8ft ▲ 206ft



17 Dec 2018, 08:36

Photo Point 10: Managed vegetation excludable under Clauses 2.2.3.2 (f) of AS3959

South West Elevation

☉ 34°NE (T) ● 31°44'34"S, 115°48'18"E ±32.8ft ▲ 206ft



Photo Point 11: Managed olive tree plantation excludable under Clause 2.2.3.2 (f) of AS3959, within land proposed for development

North West Elevation

☉ 122°SE (T) ● 31°44'35"S, 115°47'52"E ±213.3ft ▲ 147ft



Photo Point 12: Class A forest in north-western corner of site

North Elevation

☉ 194°S (T) ● 31°44'35"S, 115°47'52"E ±213.3ft ▲ 148ft



Photo Point 13: Managed road reserve excludable under Clauses 2.2.3.2 (e) and (f) of AS3959

South West Elevation

☉ 68°NE (T) ● 31°44'39"S, 115°47'55"E ±213.3ft ▲ 93ft



Photo Point 14: Class B woodland in western portion of site



☼ 118°SE (T) ● 31°44'44"S, 115°48'6"E ±213.3ft ▲ 201ft



17 Dec 2018, 11:42

Photo Point 15: Class G grassland (foreground), Class B woodland (background)



☼ 312°NW (T) ● 31°44'43"S, 115°48'7"E ±164.1ft ▲ 176ft



17 Dec 2018, 11:46

Photo Point 16: Managed grass excluded under Clause 2.2.3.2 (f) of AS3959



Photo Point 17: Class A forest in north-western corner of site

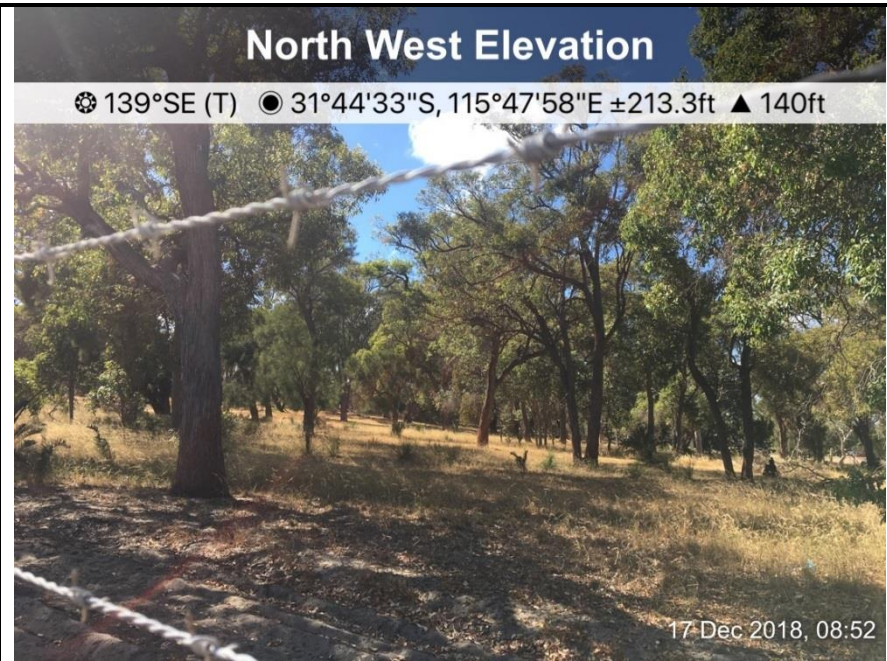


Photo Point 18: Class B woodland in north-western portion of site

E 90 120 SE 150 S 180

135°SE (T) 31°44'36"S, 115°48'4"E ±328.1ft ▲ 192ft



Photo Point 19: Class G grassland within the site (occasionally slashed)

NW N NE E 300 330 0 30 60 90

32°NE (T) 31°44'37"S, 115°48'8"E ±328.1ft ▲ 204ft



Photo Point 20: Class B woodland within the site



Photo Point 21: Class B woodland within the site



Photo Point 22: Class G grassland and Class B woodland (background) within the site

