

# **Bushfire Management Plan**

## **For a proposed urban development at Village 8 at Ellenbrook**

**Prepared by York Gum Services  
April 2013**

### **1. Introduction**

This Bushfire Management Plan addresses the requirements for bushfire preparedness and bushfire damage mitigation for Village 8 at Ellenbrook WA.

The plan is prepared on behalf of Roberts Day (representing the developer) by Roger Underwood of York Gum Services.

The purposes of this plan are:

- to provide support for an application to the City of Swan for approval to subdivide and the amendment of a previously approved development plan; and
- To provide the basis for minimising bushfire damage on the site.

The plan sets out the principles and objectives which will underpin the development, and provides background information on the property and its climate and vegetation, and an analysis of the fire hazard, Bushfire Attack Level (BAL) and bushfire threat. The plan sets out the measures which are proposed to minimise both the occurrence of bushfires and the damage that bushfires might cause on the property and clarifies the responsibilities for plan implementation and review.

The plan includes commitments by the developer in respect to site design and fire management, but also recognises that future lot owners will need to accept a level of responsibility for their own preparedness and fire safety.

The developer recognises that some years could elapse before site development is complete. For this reason, an interim fire management regime has been adopted for undeveloped sections of the site.

An appendix is provided that summarises the compliance of the proposals in the plan with the design requirements and performance indicators set out in the Planning for Bushfire Protection Guidelines (Western Australian Planning Commission, 2010).

### **2. Aims**

The aims of this Bushfire Management Plan are to

- Reduce the incidence and the impact of bushfires on the urban residential area to be developed at Village 8, Ellenbrook;
- Provide a blueprint for measures to be adopted which will optimise bushfire preparedness and damage mitigation at the site; and
- Ensure compliance with the bushfire planning requirements of Australian Standards 3959 – 2009, ‘Planning for Bushfire Protection Guidelines’ and FESA.

### **3. Objectives and Principles**







The objectives of this plan are to set out the basis for bushfire management at the site, to define the values to be protected on the site and to provide guidelines on how these values are to be protected.

The developer has adopted the following principles to underpin bushfire management at this site:

- Current and future bushfire threats will be identified and, as far as possible, mitigated;
- Planning will be undertaken in the light of an understanding of bushfire threats to human, economic and environmental/conservation values;
- Development will be in compliance with a formal bushfire management plan that must satisfy, as far as is practical, the bushfire management requirements of the 'Planning for Bushfire Protection Guidelines' and FESA
- The developer will set out measures to be adopted to minimise the risk of bushfire damage at the site before development begins.

The developer recognises an obligation to alert potential lot buyers of the bushfire threat in this area and to provide lot buyers with copies of this management plan.

## **4. Description of the site and proposed development**

### **4.1 General**

Village 8 is part of the progressive urban development of the Ellenbrook area, north of Perth. Village 8 adjoins a developed residential area to the south ("The Vines") and cleared agricultural land to the north and east. It is bounded to the west and north by an area of bushland known as the Lexia Wetland.

The Lexia Wetland is managed for conservation and vested with the Department of Environment and Conservation (DEC).

There will be two cells of development within Village 8, separated by Public Open Space (POS) areas. POS separates Village 8 from The Vines to the south. POS will be vested with the City of Swan.

The natural and topographical characteristics of Village 8 are shown in Figure 1.

### **4.2 Climate**

The climate of the area is Mediterranean, with hot, dry summers and cool wet winters. Annual rainfall is approximately 750 mm, the bulk of which falls between April and October.

Summer winds tend to be from the east in the morning and from the southwest in the afternoon. Occasional strong northerly winds will accompany the movement of a low pressure trough.

Thunderstorms occur most summers, often generating lightning strikes plus occasional torrential rain.

### **4.3 Topography**

The area is generally flat. It is interspersed by narrow strips of vegetation that effectively intervene between development cells. These strips follow the lower-lying drainage lines, and will eventually be parkland cleared (i.e. the mature trees retained, but all understory cleared and replaced by irrigated/mown grass).

