

# Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

## Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 9006 Flynn Drive (Stages 1-5 Meridian Park Industrial Estate)

Suburb: Neerabup

State: WA

P/code: 6031

Local government area: City of Wanneroo

Description of the planning proposal: Subdivision application

BMP Plan / Reference Number: 58454

Version: R01 Rev 1

Date of Issue: 27/05/2020

Client / Business Name: DevelopmentWA

## Reason for referral to DFES

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?  
N/A

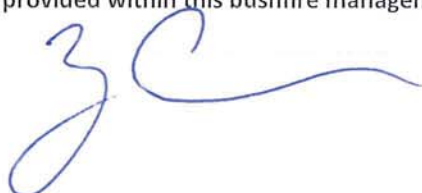
Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

## BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
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Company		Contact No.	
Strategen-JBS&G		(08) 9792 4797	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 27/05/2020

DevelopmentWA  
Bushfire Management Plan (Subdivision Application)  
Stages 1-5 Meridian Park Industrial Estate (Lot 9006  
Flynn Dr, Neerabup)

27 May 2020  
58454/129,449 (Rev 1)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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## 1. Proposal details

### 1.1 Background

DevelopmentWA is seeking to lodge a subdivision application to guide future industrial development within Stages 1–5 of the Neerabup Industrial Area, otherwise known as Meridian Park Industrial Estate, located at Lot 9006 Flynn Drive, Neerabup in the City of Wanneroo (hereon referred to as the project area). The subdivision plan (Figure 1; Element 2020) identifies:

- proposed industrial lots within Stages 1–5
- proposed internal road layout
- proposed drainage lot.

### 1.2 Site description

The project area comprises approximately 19.46 ha within Lot 9006 and is surrounded by (see Figure 2):

- cleared vacant land (proposed balance of Lot 9006) to the north, which occupies future stages of industrial development following completion of current limestone extraction operations
- Flynn Drive and existing rural residential development to the south
- existing developed stages of Neerabup industrial area to the east
- remnant bushland within Lot 503 to the west, a portion of which is earmarked for future clearing for the purpose of limestone extraction under valid clearing permit 7405/1.

A portion of the project area is designated as bushfire prone on the *Map of Bush Fire Prone Areas* (DFES 2020; see Plate 1).

### 1.3 Purpose

This Bushfire Management Plan (BMP) has been prepared to address requirements under Policy Measure 6.4 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 project area include:

- Bushfire Management Plan Neerabup Industrial Area prepared by Strategen (2017) for the overarching Local Structure Plan.

There are no other relevant bushfire reports or assessments known to have been prepared previously for the project area.

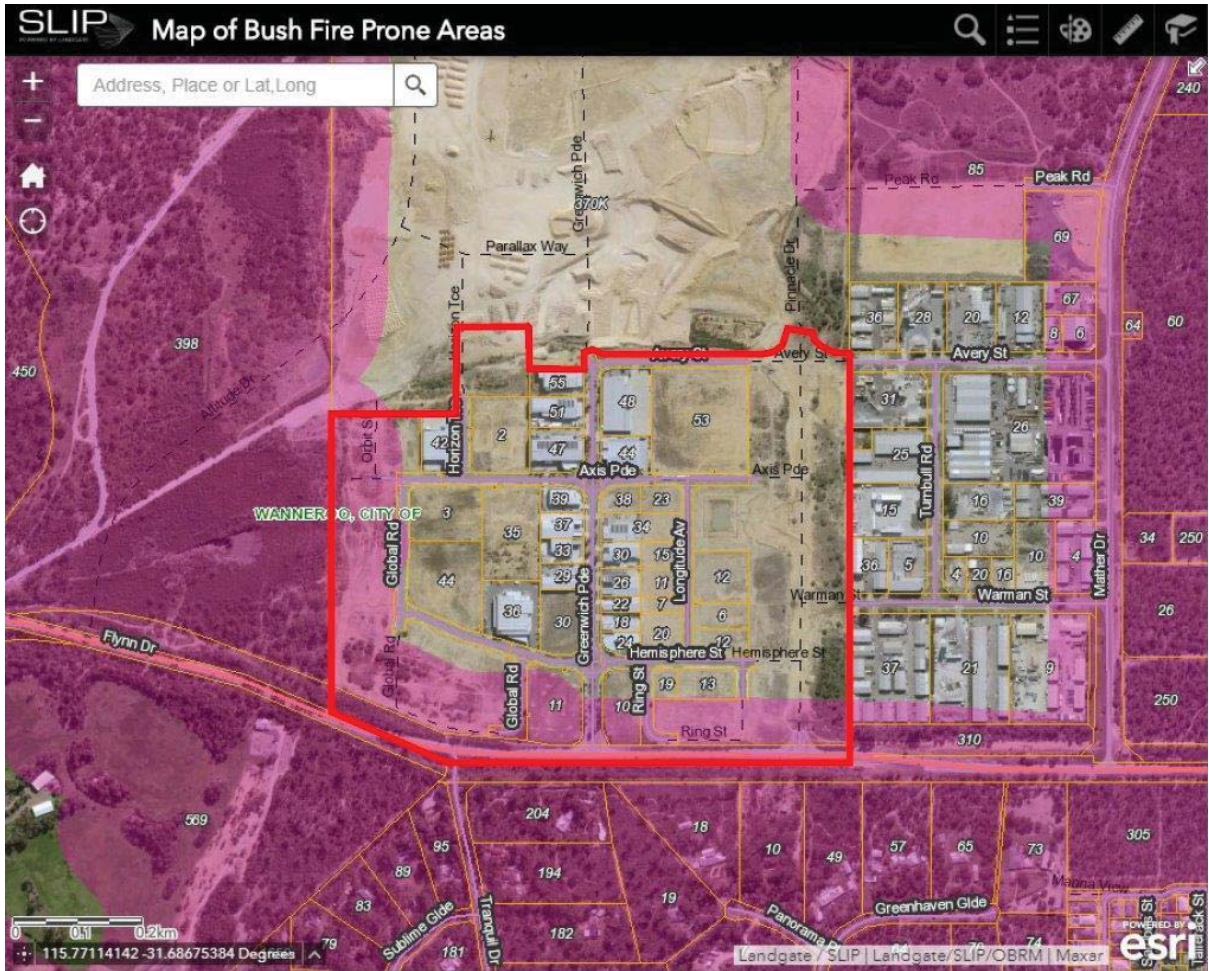
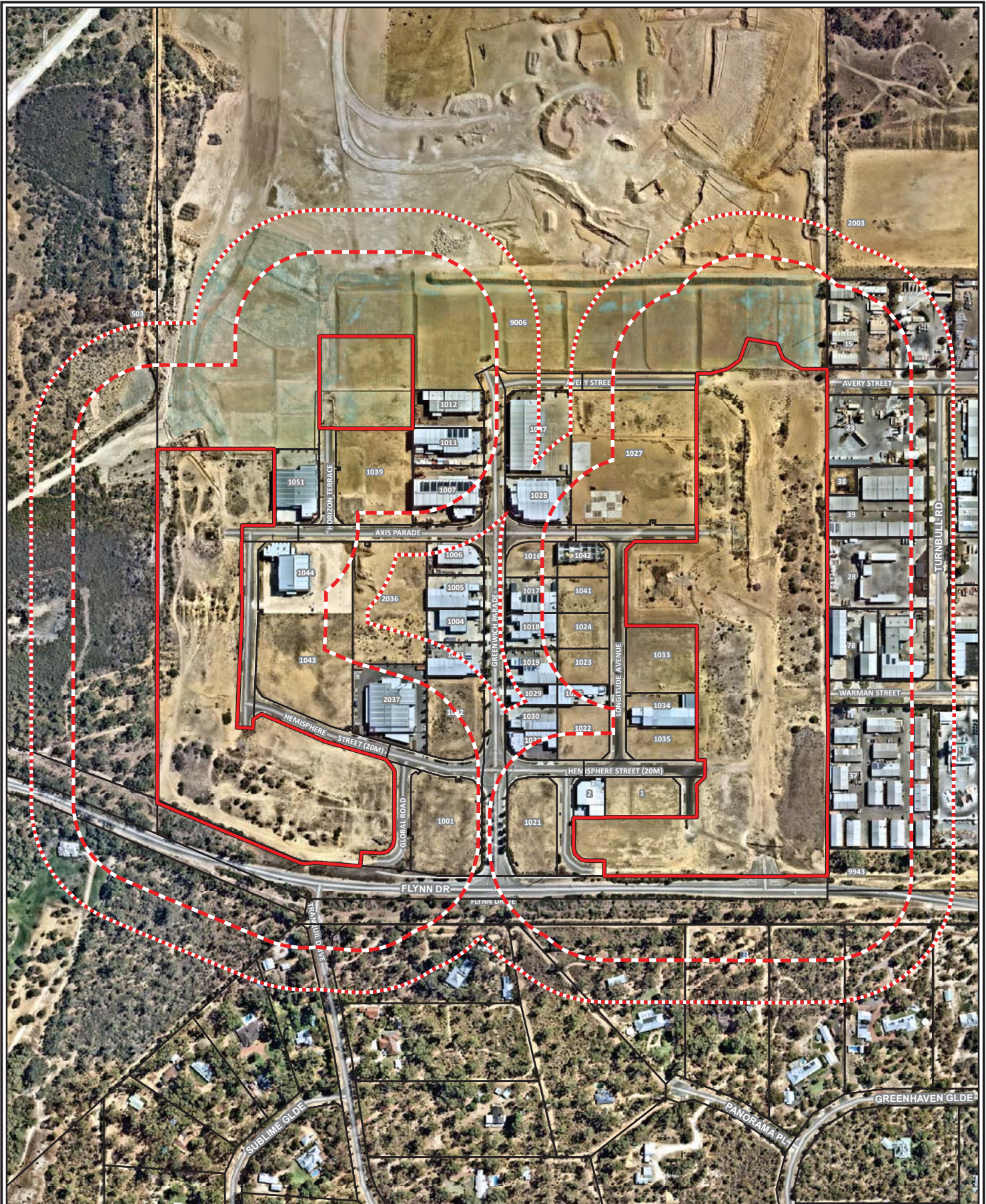