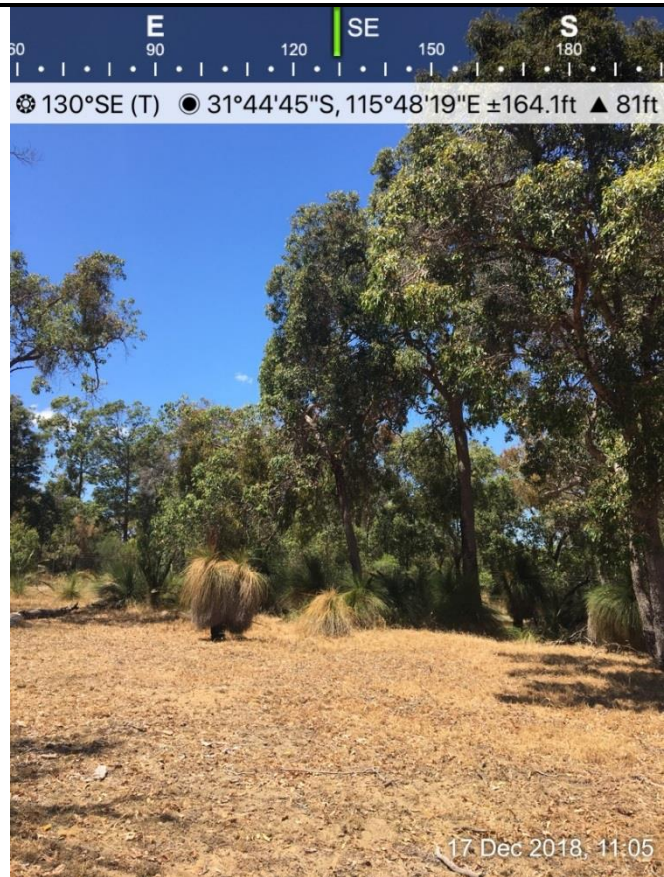


Photo Point 23: Class A forest in south-eastern portion of site



Photo Point 24: Class A forest in south-eastern portion of site



Photo Point 25: Class B woodland in eastern portion of site



Photo Point 26: Class G grassland in eastern portion of site

NW 330 N 0 30 NE 60 E 90

24°NE (T) 31°44'23"S, 115°48'24"E ±213.3ft ▲ 202ft



17 Dec 2018, 10:29

Photo Point 27: Class B woodland in eastern portion of site

SW 210 240 N 70 NW 300 330

269°W (T) 31°44'36"S, 115°48'22"E ±328.1ft ▲ 118ft



17 Dec 2018, 11:13

Photo Point 28: Class B woodland in northern portion of site

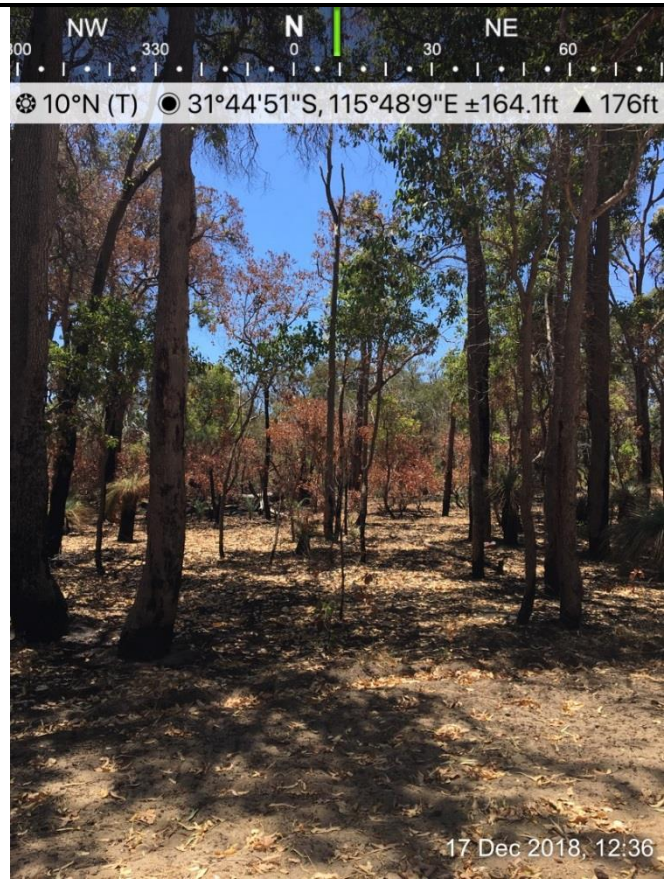


Photo Point 29: Class A forest (recently burnt) south of site



Photo Point 30: Class A forest south of site



Photo Point 31: Class A forest in south-eastern corner of site



Photo Point 32: Class A forest in south of site

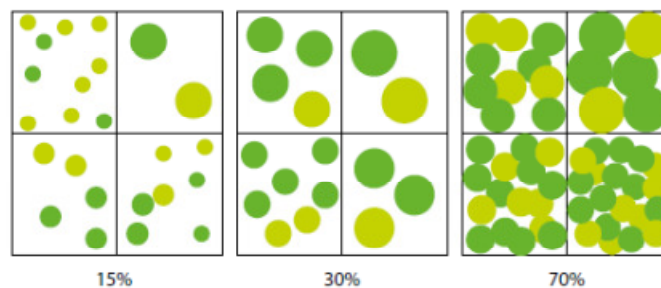
Appendix 2
Asset Protection Zone Standards

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

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 16: 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 5m² 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 3
City of Wanneroo Firebreak and Fuel
Hazard Reduction Notice 2018/2019

Under the Bushfires Act (1954), all owners and occupiers of land in Western Australia must establish and maintain fire breaks.