#### **4.4 Bushfire fuels**

The entire proposed residential area (lots on which houses will be built) has been cleared down to bare earth, or is proposed to be fully cleared before houses are built, so will contain no bushfire fuels at the time development commences. No lots will carry retained bushland.

The adjacent bushland to the west and north (the Lexia Wetlands) carries Banksia, marri and jarrah trees to a height of about 15 metres, and an understory of shrubs, interspersed with wetlands with paperbark thickets. All of this bushland accumulates bushfire fuels in the absence of fire, and is highly flammable when dry. Flammability increases with time since last fire, and whilst it will not generally carry a hot fire in the first 2-3 years after a fire, by the time 6-8 years has elapsed, fires will be intense and difficult to control. Bushland containing paperbark trees is notorious for generating burning embers that are carried downwind of a fire.

To the east of the property is the reserve for the Midland Junction to Walkaway Railway line. This carries low grassy vegetation and weeds plus occasional native trees, and will be flammable when dry.

There is an open, part-cleared area adjoining the south-east corner of the property. This area currently carries grass, weeds and occasional trees. It is planned to be developed into housing, and will ultimately carry no bushland fuels.

The narrow strips of vegetation that will be retained along the drainage lines that intervene between development cells and designated as POS will be parkland cleared and grassed and will carry insignificant bushfire fuels. The POS intervening between Village 8 and The Vines will be retained as bushland, and will carry bushfire fuels except for a narrow strip which will be cleared.

The development proposal identifies a number of other small areas of POS. These will be grassed and irrigated and used for community recreation and will not retain bushland.

An area of bushland within the western cell is designated as a future site for a Primary School. This area will be fully cleared and landscaped and will not carry bushfire fuels.

All internal and access roads will be planted with street trees at about a 10 metre interval. These will generate a small volume of bushfire fuels along road verges, the responsibility for removal being shared between the City of Swan and lot owners.

#### **4.5 Land use**

The property is designated for urban development in its entirety.

#### **4.6 Assets**

At the time of preparation of this management plan the area has no human or economic assets. These will be progressively developed on the site over time, and eventually will include: human lives, houses and other buildings and their contents, motor vehicles, and community and social infrastructure.

#### **4.7 Access**

Current access is via sealed roads constructed within adjoining residential areas, with multiple connections.

#### **4.8 Water supply**

The area currently has no water supply, other than seasonal flow in drainage lines. Following development all lots will have reticulated pressurised water supply.

#### **4.9 The proposed development**

The proposed development will comprise two distinct development cells in the east and west separated by the Sawpit Gully Reserve, which is a tributary of Ellen Brook.

No native vegetation (excluding retained mature trees) is to be retained on any lot. This will be replaced by houses and gardens.

All lots will be serviced by sealed roads, underground power and reticulated water supply.

Lots will be conventionally laid out with access direct to internal roads.

### **5. Fire Problem**

#### **5.1 Bush fire history**

Before development, bushland in the Ellenbrook region is known to have experienced many fires, either wildfires or fuel reduction burns over the last century.

#### **5.2 Bush fire risk**

The risk of a bushfire starting on the bulk of the property once development is completed will be low, as bushland will have been converted to houses and irrigated gardens. There will be a temporary risk associated with weed regrowth on undeveloped blocks during the development phase.

There will be a risk of bushfires starting in the strip of bushland POS separating Village 8 from the Vines, but as this strip is narrow, the risk of a large, high intensity bushfire emanating from this vegetation is low.

There will be an extreme risk of bushfires starting on bushland to the west and north of Village 8. Fires in this area could be driven into the subdivision by strong north-westerly or westerly winds. This risk will be closely related to the management of the bushland, and whether or not regular fuel reduction burning is carried out by the DEC.

#### **5.3 Bush fire hazard**

The bushfire hazard on the proposed lots will be 'Low' as bushland on the site will have been totally cleared. The adjoining bushland areas have been mapped as 'Moderate' and 'Extreme' by the City of Swan, as shown in Figure 2.

Retained POS within Village 8 will be grassed and irrigated, and so will not represent a bushfire hazard.