Plate 1: Map of Bush Fire Prone Areas (DFES 2020)





<b>Legend</b> Project area 100m assessment 150m assessment Cadastral Roads	Scale 1:6,000 at A4				<b>Lot 9006, Flynn Drive Neerabup, WA</b>  <b>SITE OVERVIEW</b>
	Coord. Sys. GDA 1994 Perth Coastal Grid 1994				
	Job No: 58454				<b>FIGURE 2</b>  
	Client: Development WA				
	Version: A	Date: 13-May-2020			
	Drawn By: cthatcher	Checked By: BM			



## 2. Environmental considerations

### 2.1 Native vegetation - modification and clearing

As the project area is predominantly cleared the proposal will not result in clearing of any significant native vegetation. Table 1 provides a summary of environmental values which has been derived from a search of publicly available environmental data. Strategen-JBS&G understands that the potential for any of the environmental values identified in Table 1 to exist on-site was removed when the site was initially cleared as part of previous limestone extractive industries and development of the initial stages of Meridian Park Industrial Estate.

Strategen-JBS&G understands that all relevant environmental and clearing approvals have been sought up to this point in time, including proposed clearing of native vegetation within adjacent west Lot 503 under permit 7405/1.

**Table 1: Summary of environmental values**

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
Environmentally Sensitive Area			✓	An Environmentally Sensitive Area (ESA) occurs immediately adjacent to the east of the project area, while another ESA occurs 380 m to the west.
Swan Bioplan Regionally Significant Natural Area	✓			N/A
Ecological linkages		✓	✓	A regional ecological linkage occurs to the south of the project area and also extends to the east and west. The southeast portion of the project area is intersected by the regional ecological linkage; however, there is no potential for these values to occur on site given the site is cleared.
Wetlands	✓			N/A
Waterways	✓			N/A
Threatened Ecological Communities listed under the EPBC Act		✓	✓	Threatened Ecological Communities and Tuart Woodlands are mapped as occurring within and adjacent to the project area, and the eastern portion of the project area is mapped as likely to contain Banksia Woodlands of the Swan Coastal Plain while the western portion is mapped as maybe occurring; however, there is no potential for these values to occur on site given the site is cleared.
Threatened and priority flora				Database layer not available at time of report preparation; however, there is no potential for these values to occur on site given the site is cleared.
Fauna habitat listed under the EPBC Act		✓	✓	Possible Quenda habitat is mapped as occurring adjacent to the project area. With respect to Carnaby's Black Cockatoo, the project area and adjacent areas are mapped as containing confirmed roosting areas. The western fringe of the project area and adjacent areas are mapped as containing potential feeding areas; however, there is no potential for these values to occur on site given the site is cleared.

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
Threatened and priority fauna				Database layer not available at time of report preparation; however, there is no potential for these values to occur on site given the site is cleared.
Bush Forever Site			✓	Bush Forever site 295 occurs to the east of the project area, Bush Forever site 494 occurs to the southeast, while Bush Forever site 384 occurs to the west.
DBCA managed lands and waters (includes legislated lands and waters and lands of interest)	✓			N/A
Conservation covenants	✓			N/A.

## 2.2 Revegetation / landscaping

No revegetation is proposed as part of the proposal, given the proposed industrial land use. Proposed landscaping outside of proposed drainage Lot 8002 will consist of low threat and managed gardens and street scaping in accordance with AS 3959 Clause 2.2.3.2 (f) and Schedule 1 of the Guidelines (refer to Appendix C).

DevelopmentWA has confirmed that proposed drainage Lot 8002 will predominantly consist of social amenities (e.g. shade trees, half basketball court, barbecue and picnic area) excluded under Clauses 2.2.3.2 (e) and (f). Drainage landscaping will be introduced to a section of Lot 8002 in the form of a planted drainage basin; however, DevelopmentWA has confirmed that this planted component will be less than 1 ha in size and will not be situated within 100 m of any other areas of classified vegetation, which in turns triggers the drainage basin to be excluded under Clause 2.2.3.2 (b) (refer to Client correspondence in Appendix A). A landscape plan will need to be prepared and implemented consistent with the requirements of this BMP in order to achieve the relevant exclusions under AS3959 discussed above.

### 3. Bushfire assessment results

#### 3.1 Assessment inputs

##### 3.1.1 Vegetation classification

Strategen-JBS&G assessed classified vegetation and exclusions within the 150 m assessment area through on-ground verification on 11 May 2020 in accordance with *AS 3959-2018 Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and a description of the vegetation classifications and exclusions are contained in Appendix B and depicted in Figure 3.

Regional vegetation surveys and mapping of the Swan Coastal Plain indicates the project area and adjacent land is contained within the Cottesloe Complex – Central and South. This vegetation complex is described as:

- mosaic of woodland of tuart (*Eucalyptus gomphocephala*) – jarrah (*Eucalyptus marginata*) – marri (*Corymbia calophylla*); closed heath on the limestone outcrops.

The indicator species of the Cottesloe Complex – Central and South were identified within the 150 m assessment area to the west and south of the project area and have been classified as a combination of Class A forest throughout areas of eucalyptus overstorey (i.e. Plots 1–3) and Class D scrub throughout areas of heath on limestone outcrops (i.e. Plot 4–5). Previous disturbance, clearing and recreational activities have reduced the density of mature trees normally found in a typical jarrah-marri forest; however, a multi-tiered fuel structure and dense canopy has generally been maintained prompting Plots 1–3 to be classified as Class A forest as opposed to Class B woodland.

Classified vegetation identified throughout the 150 m assessment area can be summarised as:

- Class A forest to the west and south (Plots 1–3)
- Class D scrub to the west (Plots 4–5)
- Class G grassland to the northeast, occupying unmanaged cleared land (Plot 6).

Exclusions identified within the 150 m assessment area (i.e. Plot 7) include:

- non-vegetated areas (i.e. buildings, roads, footpaths, driveways, tracks, cleared vacant lots and cleared land to the north of the project area within Lot 9006) excluded under Clause 2.2.3.2 (e)
- low threat managed vegetation (i.e. mowed/slashed road verges and APZs around rural residential dwellings to the south of Flynn Drive) excluded under Clause 2.2.3.2 (f).

Earthworks will necessitate clearing of any remaining/regrowth vegetation on-site, which has been identified in Figure 3 as ‘areas to be modified to a low threat state’ (i.e. Plot 8). These areas will ultimately be excluded under Clauses 2.2.3.2 (e) and (f) as part of the proposed development.

The proposed drainage basin within Lot 8002 (Plot 9) will be excluded under Clause 2.2.3.2 (b) as discussed in Section 2.2, with the exclusions to be supported by a future landscape plan.

### 3.1.2 Effective slope

Strategen-JBS&G assessed effective slope under classified vegetation within the 150 m assessment area through on-ground verification on 11 May 2020 in accordance with AS 3959. Results were cross-referenced with DPIRD 2m contour data and are depicted in Figure 3.