Fire breaks and protection measures are vital in assisting the prevention of fires spreading and to allow safer access for bushfire fighters and vehicles.

Land with an area of less than 4,000m²

- A fire break, not less than three (3) metres wide must be cleared immediately inside (or as close as possible) around all external boundaries of the land.
- All tree branches that over-hang a fire break must be trimmed back to a minimum height of three and a half (3.5) metres above ground level and the growth on the fire break cannot exceed fifty (50) millimetres high.

Land with an area of 4,000m² or more

- A fire break, not less than three (3) metres wide, must be cleared immediately inside (or as close as possible) around all external boundaries of the land.
- All tree branches that over-hang a fire break must be trimmed back to a minimum height of three and a half (3.5) metres above ground level and the growth on the fire break cannot exceed fifty (50) millimetres high.

Buildings

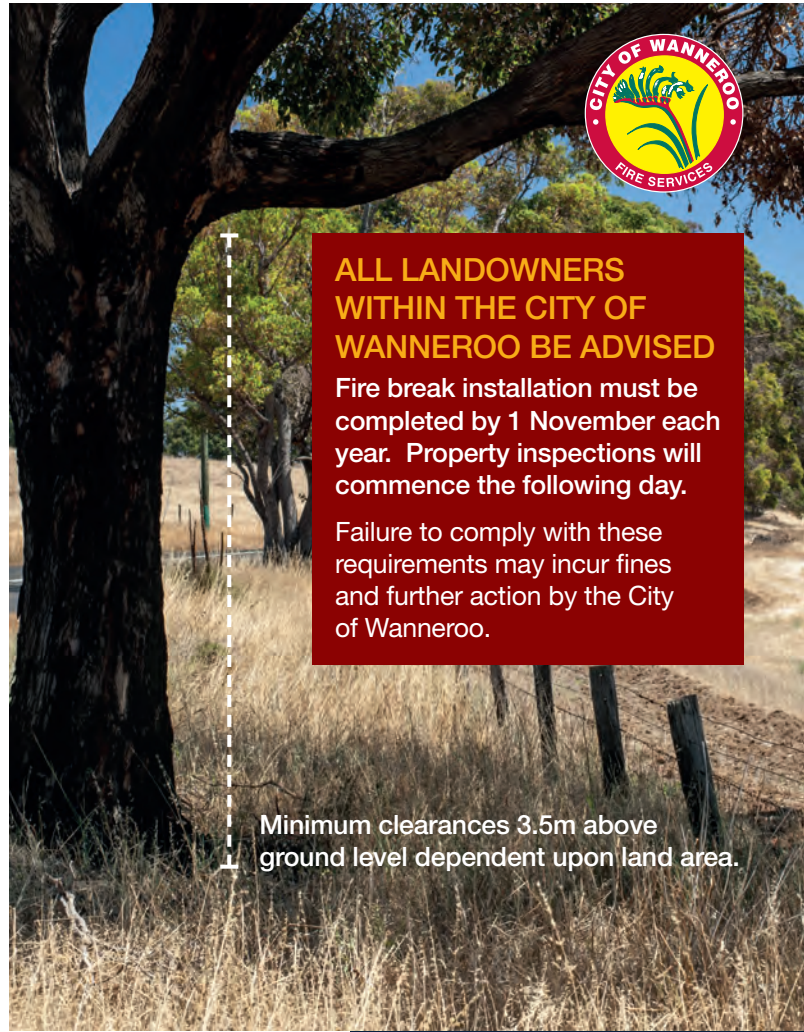
- Install and maintain a twenty (20) metre building protection zone surrounding all buildings, large hay stacks and fuel storage areas. A building protection zone includes undertaking measures such as pruning all lower tree branches to prevent fire entering the trees, ensuring three (3) metre spacing between tree canopies to prevent treetop fires spreading between trees, keeping all grasses to a height of not more than fifty (50) millimetres and storing all firewood piles more than twenty (20) metres away from the buildings.

APPLICATION TO VARY THE ABOVE REQUIREMENTS

If it is considered impracticable for any reason to implement any of the requirements of this Notice, application may be made not later than the 18th of October annually to the Council or its authorised officer for permission to provide alternative fire protection measures. If permission is not granted the requirements of this Notice must be complied with.

ADDITIONAL WORKS

In addition to the requirements of this Notice, you may be required to carry out further works which are considered necessary by an Authorised Officer and specified by way of a separate written notice forwarded to the address of the owner/s as shown on the City of Wanneroo rates record for the relevant land.



Minimum clearances 3.5m above ground level dependent upon land area.



Non-compliant: no fire break installed inside boundary fence



Compliant: grass slashed to ground level



Non-compliant: mineral earth fire break showing grass/weed regrowth



Compliant: mineral earth fire break



Non-compliant: thick scrub creates a fire hazard around power poles



Compliant: cleared buffer zone around power poles