The Bushfire hazard in the narrow strip of bushland separating Village 8 and The Vines is rated as 'Moderate'.

The Railway Reserve along the eastern boundary is basically grassland, with occasional small trees and is categorised as a Low bushfire threat.

## **5.4 Bushfire threat**

The bushfire threat is extreme on all lots in Village 8 that face and adjoin the Lexia Wetlands conservation reserve. These lots are potentially threatened by running fire from the west, north-west and north, generating radiant heat and burning embers.

A strip of bushland will be cleared adjacent to the southern boundary, effectively reducing that portion to a low threat. Retained bushland behind this cleared area is identified as a 'Moderate' hazard.

In all other lots there is a low threat of lots being impacted by running fire or radiant heat, but a potential threat of being impacted by burning embers from a fire burning in the Lexia Wetlands under the influence of a northerly wind.

## **5.5 Assessment of Bushfire Attack Level (BAL)**

All lots within 100 metres of a bush fire hazard are assessed according to Table 2.4.3 'Determination of Bushfire Attack Level (BAL) – FDI 80 (1090K)' of AS 3959-2009.

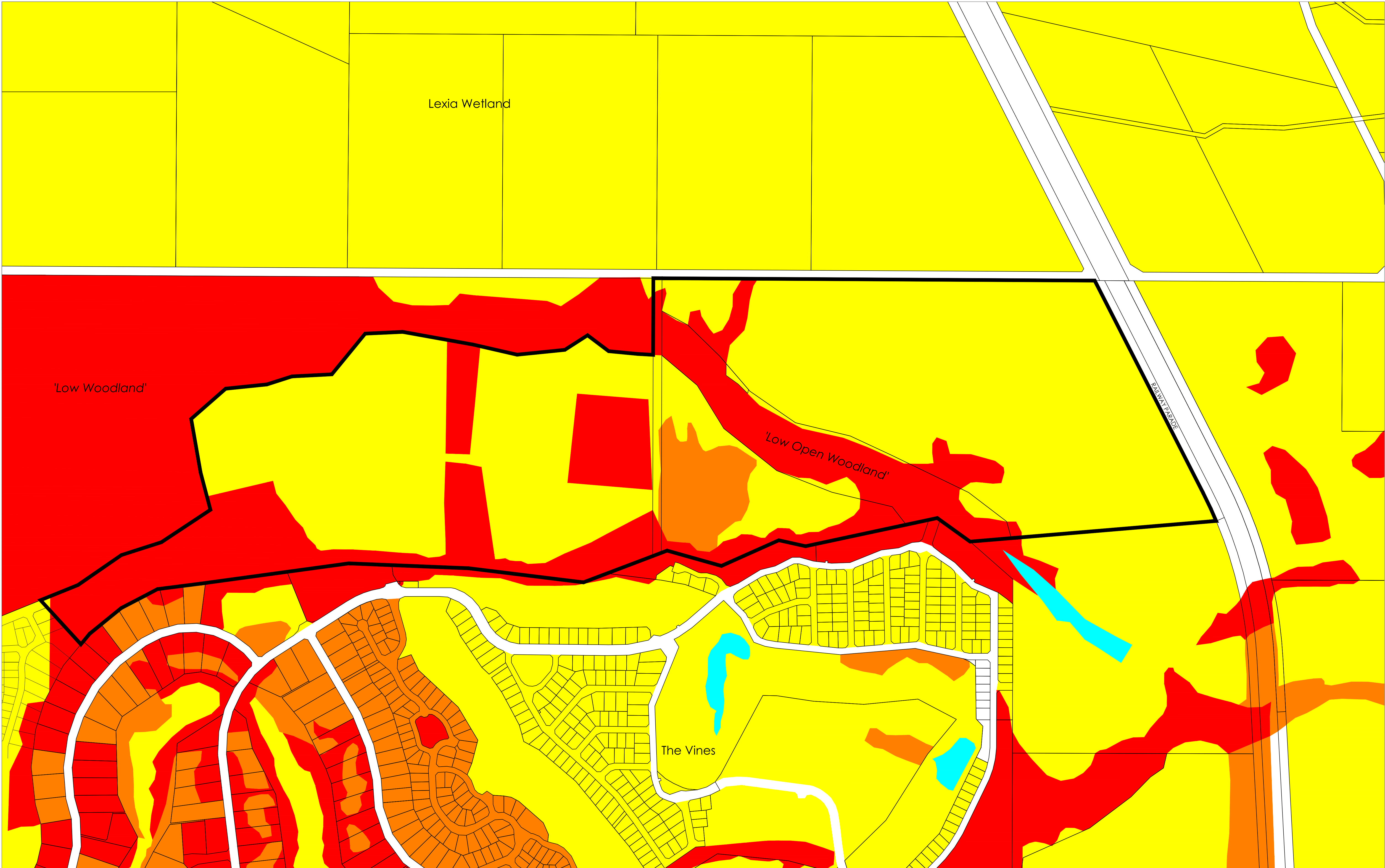
### **Low Woodland**

- Bushland to the west and north of Village 8 is low woodland (Category B, Type 5);
- The lots are roughly level with the bushland and are assessed as Downslope > 0 to 5 degrees as per Table 2.4.3 of AS3959-2009;
- To achieve a BAL of 19, dwellings on lots directly adjacent to low woodland will need to be setback at least 25 metres from the edge of bush fire hazard in accordance with the 'Planning for Bush Fire Protection Guidelines';
- To achieve a BAL of 12.5, dwellings on lots directly adjacent to low woodland will need to be setback at least 35 metres from the edge of the bushfire hazard in accordance with the 'Planning Bush Fire Protection Guidelines'.