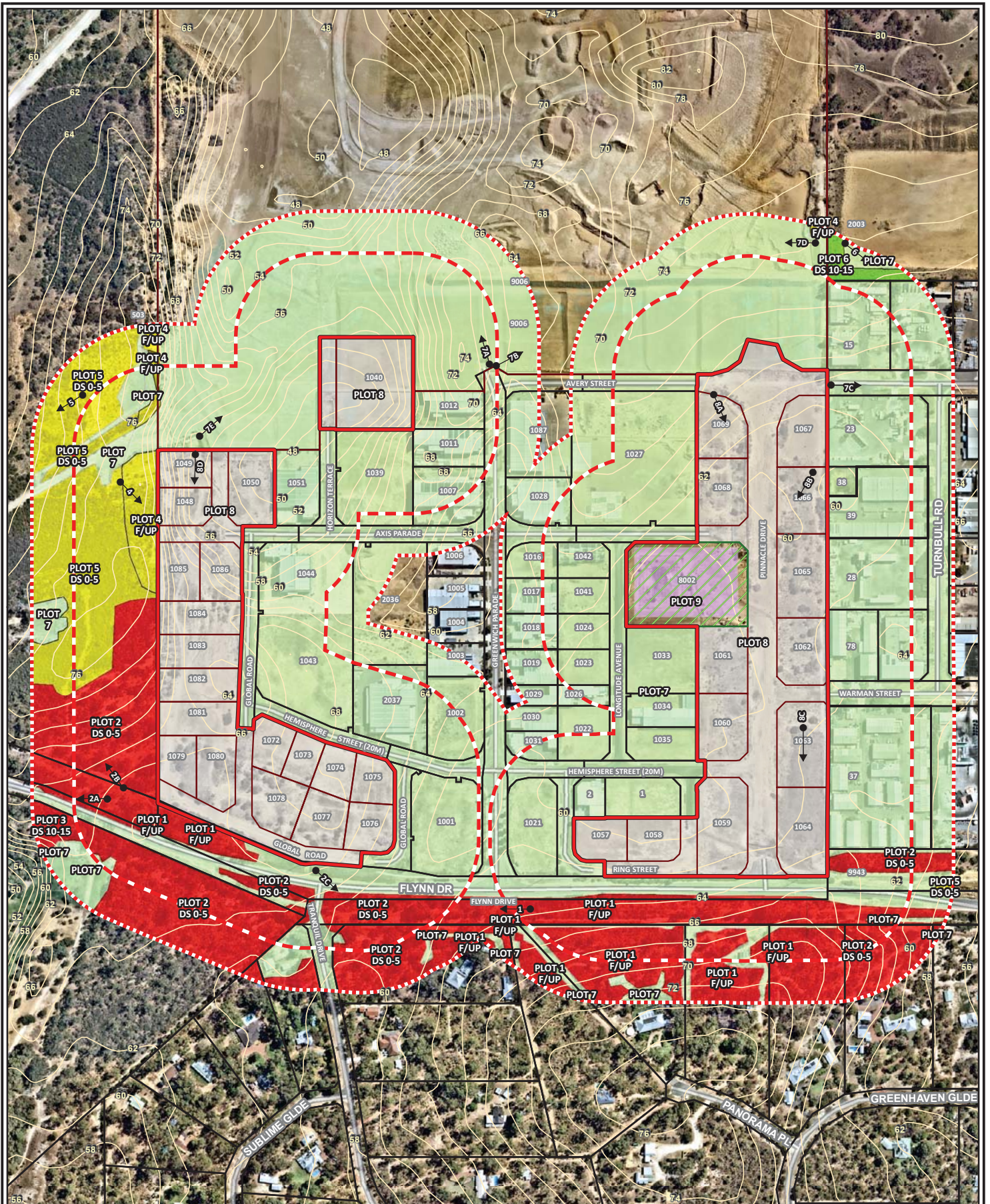
Site observations indicate that the project area and previously developed stages of Meridian Park Industrial Estate are flat. Earthworks within/along the boundary of Lot 9006 have resulted in sheer slopes to the north and west of the project area, which are upslope of the project area. Remaining areas within the 150 m assessment area are undulating, both down-slope and up-slope of the project area, with the steepest down-slopes located near The Kiln Estate to the southwest and along the vegetated batters to the northeast. Assessed effective slopes range from flat/up-slope to downslope 10–15 degrees, as detailed in Table 2.

### 3.1.3 Summary of inputs

Figure 3 illustrates the anticipated post-development vegetation classifications and exclusions following completion of subdivision works and implementation of low threat landscaping throughout the project area and adjacent 150 m. The post-development vegetation classifications/exclusions and effective slope are summarised in Table 2.

**Table 2: Summary of post-development vegetation classifications, exclusions and effective slope**

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class A Forest	Flat/upslope (0°)	Forest vegetation dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer.
2	Class A Forest	Downslope >0–5°	Forest vegetation dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer.
3	Class A Forest	Downslope >10–15°	Forest vegetation dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer.
4	Class D Scrub	Flat/upslope (0°)	Scrub vegetation predominantly 2-6 m in height and degraded areas with low shrubs which may be greater than 2 m in height at maturity.
5	Class D Scrub	Downslope >0–5°	Scrub vegetation predominantly 2-6 m in height and degraded areas with low shrubs which may be greater than 2 m in height at maturity.
6	Class G Grassland	Downslope >10–15°	Unmanaged grassland vegetation greater than 10 cm in height.
7	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Non-vegetated areas (i.e. buildings, roads, footpaths, driveways, tracks, cleared vacant lots and cleared land to the north of the project area within Lot 9006) and low threat managed vegetation (i.e. mowed/slashed road verges and APZs around rural residential dwellings to the south of Flynn Drive).
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Areas proposed to be modified to a low threat state as part of development (i.e. grass, weeds and isolated shrubs within the project area).
9	Excluded – Clause 2.2.3.2 [b]	N/A	Proposed drainage basin within Lot 8002, which will be less than 1 ha in area and greater than 100 m from other areas of classified vegetation following implementation of the management measures in this BMP.



<ul style="list-style-type: none"> <li><span style="border: 1px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Project area</li> <li><span style="border: 2px dashed red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 100m assessment area</li> <li><span style="border: 2px dotted red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 150m assessment area</li> <li><span style="border: 1px solid green; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Drainage</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Cadastral boundary</li> <li><span style="border-bottom: 1px solid red; display: inline-block; width: 15px; margin-right: 5px;"></span> Proposed internal development layout</li> <li><span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Photo point directions</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid brown; margin-right: 5px;"></span> Topographic contours (mAH)</li> </ul>	<p><b>Vegetation classification</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: red; margin-right: 5px;"></span> Class A Forest</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: yellow; margin-right: 5px;"></span> Class D Scrub</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; margin-right: 5px;"></span> Class G Grassland</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: purple; margin-right: 5px;"></span> Clause 2.2.3.2 (b)</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: lightgreen; margin-right: 5px;"></span> Clause 2.2.3.2 (e) &amp; (f)</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: lightgrey; margin-right: 5px;"></span> Area to be modified to non-vegetated and low threat state</li> <li><span style="display: inline-block; width: 15px; height: 10px; border-bottom: 1px solid grey; margin-right: 5px;"></span> Roads (MRWA)</li> </ul>	<p>Scale 1:6,000 at A4</p> <p>Coord. Sys. GDA 1994 Perth Coastal Grid 1994</p> <p>Job No: 58454</p> <p>Client: Development WA</p> <p>Version: A</p> <p>Drawn By: cthatcher</p>	<p>0 50 100 metres</p> <p>↑</p> <p>POST-DEVELOPMENT VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE</p> <p>FIGURE 3</p> <p><b>strategen</b> <b>JBS&amp;G</b></p>	<p><b>Lot 9006, Flynn Drive Neerabup, WA</b></p> <p>Date: 15-May-2020</p> <p>Checked By: BM</p>
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## 3.2 Assessment outputs

### 3.2.1 Bushfire Attack Level (BAL) contour assessment

Strategen-JBS&G has undertaken a BAL contour assessment in accordance with Method 1 of AS 3959 for the project area (Figure 4). The Method 1 procedure incorporates the following factors:

- state-adopted FDI 80 rating
- vegetation classification
- effective slope
- distance maintained between proposed development areas and the classified vegetation.

The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed development and subsequently informs the standard of building construction and/or setbacks required for proposed development to potentially withstand such impacts.

The BAL contours are based on:

- the vegetation classifications and effective slope observed at the time of inspection as well as consideration of the proposed post-development conditions, including on-site clearing extent, resultant vegetation exclusions and separation distances achieved in line with the subdivision plan
- consideration of low threat landscaping and drainage planting of less than 1 ha within proposed Lot 8002, as per Figure 3 (with the relevant exclusions under AS3959 to be supported by a future landscape plan)
- management of 100 m wide low threat staging buffers to the north of the project area if required, as per Figure 4
- ongoing maintenance of the existing developed portions of Meridian Park Industrial Estate in a low threat state to achieve exclusion under Clauses 2.2.3.2 (e) and (f), as per Figure 3.

Results of the BAL contour assessment are detailed in Table 3 and illustrated in Figure 4. The highest BAL applicable to the external boundary of the proposed lots is BAL-FZ, applicable to proposed Lots 1048–1049, 1064 and 1079–1085.