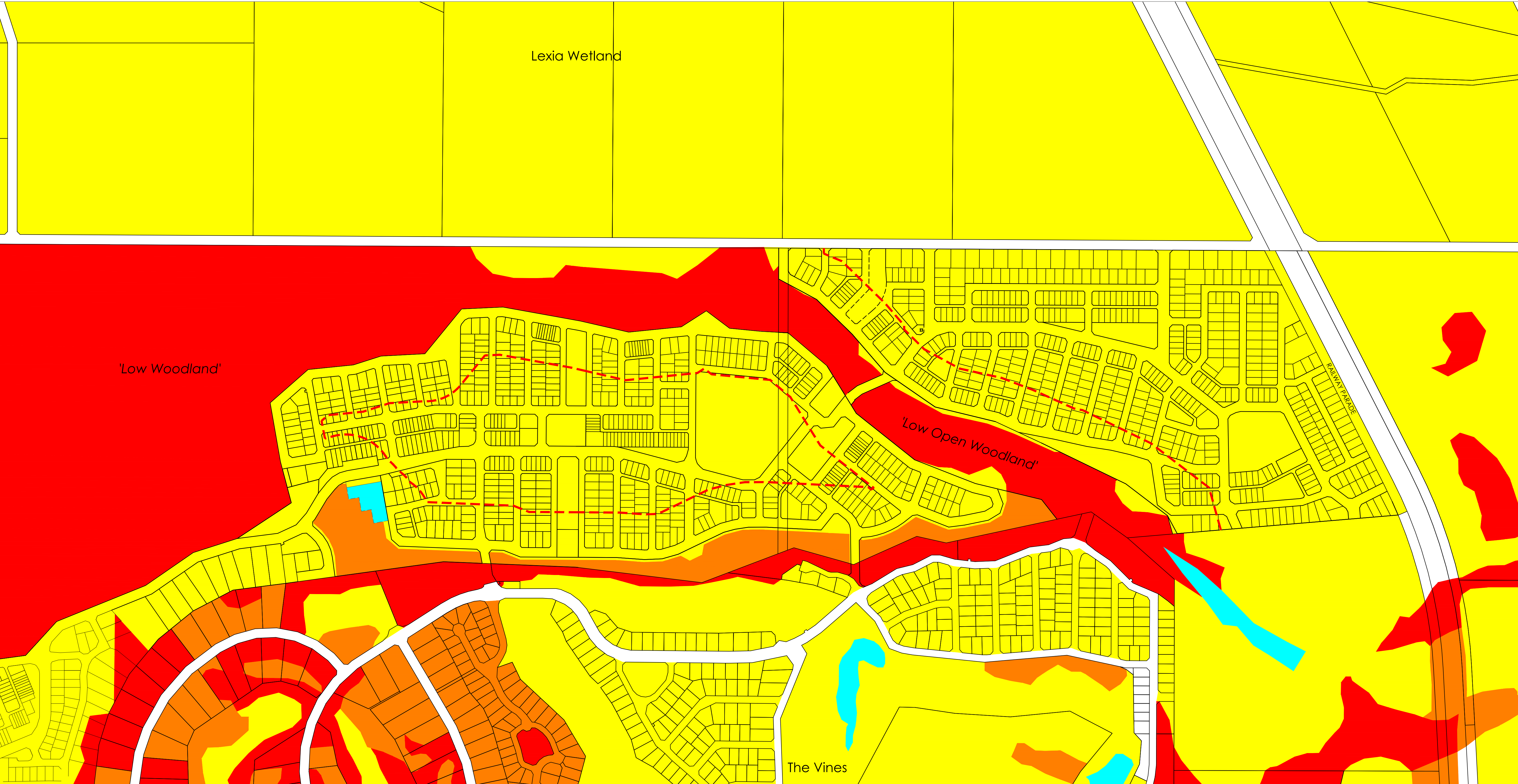
### **Low, Open Woodland**

- Bushland on the railway reserve adjacent to the eastern boundary of the railway reserve and bushland in Sawpit Gulley is identified as low, open woodland (Category B, Type 7);
- The lots are roughly level with the bushland and are assessed as Downslope > 0 to 5 degrees as per Table 2.4.3 of AS3959-2009;
- The lots are roughly level with the bushland;
- To achieve a BAL of 19 dwellings on lots directly adjacent to low woodland will need to be setback at least 25 metres from the edge of the bush fire hazard in accordance with the 'Planning for Bush Fire Protection Guidelines';
- To achieve a BAL 12.5, dwellings on lots directly adjacent to low open woodland will need to be setback at least 35 metres from the edge of the bushfire hazard in accordance with the 'Planning Bush Fire Protection Guidelines'.

All other lots within the 100 metre setback from 'low woodland' and 'open woodland' are assessed as having a BAL of 12.5.







BUSHFIRE RISK MAPPING (City of Swan, 2010)

Subject Land

- Extreme
- Moderate
- Low
- Water

--- Designated Bushfire prone area (100m setback from extreme)



DISCLAIMER: ISSUED FOR DESIGN INTENT ONLY. ALL AREAS AND DIMENSIONS ARE SUBJECT TO DETAIL DESIGN AND SURVEY.



Lots adjoining the open farm paddocks to the north of the property (facing Maralla Road) will not be subject to a fire coming out of bushland, and as such have no BAL. In the longer term this farmland is proposed for urban development.

Refer to Figure 4, which illustrates the lots which are the subject of a BAL and Building Exclusion Zones.

## **5.6 Fire fighting resources in the area**

The area is well served for fire detection, as it is overlooked by Fire Lookout Towers operated by the DEC and has access to fire spotting aircraft in the hills to the east. The high population in the area should also ensure fires are rapidly detected and reported.

There is a FESA Fire Station at Ellenbrook on Gnangara Road, approximately 8 minutes driving time from the remotest section of the site.

DEC firefighters are located at Wanneroo, 25 minutes away to the west, and they have heavy equipment and trained operators on standby for fighting fires in bushland. There are volunteer bushfire brigades under the auspices of the City of Swan located to the east.

Water bombing fixed wing aircraft and helicopters are located at Jandakot airfield and could be at the site within 20 minutes of a call-out for a fire at or near the site.

## **5.6 Summary of bush fire potential issues**

The residential lots to be developed on this site will contain values potentially threatened by a bushfire approaching from the north, north-west, north-east, or east. Fires in long unburnt-bushland in this region can be fierce and throw spotfires long distances. The bulk of the developed suburb will not sustain a running fire; however houses and other assets will be vulnerable to embers generated by an intense fire on a windy day.