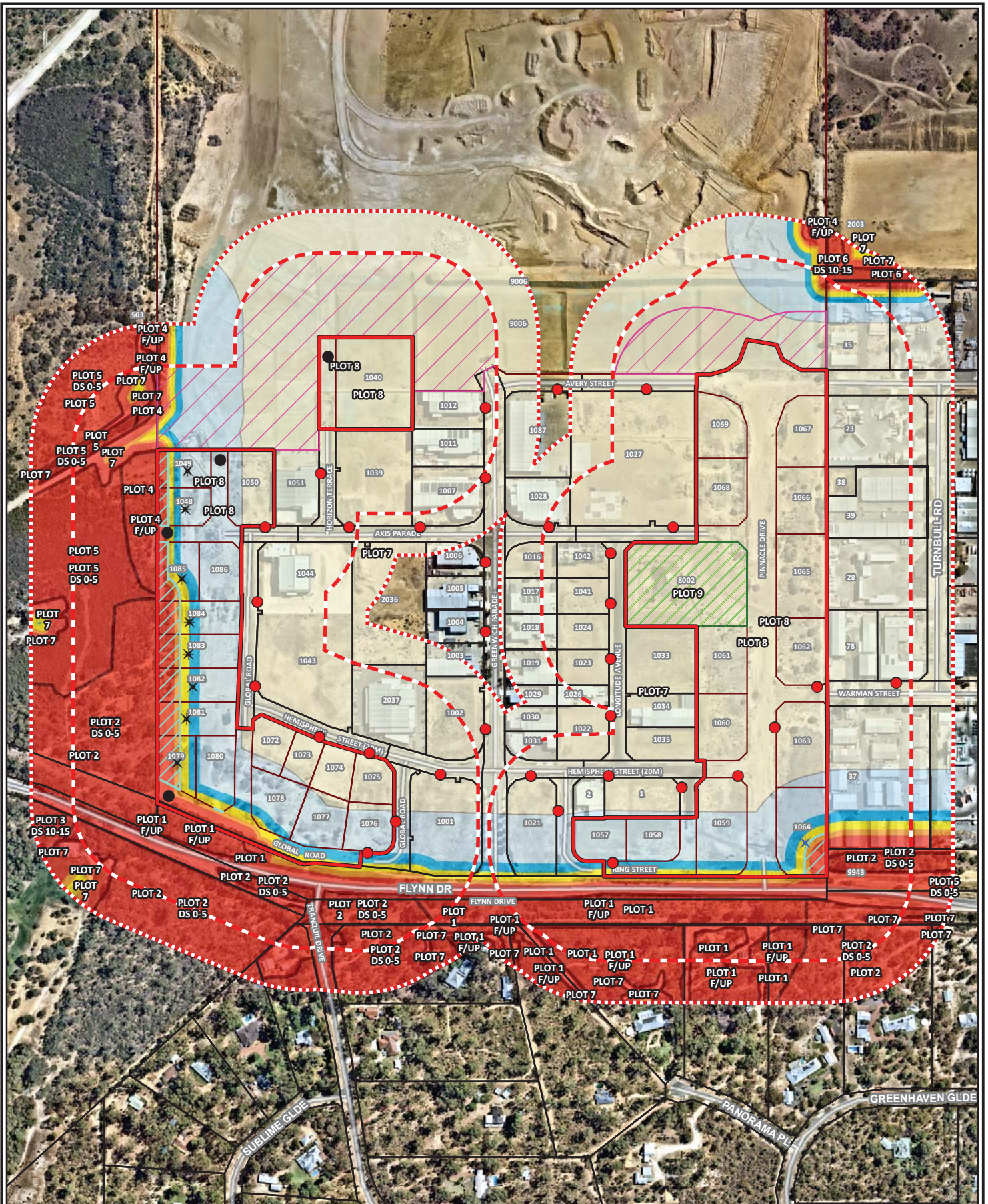
Implementation of a minor 3 m wide front Asset Protection Zone (APZ) building setback within Lot 1080 will enable BAL-29 or lower to be readily achieved for future habitable development within this lot and therefore no temporary quarantining of development for this lot is deemed necessary given the required building setback is mandatory in any case, as provided for under Scheme provisions.

However, the current extent of BAL-40/FZ intrusion into proposed Lots 1048–1049, 1079 and 1081–1085, as a result of proximity to adjacent areas of temporary vegetation, is such that temporary quarantining of development within these lots will be required until such time that it can be demonstrated through updated BAL contour assessment that BAL-29 or lower has been achieved once the affecting vegetation and hazard has been removed/managed. It is expected that a rating of BAL-29 or lower will eventually be achieved for these lots through future vegetation clearance within the adjacent west Lot 503 in accordance with Native Vegetation Clearing Permit 7405/1, followed by future development of this land in accordance with the approved Structure Plan for Neerabup Industrial Estate.

For proposed Lot 1064 situated in the southeast corner of the site, this lot abuts a vegetated reserve that is not expected to be cleared. However, since the lot is relatively large, there is still a developable area of BAL-29 or below suitable to cater for an appropriately sized building once the lot is created. As such, a condition for a restrictive covenant on title will need to be applied to proposed Lot 1064 to ensure no development occurs within the BAL-40/FZ affected portion of the lot, as per Figure 4.

**Table 3: BAL contour assessment results**

Method 1 BAL determination				
Plot	Vegetation classification	Effective slope	BAL contour width	Highest BAL (to proposed lot boundaries)
1	Class A Forest	Flat/upslope (0°)	16-<21m	BAL-40
2	Class A Forest	Downslope >0-5°	<20m	BAL-FZ
3	Class A Forest	Downslope >10-15°	>100m	BAL-Low
4	Class D Scrub	Flat/upslope (0°)	<10m	BAL-FZ
5	Class D Scrub	Downslope >0-5°	<11m	BAL-FZ
6	Class G Grassland	Downslope >10-15°	>50m	BAL-Low
7	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
9	Excluded – Clause 2.2.3.2 [b]	N/A	N/A	N/A



Project area	BAL contours
100m assessment area	BAL FZ
150m assessment area	BAL 40
100m wide low threat staging buffer	BAL 29
Asset protection zone	BAL 19
Drainage	BAL 12.5
Cadastral boundary	BAL Low
Classified vegetation	Lot temporarily quarantined until BAL-40/FZ impact is resolved
Proposed internal development layout	Lot subject to restrictive covenant on the title to ensure no development occurs within the BAL-40/FZ affected portion of the lot
Water hydrant	
Temporary 17.5m cul-de-sacs	

Scale 1:6,000 at A4

Coord. Sys. GDA 1994 Perth Coastal Grid 1994

Job No: 58454

Client: Development WA

Version: A

Drawn By: cthatcher

0 50 100 metres

Date: 27-May-2020

Checked By: BM

**Lot 9006, Flynn Drive  
Neerabup, WA**

**BAL CONTOUR MAP AND  
BUSHFIRE MANAGEMENT MEASURES**

**FIGURE 4**



## 4. Identification of bushfire hazard issues

### 4.1 Bushfire context

Land to the east of the project area comprises existing built out industrial development that does not pose a significant bushfire threat. Land to the north of the project area is currently non-vegetated (proposed future stages of Meridian Park Industrial Estate) and poses no risk of fire threat. Land to the west within Lot 503 comprises intact forest and scrub vegetation with long fire runs that currently poses significant bushfire threat to the project area; however, noting that future clearing under permit 7405/1 will largely reduce this risk. Land to the south occupies rural residential dwellings amongst a largely vegetated forest fuel profile, which poses a permanent bushfire risk to the project area; however, the separation provided by Flynn Drive provides a permanent and substantial buffer to the proposed development sufficient to manage the bushfire risk.

### 4.2 Bushfire hazard issues

It is acknowledged that the bushfire risk to the proposed development posed by the abovementioned hazards can be sufficiently managed through:

- temporary quarantining of development within proposed Lots 1048–1049, 1079 and 1081–1085
- condition for a restrictive covenant on the title of proposed Lot 1064 to ensure no development occurs within the BAL-40/FZ affected portion of the lot
- standard application of acceptable solutions under the Guidelines and AS 3959
- a direct bushfire suppression response if required.

Bushfire mitigation strategies applicable to the proposed development are discussed as follows:

1. Temporary BAL-40/FZ impacts within proposed Lots 1048–1049, 1079 and 1081–1085 will be addressed through temporary quarantining of development within these lots until the adjacent hazards are cleared/managed and BAL-29 or lower has been achieved, as previously discussed in Section 3.2.1. Standard WAPC subdivision conditions and advice notes can be applied as part of subdivision approval to enforce this and ensure that no development occurs in areas of BAL-40/FZ, suggested as follows:
  - a. Subdivision condition: Proposed Lots 1048–1049, 1079 and 1081–1085 are excluded from this approval until such time that the bushfire risk presented over the adjacent land is either permanently removed or it is demonstrated that a rating of BAL-29 or lower can be achieved for the development of the lots.
  - b. Advice note: The landowner/applicant is advised that upon removal of the bushfire risk within the adjacent land, the above condition will become redundant and the excluded lots shown on the approved plan of subdivision will form part of this approval.
2. BAL-40/FZ impacts within proposed Lot 1064 will be addressed through a condition for a restrictive covenant on title to ensure no development occurs within the BAL-40/FZ affected portion of the lot, as previously discussed in Section 3.2.1.
3. Minor BAL-40 impact within proposed Lot 1080 is to be addressed through a 3 m wide APZ building setback as depicted in Figure 4. This will achieve BAL-29 for future habitable buildings within Lot 1080 and is enforceable under Scheme building setback provisions for industrial land use.

4. The balance of Lot 9006 to the north of the project area is cleared and currently non-vegetated; however, this land will require ongoing fuel management in a low threat state in accordance with Clause 2.2.3.2 (f) to avoid reintroduction of a bushfire hazard. The proposed 100 m wide low threat staging buffers (refer to Section 5.2.1 and Figure 4) will need to be implemented to the north to achieve this outcome.
5. The proposed extension of the Horizon Terrace cul-de-sac to service proposed Lot 1040 will create a cul-de-sac that is greater than 200 m in length. Provision of a temporary cul-de-sac head (17.5 m wide) along Horizon Terrace at a distance of no greater than 200 m from the Horizon Terrace/Axis Parade intersection (refer to Figure 4) will be sufficient to service Lot 1040 with compliant access. This cul-de-sac is temporary given the future urban development proposed to the north of the project area over the cleared balance of Lot 9006 and is located within an area that is both BAL-Low and not designated as bushfire prone.
6. The three other temporary cul-de-sac heads proposed (refer to Figure 4) will provide a compliant vehicular access outcome for lots serviced by the three proposed temporary dead ends of Axis Parade, Global Road and an unnamed road in the northwest of the project area. The three proposed cul-de-sacs are less than 200 m in length and are temporary given the future urban development proposed to the west and north of the project area within Lot 503 and over the cleared balance of Lot 9006 respectively.
7. The existing public road network established in previous stages of Meridian Park Industrial Estate, in conjunction with the proposed public road network and existing surrounding roads to the south and east will ensure all proposed lots/occupants are provided with two access routes leading to two different destinations in two different directions at all times.
8. The existing reticulated water supply available throughout the development (see street hydrants in Figure 4) will service all proposed lots with a sufficient emergency water supply.

A compliance assessment against the bushfire protection criteria of the Guidelines is provided in Section 5.1 of this BMP to further demonstrate application of the above measures in accordance with Guideline acceptable solutions.

## 5. Assessment against bushfire protection criteria

### 5.1 Compliance table

An acceptable solutions assessment against the bushfire protection criteria is provided in Table 4.

**Table 4: Compliance with the bushfire protection criteria of the Guidelines**

Bushfire protection criteria	Method of compliance Acceptable solutions	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location	The BAL contour assessment (see Figure 4 and Table 3) indicates that all proposed lots can achieve BAL-29 or lower and that sufficient APZ, restrictive covenants on title and quarantining mechanisms are available to ensure no development occurs within areas of BAL-40/FZ.
Element 2: Siting and design	A2.1 Asset Protection Zone	The BAL contour assessment identifies all development as having the capacity to achieve BAL-29 or lower through APZs or compliant separation provided either within lot boundaries or existing perimeter roads (see Figure 4). As previously mentioned, lots with significant APZ setback requirements have either been temporarily quarantined from development until the affecting vegetation hazards are removed and BAL-29 or lower can be achieved, or, for proposed Lot 1064, appropriate provisions for a restrictive covenant on title will be applied to ensure no habitable development occurs within the BAL-40/FZ portion of the lot. Any APZs are to be subject to ongoing management in accordance with standards outlined in the Guidelines (see Appendix C).
Element 3: Vehicular access	A3.1 Two access routes	A combination of existing public roads and the proposed public road network will provide all occupants with the option of travelling to more than two different destinations (see Figure 4), via connections to the following public roads: <ul style="list-style-type: none"> <li>• Flynn Drive to the south (two connections)</li> <li>• Avery Street to the northeast</li> <li>• Warman Street to the east</li> <li>• various existing public roads internal to the site.</li> </ul>
	A3.2 Public road	All new public roads will be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.3 Cul-de-sac (including a dead-end-road)	All temporary cul-de-sacs identified in Figure 4 will be less than 200 m in length, will include minimum 17.5 m diameter turn-around heads and will be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.4 Battle-axe	N/A – no battle-axes are proposed as part of the subdivision and the project area is not serviced by an existing battle-axe.
	A3.5 Private driveway longer than 50 m	All private driveways longer than 50 m are to be constructed to the relevant technical requirements of the Guidelines (see Appendix D), including turn-around areas within 50 m of each building, passing bays if driveways are longer than 200 m and additional turn-around areas for fire appliances every 500 m.
	A3.6 Emergency access way	N/A – the proposed subdivision design does not require Emergency Access Ways (EAWs) to provide through access to a public road. No permanent emergency access ways (EAW) are proposed; however, if development and vehicular access construction is to be staged, any proposed temporary EAW is to be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.7 Fire service access routes (perimeter roads)	N/A – the proposed subdivision design does not require fire service access routes (FSARs) to achieve access within and around the perimeter of the project area.
	A3.8 Firebreak width	N/A – given that all lots will be cleared and developed, lot boundary firebreaks will not be required.

Bushfire protection criteria	Method of compliance Acceptable solutions	Proposed bushfire management strategies
Element 4: Water	A4.1 Reticulated areas	The proposed development will be connected to reticulated water supply via extension of existing services in surrounding development in accordance with Water Corporations Design Standard 63 requirements (refer to Appendix E). Existing water hydrants are identified in Figure 4.
	A4.2 Non-reticulated areas	N/A – the proposed subdivision is located within an existing reticulated area.
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A – the proposed subdivision is located within an existing reticulated area.

## **5.2 Additional management strategies**

Strategen-JBS&G makes the following additional bushfire management recommendations to inform ongoing planning stages of the development.

### **5.2.1 On-site staging buffers**

If development (and therefore clearing) is to occur on a staged basis, clearing in advance will 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, on-site cleared or low threat buffer to development (not including vegetation proposed to be retained; refer to Figure 4). Once the buffers are created, they will need to be maintained on a regular and ongoing basis in accordance with AS 3959 Clause 2.2.3.2 (f) and the City of Wanneroo annual firebreak notice (including the management of grassland at 5 cm or lower) 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.

### **5.2.2 Staging of access**

If development (and therefore construction of vehicular access) is to occur on a staged basis, vehicular access arrangements will need to ensure that all occupiers and visitors are provided with at least two access routes at all stages. This can be achieved via construction of public access roads in advance of stages or through provision of temporary compliant emergency access ways/cul-de-sacs until two formal access roads are available.

### **5.2.3 Fuel management within cleared vacant lots**

Cleared vacant lots are to be managed on a regular and ongoing basis by the developer until sale of lots after which time landowners will be responsible for ongoing management. Maintenance is to be in accordance with Clause 2.2.3.2 (f) of AS 3959 and the annual firebreak notice (refer to Section 5.2.12) and will involve slashing/mowing of grassland and weeds to height of less than 5 cm.

### **5.2.4 Road verge fuel management**

Existing and proposed road verges that have been excluded as low threat are 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.

### **5.2.5 Temporary quarantining of development**

Development of habitable buildings within Lots 1048–1049, 1079 and 1081–1085 will be temporarily restricted via subdivision conditions due to temporary BAL-40/FZ impacts. Subdivision clearance, title and development within these lots can only occur through provision of evidence that demonstrates that BAL-29 or lower has been achieved.

### **5.2.6 Restrictive covenant on title**

Development of habitable buildings within proposed Lot 1064 will be subject to a restrictive covenant on title to ensure no development occurs within the BAL-40/FZ affected portion of the lot.

### **5.2.7 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.

### 5.2.8 Building construction standards

Future development will not include Class 1, 2, 3 or associated 10a buildings, and as such, there is no statutory requirement for proposed buildings to meet the construction requirements of AS 3959.

### 5.2.9 BMP compliance and/or individual lot BAL assessment at future stages

A BMP compliance report will be prepared as a condition of subdivision to validate and confirm that the relevant management measures of this BMP have been implemented appropriately to achieve the intended bushfire management outcomes and compliance with bushfire protection criteria.

### 5.2.10 High risk land uses

High risk land uses may include, but are not limited to; service stations, landfill sites, bulk storage of hazardous materials, fuel depots and certain heavy industries as well as military bases, power generating land uses, saw-mills, highways and railways, among other uses meeting the definition.

Proposed industrial development has the potential to establish high risk land uses throughout the project area. Where high risk land uses cannot be avoided within designated bushfire prone areas, Policy Measure 6.6.1 of SPP 3.7 requires high risk land uses located in areas of BAL-12.5 to BAL-29 to be accompanied by a Bushfire Risk Management Plan (BRMP) at development application stage.

### 5.2.11 Landscaping

Aside from the proposed drainage basin within Lot 8002, the BAL contour assessment is reliant on all internal landscaping being implemented and maintained in a low threat state in accordance with Section 2.2. Responsibility for establishment and maintenance of low threat landscaping is discussed in Section 6.

### 5.2.12 Compliance with annual firebreak notice

The developer/land manager and prospective land purchasers are to comply with the City of Wanneroo annual firebreak notice as amended (refer to Appendix F).

The City of Wanneroo firebreak notice does not specify firebreak or grassland maintenance requirements for developed lots. However, the City's firebreak notice requires the following:

*'All properties that are subject to a Bushfire Management Plan, Emergency Management Plan or an approved Bushfire Attack Level Assessment, approved as part of a District Planning Scheme, a subdivision or development approval or a building permit must comply with the requirements of such plans in its entirety.'*

Management of cleared vacant lots in a low threat state (i.e. removal of all flammable material and regular slashing of grass/weeds to a height of no greater than 5 cm) in accordance with this BMP and the approved structure plan BMP (Strategen 2017) is enforceable under the abovementioned requirement of the firebreak notice.

## 6. Responsibilities for implementation and management of the bushfire measures

Implementation of the BMP applies to the developer, prospective landowners and the City to ensure bushfire management measures are adopted and implemented on an ongoing basis. A bushfire responsibilities table is provided in Table 5 to drive implementation of all bushfire management works associated with this BMP.