The most bushfire vulnerable lots are those along the northern and western edge facing the Lexia Wetlands.

Rapid fire detection and availability of firefighters within minutes of a fire report will allow most fires to be dealt with efficiently, but the principal threat remains: a high intensity fire on a bad day sweeping in from the north.

# **6. Bushfire Mitigation Strategies**

## **6.1 Interim bushfire management**

The developer acknowledges that some time might lapse before all of the lots are sold and house construction commences. Developer is responsible complying with all aspects of the City of Swan annual firebreak notice including the installation of firebreaks, maintenance of long dry grasses under 50mm, weed control and management bush fuels on unsold or balance lots during the period outlined in the City of Swan firebreak notice and literature published and advertised annually.

## **6.2 Protection of human lives and assets**

The following measures will be adopted to protect, as far as is possible, the lives of residents and their assets from bushfire damage in this development:



### **6.2.1 BAL 19**

For lots that adjoin bushland and which are rated as having a BAL of 19, notification in the form of a section 70A notification, pursuant to the Transfer of Land Act 1893 (as amended) is to be placed on the Certificates of Title.

The notification will advise of the existence of an approved Detailed Area Plan and that development of the lot will be required to be in accordance with the Detailed Area Plan. The Detailed Area Plan for these lots will refer to this Bushfire Management Plan and will require that houses constructed on these lots must comply with Section 3 and 6 of Australian Standards AS 3959-2009 (“Construction of Houses in Bushfire-prone Areas”).

In addition to Section 3 and 6 of AS 3959-2009 the following requirements will apply to these lots:

- Rotary roof ventilators to be fitted with metal gauze spark screens with a maximum aperture size of 1.8 mm.
- Roof-mounted evaporative air conditioners to have the openings to the cooling unit fitted with metal gauze spark guards.

The property owner is responsible for complying with bushfire hazard reduction requirements in accordance with all aspects of the City of Swan annual firebreak notice during the period outlined within the notice and literature published annually, this is typically limited to maintaining long dry grass under 50mm for the lot sizes created by this development.

Figure 4 shows the lots to which these requirements will apply.

### **6.2.2 BAL 12.5**

For lots which are rated as having a BAL of 12.5, notification in the form of a section 70A notification, pursuant to the Transfer of Land Act 1893 (as amended) is to be placed on the Certificates of Title.