**Table 5: Responsibilities for implementation and management of the bushfire measures**

Implementation/management table	
Developer – prior to issue of titles	
No.	Implementation action
1	Provide for compliant public roads and reticulated water supply to the standards stated in this BMP.
2	Provide for any temporary cul-de-sacs/heads and/or EAWs as required to deliver compliant access during staging to the standards stated in this BMP.
3	Provide a detailed landscape plan for proposed Lot 8002 and implement any landscaping in accordance with that plan consistent with the requirements of this BMP to achieve the relevant exclusions under AS3959. The landscape plan will also need to demonstrate that any vegetation that cannot be managed as low threat in accordance with Clause 2.2.3.2 (f) of AS 3959 in the proposed drainage basin within proposed Lot 8002 will be less than 1 ha in area.
4	Undertake a BMP compliance assessment demonstrating implementation of the BMP.
5	Comply with the City of Wanneroo annual firebreak notice as amended, including complying with all management measures proposed in this BMP.
6	Provide an updated BAL contour assessment that demonstrates delivery of BAL-29 or lower for any temporarily quarantined lots.
7	Establish on-site low threat staging buffers as required to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 5 cm.
8	Establish any APZs/proposed lots in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 5 cm.
9	Establish road verges/POS in a low threat minimal fuel condition as per Clause 2.2.3.2 (f) of AS 3959.
10	Apply a restrictive covenant on the title of proposed Lot 1064 to ensure no development occurs within the BAL-40/FZ affected portion of the lot, in accordance with Figure 4 of this BMP.
Developer – until sale/transfer of lots	
No.	Implementation action
1	Maintain on-site low threat staging buffers as required to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 5 cm.
2	Maintain any APZs/proposed lots in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 5 cm.
3	Maintain road verges/POS in a low threat minimal fuel condition as per Clause 2.2.3.2 (f) of AS 3959.
4	Comply with the City of Wanneroo annual firebreak notice as amended, including complying with all management measures proposed in this BMP.
Landowner/occupier – at future planning stages	
No.	Implementation action
1	Prepare Bushfire Risk Management Plan for any high-risk land uses proposed within areas of BAL-12.5 to BAL-29 or within designated Bush Fire Prone Areas at the DA stage.
Landowner/occupier – prior to building construction and ongoing	
No.	Implementation action
1	Maintain any APZs within lots to the standards stated in the BMP.
2	Maintain cleared/vacant lots in a low threat state to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 5 cm, until developed to a permanent low fuel state.
3	Any private driveways longer than 50 m are to be constructed and maintained to the relevant technical requirements of the Guidelines and identified in this BMP.
4	Comply with the City of Wanneroo annual firebreak notice as amended, including complying with all management measures proposed in this BMP.
Local government – ongoing management	
No.	Implementation action
1	Maintain road verges and POS in a low threat minimal fuel condition as per Clause 2.2.3.2 (f) of AS 3959.

## 7. References

Department of Fire and Emergency Services (DFES) 2020, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <https://maps.slip.wa.gov.au/landgate/bushfireprone/>, [13/05/2020].

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

Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Strategen Environmental (Strategen) 2017, *Bushfire Management Plan: Neerabup Industrial Area*, Strategen, Bunbury.

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*, Version 1.3 August 2017, Western Australian Planning Commission, Perth.



## 8. Limitations

### Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. 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-JBS&G 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-JBS&G 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-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G 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-JBS&G. The making of any assumption does not imply that Strategen-JBS&G 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-JBS&G 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.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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## Appendix A Landscaping correspondence

## Brodie Mastrangelo

---

**From:** Zac Cockerill  
**Sent:** Thursday, 14 May 2020 11:42 AM  
**To:** Brodie Mastrangelo  
**Subject:** FW: Meridian Park Industrial Estate - BMP

I confirm that any introduction/replanting of vegetation that cannot be maintained as low threat will be kept to less than 1ha in size and will be confirmed through preparation of a future landscape plan.

Regards

**Nathan Varma**  
Development Manager



40 The Esplanade, Perth WA 6000  
T 08 9482 7410 M 0466 678 070 F +61 8 9481 0861  
[developmentwa.com.au](http://developmentwa.com.au)

---

**From:** Zac Cockerill <[zcockerill@jbsg.com.au](mailto:zcockerill@jbsg.com.au)>  
**Sent:** Thursday, 14 May 2020 11:27 AM  
**To:** Nathan Varma <[Nathan.Varma@developmentwa.com.au](mailto:Nathan.Varma@developmentwa.com.au)>  
**Cc:** Brodie Mastrangelo <[bmastrangelo@jbsg.com.au](mailto:bmastrangelo@jbsg.com.au)>  
**Subject:** RE: Meridian Park Industrial Estate - BMP

Thanks Nathan,

Can you please confirm via email that within the proposed drainage Lot 8002, any introduction/replanting of vegetation that cannot be maintained as low threat will be kept to less than 1ha in size and that this will be confirmed through preparation of a future landscape plan.

Regards,



**Zac Cockerill** | Associate | Strategen-JBS&G  
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury  
177 Spencer Street Bunbury WA 6230  
T: 08 9792 4797 | M: 0400 784 860 | E: [zcockerill@jbsg.com.au](mailto:zcockerill@jbsg.com.au) | W: [www.jbsg.com.au](http://www.jbsg.com.au)

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---

**From:** Nathan Varma <[Nathan.Varma@developmentwa.com.au](mailto:Nathan.Varma@developmentwa.com.au)>  
**Sent:** Thursday, 14 May 2020 10:47 AM  
**To:** Zac Cockerill <[zcockerill@jbsg.com.au](mailto:zcockerill@jbsg.com.au)>  
**Cc:** Brodie Mastrangelo <[bmastrangelo@jbsg.com.au](mailto:bmastrangelo@jbsg.com.au)>  
**Subject:** RE: Meridian Park Industrial Estate - BMP

Hi Zac

Lot 8002 is proposed to be social amenity in the future with a few shade trees. This may include a half basketball court, barbeque and picnic area.

If you require any further information please let me know.

Regards

**Nathan Varma**  
Development Manager



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---

**From:** Zac Cockerill <[zcockerill@jbsg.com.au](mailto:zcockerill@jbsg.com.au)>  
**Sent:** Tuesday, 12 May 2020 4:19 PM  
**To:** Nathan Varma <[Nathan.Varma@developmentwa.com.au](mailto:Nathan.Varma@developmentwa.com.au)>  
**Cc:** Brodie Mastrangelo <[bmastrangelo@jbsg.com.au](mailto:bmastrangelo@jbsg.com.au)>  
**Subject:** RE: Meridian Park Industrial Estate - BMP

Hi Nathan,

Just a quick update on the BMP. Site visit went fine and is complete. We're now pre-filling what we can in the BMP report and preparing prelim veg/BAL contour mapping and BMP report over the next couple of days. A draft report is expected to be available for client review early next week (Mon/Tues), so we're still on track to finalise by 22<sup>nd</sup> or earlier.

One important query we've got is in relation to the proposed drainage basin, identified in the attached mark-up within proposed Lot 8002. Is there any landscaping plans/detail available to inform how we classify or exclude the vegetation proposed to be replanted in this area? I'm hoping the planted out component will be less than 1ha in size so we can exclude the vegetation from having any BAL impact. If the reintroduction of new vegetation within the POS/basin exceeds 1ha, then we will need to classify the veg and map the BAL contours off it, which will impede on adjacent industrial lots, particularly to the south, and setbacks will be required (which we'd like to avoid if possible). Please advise re: any available landscaping plans/detail for the proposed drainage basin.

Regards,



**Zac Cockerill** | Associate | Strategen-JBS&G  
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---

**From:** Zac Cockerill  
**Sent:** Monday, 11 May 2020 11:34 AM  
**To:** Nathan Varma <[Nathan.Varma@developmentwa.com.au](mailto:Nathan.Varma@developmentwa.com.au)>  
**Cc:** Euan Sutherland <[esutherland@jbsg.com.au](mailto:esutherland@jbsg.com.au)>; Brodie Mastrangelo <[bmastrangelo@jbsg.com.au](mailto:bmastrangelo@jbsg.com.au)>  
**Subject:** RE: Meridian Park Industrial Estate - BMP

## Appendix B Vegetation plot photos and description



Photo ID: 1

<b>Plot number</b>		Plot 1
<b>Vegetation classification</b>	<b>Pre-development</b>	Class A Forest
	<b>Post-development</b>	Class A Forest
<b>Description / justification</b>		Forest vegetation dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer.



Photo ID: 2a

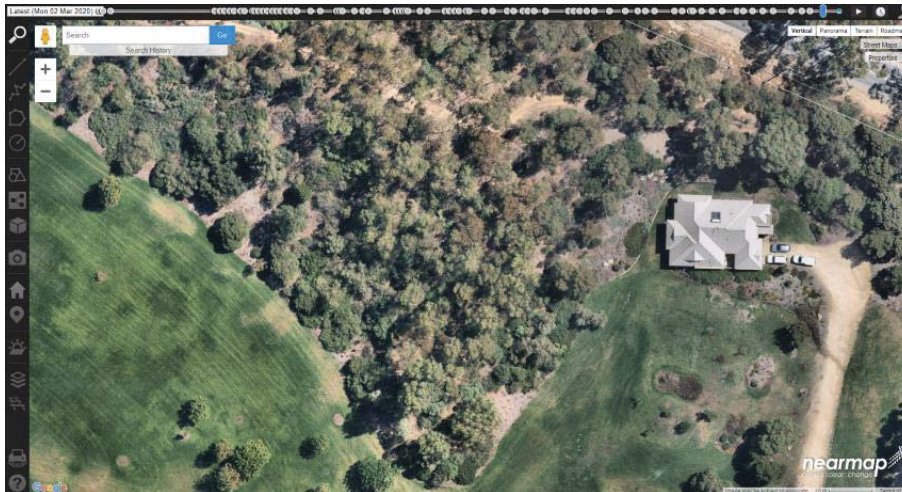


Photo ID: 2b



Photo ID: 2c

<b>Plot number</b>		Plot 2
<b>Vegetation classification</b>	<b>Pre-development</b>	Class A Forest
	<b>Post-development</b>	Class A Forest
<b>Description / justification</b>		Forest vegetation dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer.



Nearmap image

<b>Plot number</b>		Plot 3
<b>Vegetation classification</b>	<b>Pre-development</b>	Class A Forest
	<b>Post-development</b>	Class A Forest
<b>Description / justification</b>		This vegetation was not accessible during the site inspection but from a distance the fuel profile appeared to be consistent with Class A forest (i.e. dominated by eucalypts with a multi-tiered fuel profile, including a shrubby middle layer).