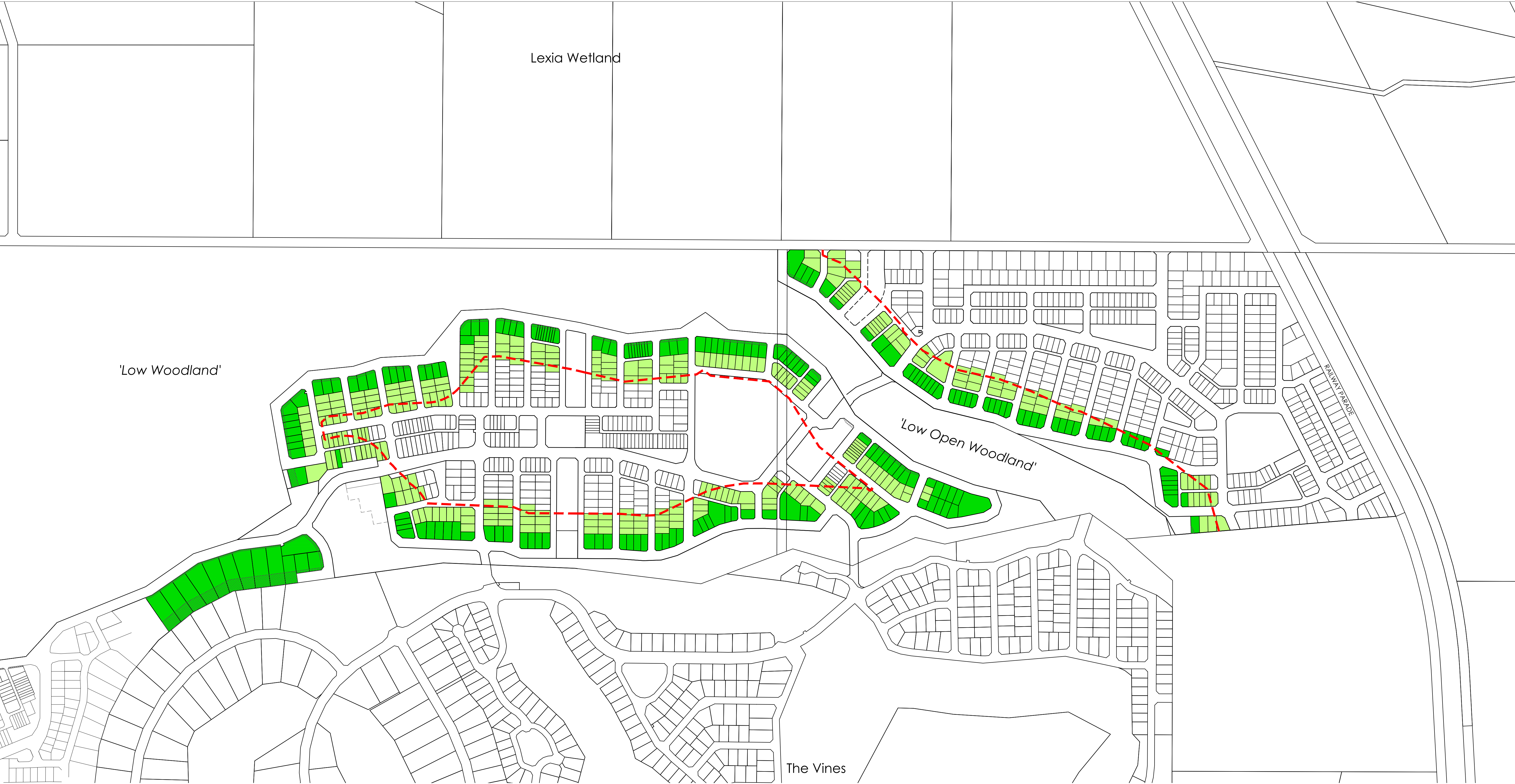
The notification will advise of the existence of an approved Detailed Area Plan and that development of the lot will be required to be in accordance with the Detailed Area Plan. The Detailed Area Plan for these lots will refer to this Bushfire Management Plan and will require that houses constructed on these lots must comply with Section 3 and 5 of Australian Standards AS 3959-2009 (“Construction of Houses in Bushfire-prone Areas”).

In addition to Section 3 and 5 of AS 3959-2009 the following requirements will apply to these lots:

- Rotary roof ventilators to be fitted with metal gauze spark screens with a maximum aperture size of 1.8 mm.
- Roof-mounted evaporative air conditioners to have the openings to the cooling unit fitted with metal gauze spark guards.

The property owner is responsible for complying with bushfire hazard reduction requirements in accordance with all aspects of the City of Swan annual firebreak notice during the period outlined within the notice and literature published annually, this is typically limited to maintaining long dry grass under 50mm for the lot sizes created by this development.





- LEGEND
- Bushfire Attack Level 19 (see Section 6.2.1 of BMP)
  - Bushfire Attack Level 12.5 (see Section 6.2.2 of BMP)
  - Building Exclusion Zone
  - Designated Bushfire prone area (100m setback to proposed Extreme Fire Zone)



DISCLAIMER: ISSUED FOR DESIGN  
INTENT ONLY. ALL AREAS AND  
DIMENSIONS ARE SUBJECT TO  
DETAIL DESIGN AND SURVEY.



Figure 4 shows the lots to which these requirements will apply.

### **6.2.3 All other lots**

In a covering letter accompanying this Management Plan, the developer will advise all other lot owners (i.e. those lots not covered in 6.2.1 and 6.2.2 above) for lots within the western cell of the development, that houses on these lots should have enclosed eaves and no gaps between rafters; that rotary roof ventilators be fitted with metal gauze spark screens with a minimum aperture size of 1.8 mm; and roof-mounted evaporative air conditioners have the openings to the cooling unit fitted with metal gauze spark guards.