Photo ID: 4

<b>Plot number</b>		Plot 4
<b>Vegetation classification</b>	<b>Pre-development</b>	Class D Scrub
	<b>Post-development</b>	Class D Scrub
<b>Description / justification</b>		Scrub vegetation predominantly 2-6 m in height and degraded areas with low shrubs which may be greater than 2 m in height at maturity.





<b>Photo ID: 5</b>		
<b>Plot number</b>	Plot 5	
<b>Vegetation classification</b>	<b>Pre-development</b>	Class D Scrub
	<b>Post-development</b>	Class D Scrub
<b>Description / justification</b>		Scrub vegetation predominantly 2-6 m in height and degraded areas with low shrubs which may be greater than 2 m in height at maturity.



<b>Photo ID: 6</b>		
<b>Plot number</b>	Plot 6	
<b>Vegetation classification</b>	<b>Pre-development</b>	Class G Grassland
	<b>Post-development</b>	Class G Grassland
<b>Description / justification</b>		Unmanaged grassland vegetation greater than 10 cm in height.



Photo ID: 7a



Photo ID: 7b



Photo ID: 7c

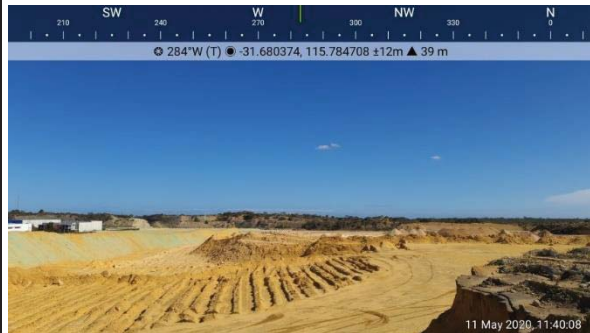


Photo ID: 7d



Photo ID: 7e

<b>Plot number</b>		Plot 6
<b>Vegetation classification</b>	<b>Pre-development</b>	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	<b>Post-development</b>	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
<b>Description / justification</b>		Non-vegetated areas (i.e. buildings, roads, footpaths, driveways, tracks, cleared vacant lots and cleared land to the north of the project area within Lot 9006) and low threat managed vegetation (i.e. mowed/slashed road verges and APZs around rural residential dwellings to the south of Flynn Drive).



Photo ID: 8a



Photo ID: 8b



Photo ID: 8c



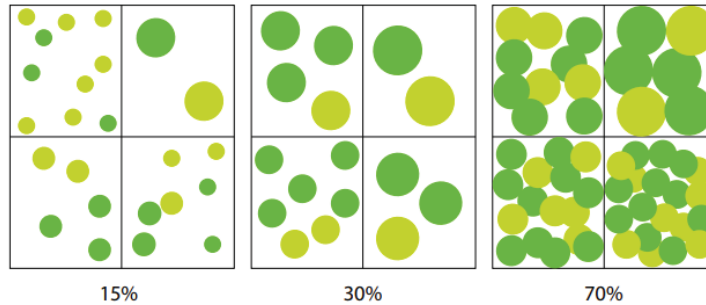
Photo ID: 8d

<b>Plot number</b>		Plot 8
<b>Vegetation classification</b>	<b>Pre-development</b>	Combination of Class G grassland and Class D scrub
	<b>Post-development</b>	Modified to non-vegetated (exclusion 2.2.3.2 [e]) and/or low threat (exclusion 2.2.3.2 [f]) state
<b>Description / justification</b>		Areas proposed to be modified to a low threat state (i.e. grass, weeds and isolated shrubs within the project area).

## Appendix C APZ standards (Schedule 1 of Guidelines)

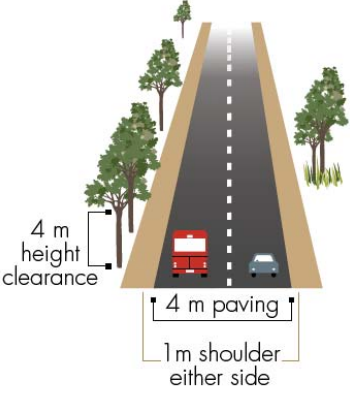
### Schedule 1: Standards for Asset Protection Zones

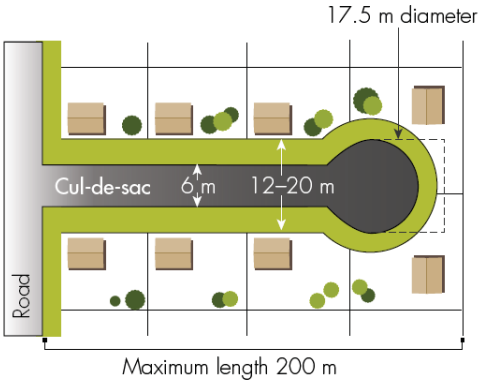
- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close 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.



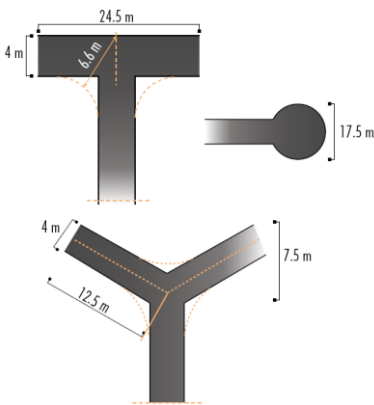
- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m<sup>2</sup> in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater 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.

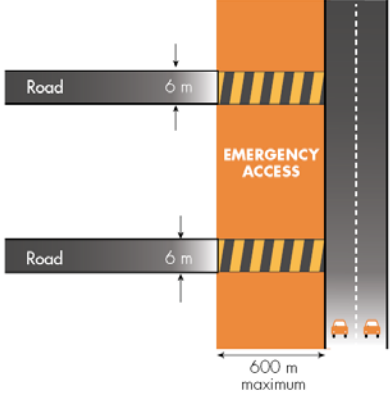
## Appendix D Vehicular access technical standards of the Guidelines

Public roads	
Acceptable solution A3.2	A public road is to meet the requirements in Table 1, Column 1.
Explanatory note E3.2	<p>Trafficable surface: Widths quoted for access routes refer to the width of the trafficable surface. A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metre wide paving one metre wide constructed road shoulders. In special circumstances, where eight lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of 90 metres may be provided subject to the approval of both the local government and Department of Fire and Emergency Services.</p> <p>Public road design: All roads should allow for two-way traffic to allow conventional two-wheel drive vehicles and fire appliances to travel safely on them.</p>  <p>The diagram illustrates a road cross-section. It shows a central paved area that is 4 meters wide, with a 1-meter shoulder on each side. A red fire truck and a blue car are shown driving on the road. A vertical dimension line on the left indicates a 4-meter height clearance for the road. Trees are shown on both sides of the road.</p>

Cul-de-sac (including a dead-end road)	
Acceptable solution A3.3	<p>A cul-de-sac and/ or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/ or will need to be demonstrated by the proponent), the following requirements are to be achieved:</p> <ul style="list-style-type: none"> <li>• Requirements in Table 1, Column 2</li> <li>• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres)</li> <li>• Turn-around area requirements, including a minimum 17.5 metre diameter head.</li> </ul>
Explanatory note E3.3	<p>In bushfire prone areas, a cul-de-sac subdivision layout is not favoured because they do not provide access in different directions for residents. In some instances it may be possible to provide an emergency access way between cul-de-sac heads to a maximum distance of 600 metres, so as to achieve two-way access. Such links must be provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency. A cul-de-sac in a bushfire prone area is to connect to a public road that allows for travel in two directions in order to address Acceptable Solution A3.1.</p> <div style="text-align: center;">  <p>The diagram illustrates a cul-de-sac layout. On the left, a vertical road is labeled 'Road'. A horizontal road, labeled 'Cul-de-sac', branches off from the vertical road. The width of the cul-de-sac is indicated as 6m. The length of the cul-de-sac is indicated as 12-20 m. At the end of the cul-de-sac is a circular turn-around area with a diameter of 17.5 m. The total length of the cul-de-sac from the road to the end of the turn-around area is labeled as 'Maximum length 200 m'. The diagram also shows several residential lots with houses and trees along the cul-de-sac.</p> </div>



<b>Private driveway longer than 50 metres</b>	
Acceptable solution A3.5	<p>A private driveway is to meet all of the following requirements:</p> <ul style="list-style-type: none"> <li>Requirements in Table 1, Column 3</li> <li>Required where a house site is more than 50 metres from a public road</li> <li>Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres)</li> <li>Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house</li> <li>Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes</li> <li>All-weather surface (i.e. compacted gravel, limestone or sealed).</li> </ul>
Explanatory note E3.5	<p>For a driveway shorter than 50 metres, fire appliances typically operate from the street frontage however where the distance exceeds 50 metres, then fire appliances will need to gain access along the driveway in order to defend the property during a bushfire. Where house sites are more than 50 metres from a public road, access to individual houses and turnaround areas should be available for both conventional two-wheel drive vehicles of residents and type 3.4 fire appliances.</p> <p>Turn-around areas should be located within 50 metres of a house. Passing bays should be available where driveways are longer than 200 metres and turn-around areas in driveways that are longer than 500 metres. Circular and loop driveway designs may also be considered. These criteria should be addressed through subdivision design.</p> <p>Passing bays should be provided at 200 metre intervals along private driveways to allow two-way traffic. The passing bays should be a minimum length of 20 metres, with the combined width of the passing bay and the access being a minimum of six metres.</p> <p>Turn-around areas should allow type 3.4 fire appliances to turn around safely (i.e. kerb to kerb 17.5 metres) and should be available at the house sites and at 500 metre intervals along the driveway.</p> <div style="text-align: center; margin-top: 20px;">  </div>

Emergency access way	
Acceptable solution A3.6	<p>An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:</p> <ul style="list-style-type: none"> <li>• Requirements in Table 1, Column 4</li> <li>• No further than 600 metres from a public road</li> <li>• Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency</li> <li>• Must be signposted.</li> </ul>
Explanatory note E3.6	<p>An emergency access way is not a preferred option however may be used to link up with roads to allow alternative access and egress during emergencies where traffic flow designs do not allow for two-way access. Such access should be provided as a right-of-way or easement in gross to ensure accessibility to the public and fire emergency services during an emergency.</p> <p>The access should comply with minimum standards for a public road and should be signposted. Where gates are used to control traffic flow during non-emergency periods, these must not be locked. Emergency access ways are to be no longer than 600 metres and must be adequately signposted where they adjoin public roads.</p> <p>Where an emergency access way is constructed on private land, a right of way or easement in gross is to be established.</p> <div style="text-align: center;">  </div>

Technical requirement	1	2	3	4	5
	Public road	Cul-de-sac	Private driveway longer than 50 m	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

## Appendix E Water technical standards of the Guidelines

Reticulated areas	
Acceptable solution A4.1	The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.
Explanatory note E4.1	Water supply authorities in Western Australia include the Water Corporation, Aqwest and the Busselton Water Board. The Water Corporation's 'No. 63 Water Reticulation Standard' is deemed to be the baseline criterion for developments and should be applied unless local water supply authorities' conditions apply.

## Appendix F City of Wanneroo annual firebreak notice

# IMPORTANT

## FIRE HAZARD REDUCTION NOTICE

### NOTICE TO OWNERS AND OCCUPIERS OF LAND WITHIN THE CITY OF WANNEROO

Pursuant to Section 33 of the Bush Fires Act 1954, you are required to carry out fire prevention works on land that you own or occupy. The applicable works outlined below must be completed before 1 November 2019 and maintained in this state up to and including 31 May 2020.

The City of Wanneroo may at any time after 1 November 2019 conduct inspections on properties. Failure to comply with this Notice may result in a penalty of up to \$5,000. Additionally, the City of Wanneroo may carry out the required works at your cost.

#### 1. DEFINITIONS

**Trafficable** means capable of being driven on from one point to another by any emergency services vehicle on a clear surface, without any obstruction to the vehicle. A fire break is not to terminate or lead to a dead end.

**Fire Break** means a strip of land which has been cleared of all flammable material and is trafficable. Approved methods include ploughing, grading, cultivating, scarifying, raking, burning and chemical spraying (reticulated and maintained green lawn is acceptable as a fire break).

**Flammable Material** means any material such as wood, leaves and grass that is likely to be ignited and capable of burning.

**Asset Protection Zone** refers to an area which includes:

- a) undertaking measures such as pruning all lower tree branches to prevent fire entering the trees;
- b) ensuring 3 metres spacing between tree canopies to prevent treetop fires spreading between trees;
- c) keeping all grasses to a height of not more than 50 millimetres; and
- d) storing all firewood piles more than 20 metres away from the buildings.

#### 2. FIRE BREAK REQUIREMENTS

##### LAND AREA - 4000sqm or less

- a) Installation of a 3 metre wide trafficable fire break with a vertical clearance of not less than 3.5 metres as close as possible to all external boundaries of the property; or
- b) Removal of all flammable material, with the exception of living trees from the property.

##### LAND AREA - 4000sqm or greater

- a) Installation of a 3 metre wide trafficable fire break with a vertical clearance of not less than 3.5 metres as close as possible to all external boundaries of the property;
- b) Where it is not possible to install the fire break adjacent to the external boundary of the property due to naturally occurring obstacles, it is acceptable to install the fire break around the obstacle. If this variation requires the fire break to be greater than 5 metres away from the external boundary, a fire break variation is required; and
- c) Installing and maintaining a 20 metre asset protection zone surrounding all buildings, large hay stacks and fuel storage areas.

#### 3. BUSHFIRE OR EMERGENCY MANAGEMENT PLANS

All properties that are subject to a Bushfire Management Plan, Emergency Management Plan or an approved Bushfire Attack Level Assessment, approved as part of a District Planning Scheme, a subdivision or development approval or a building permit must comply with the requirements of such plans in its entirety.

## 4. PROHIBITED AND RESTRICTED BURNING PERIODS

### Prohibited Burning Period

- a) From 1 December to 31 March (subject to change);
- b) All burning is prohibited during this period including burning garden waste or lighting fires in the open air for the purpose of camping or cooking;
- c) The following exemptions apply to:
  - i) pizza ovens fitted with a spark arrestor; and
  - ii) purpose built solid fuel barbeques such as kettle barbeques.

These appliances may still be used if they are used at a person's home and are located more than 3 metres away from bush and flammable material.

- d) These exemptions do not apply if a Total Fire Ban or a Harvest and Vehicle Movement Ban has been declared.

### Restricted Burning Periods

- a) From 1 April to 31 May (subject to change) and from 1 September to 30 November (subject to change);
- b) Permits are required during these periods; and
- c) Fires for the purpose of cooking are permitted as long as the fire danger rating is not 'very high', 'extreme' or 'catastrophic'

The City of Wanneroo may, where necessary, vary burning periods due to weather conditions. It is the owner and/or occupier's responsibility to ensure that the dates stated above have not been varied.

## 5. ADDITIONAL WORKS

In addition to the requirements of this Notice, further works may need to be carried out which are considered necessary by the City of Wanneroo's Authorised Officer. Land owners or occupiers who need to carry out further works will be notified.

## 6. TOTAL FIRE BANS

A Total Fire Ban is declared on days of extreme weather or when widespread fires are seriously stretching firefighting resources. A Total Fire Ban prohibits the lighting of any fires in the open air and carrying out any other activities that may start a fire. The ban includes all open air fires for the purpose of cooking or camping. It prohibits the operation of incinerators, welding, grinding, soldering or gas cutting equipment.

## 7. HARVEST, HOT WORKS AND VEHICLE MOVEMENT BANS

Harvest and Vehicle Movement Bans may be imposed by the City of Wanneroo when, during a Total Fire Ban or when the Chief Bushfire Control Officer is of the opinion that the use of engines, vehicles, plant or machinery is likely to cause a fire or contribute to the spread of a bushfire.

During a Harvest and Vehicle Movement Ban you are not allowed to light, maintain or use a fire in the open air, or to carry out any activity in the open air that causes, or is likely to cause a fire. This includes a prohibition on the use of engines, vehicles, plant or machinery that can cause or be conducive to the spread of a bushfire.

## 8. VARIATION TO FIREBREAK REQUIREMENTS

If you consider that it is impracticable for any reason to implement any of the requirements of this Notice, an application must be made **no later than 18 October 2019** to the City of Wanneroo for permission to provide alternative fire mitigation measures. An application to vary the requirements does not constitute approval until written permission is granted by the City of Wanneroo.



**Compliant Fire Break** - 3 metre wide trafficable fire break with a vertical clearance of not less than 3.5 metres as close as possible to external boundary.



**Non-compliant Fire Break** - showing grass/weed regrowth and with no vertical 3.5 metre clearance

For further information call the City of Wanneroo Community Safety and Emergency Management Team on 9405 5000 or visit [wanneroo.wa.gov.au/fireinformation](http://wanneroo.wa.gov.au/fireinformation)



**TO REPORT ALL FIRES  
CALL 000**



**APPLICATION TO VARY FIRE BREAK REQUIREMENTS**



Community Safety and Emergency Management  
City of Wanneroo  
Locked Bag 1  
Wanneroo WA 6946

To whom it may concern,

I would like to apply for a variation to the City of Wanneroo Fire Break Notice, my details are as follows:

Name \_\_\_\_\_

Property Address \_\_\_\_\_

\_\_\_\_\_

Postal Address (if different) \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_ Mobile Number \_\_\_\_\_

Reason for Variation request and proposed alternative fire mitigation measures  
(please explain how you propose to minimise the risk of a fire starting or spreading):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Below is a sketch of my property including the areas in which I seek the variation to the City of Wanneroo Fire Break Notice:

Applications must be received by the City of Wanneroo or an Authorised Officer by 18 October.

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**Document Status**

Report version	Rev No.	Purpose	Author	Reviewed and Approved for Issue	
				Name	Date
Draft Report	Rev A	For client review.	Brodie Mastrangelo (BPAD 45985, Level 1)	Zac Cockerill (BPAD 37803, Level 2)	18 May 2020
Final Report	Rev 0	Issued for use: to accompany subdivision application	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	20 May 2020
<b>Final Report</b>	<b>Rev 1</b>	<b>Issued for use: to address DPLH comments</b>	<b>Zac Cockerill (BPAD 37803, Level 2)</b>	<b>Zac Cockerill (BPAD 37803, Level 2)</b>	<b>27 May 2020</b>