Figure 3 shows the lots to which these requirements will apply.

### **6.2.4**

The developer will provide a copy of this Bushfire Management Plan and a copy of the document “Homeowners Bushfire Survival Manual Guidelines” to each initial lot purchaser.

## **6.3 Hazard management**

The developer will ensure the lots on which dwellings and the Primary School are clear of bushland vegetation at the commencement of the development and will maintain low fuel on vacant lots during the process of development.

Areas of POS will be parkland cleared, i.e. retain only large mature trees and replace understory with irrigated, mown grass.

The developer will alert the City of Swan of the need to maintain, as far as is possible, low bushfire fuels within the strip of vegetation separating Village 8 and The Vines. This could be accomplished by slashing or otherwise treating weeds or shrub regrowth from time to time.

## **6.4 Bush fire risk management**

The developer will advise lot purchasers of the extreme risk of fires starting in bushland adjacent to the property, and of the necessity to be alert for bushfires and to immediately advise the authorities of a bushfire.

The developer will recommend to lot owners that they establish a “Bushfire Ready Group” or Homeowners Association, or join an existing association, to encourage fire watching and reporting, and discuss fuels management on adjoining bushland with DEC and the City of Swan. The developer will advise lot owners that they should seek to encourage DEC and the City of Swan to undertake fuel reduction burning under safe conditions in bushland adjoining the property, and set up mechanisms for cooperation across the boundaries of different tenures in the area.

## **6.5 Future development**

Future development impacting on this property will be the completion of urban development in the Ellenbrook region to the south-west, and future residential development north of Moralla Road and on the property south-east of Village 8. All of these developments will reduce potential bushfire problems on the site.

## **6.6 Access/egress**



Every lot will be serviced by a sealed road. There will be multiple points of access and egress.

There will be a sealed road between lot boundaries and bushland where the subdivision adjoins the Lexia Wetlands, the POS and the railway reserve.

### **6.7 Water supply**

All lots will be supplied with pressurised reticulated water supply.

The developer will install fire hydrants 200 metres apart on all roads, the hydrants to meet the specifications of FESA.

Open grassland designated as POS will be irrigated by sprinklers.

### **6.8 Power supply**

All lots will be supplied with electricity from the grid, via underground powerlines.

### **6.9 Public education and community awareness**

The developer will provide all initial lot buyers with a copy of this Bushfire Management Plan, plus a copy of the booklet A Homeowner's Guide to Bushfire Safety and bushfire literature from the City of Swan.

The developer will also encourage lot buyers to form (or join) a Bushfire Ready Action Group or Residents Association, that will work to raise bushfire awareness, promote rapid reporting of bushfires and sensible action in the event of a fire. Such a group could also provide a focal point for liaison with DEC and the City of Swan in relation to fuel reduction burning in bushland adjacent to the residential area.

### **6.9 Fire safer areas**

There are no designated Community Fire Refuge Area in the City of Swan. However, at the time of an emergency, the relevant Hazard Management Agency or Controlling Agency (Department of Fire and Emergency Services, Department of Environment and Conservation or Local Government) will select an evacuation centre and if necessary animal location centre/area a sufficient distance from the Bushfire and related hazards to ensure the safety of residents, the community and fire fighters.

At this stage DFES has not provided a definition, criteria or guidance for the development of safer areas and under what circumstances these areas will be used (e.g. information to be signposted or outlined in a Fire Management Plan advising if the area is endorsed to be used at anytime during a bushfire or only at the direction of the HMA via public notices issued by the DFES during a bushfire incident). Property owners and members of the community are advised to be aware of fire danger periods and become familiar with emergency warning notification systems used by the DFES to notify communities of bushfire threat status and advice. The safest place to be during a bushfire is away from it, therefore the preferred option is for residents to designate a destination that is not in a bushfire-prone area and will be safe to travel to before a bushfire attack or in accordance with advice issued by DFES during a bushfire.

### **6.10 Assessment of fire management strategies**

The developer recommends to the City of Swan that they employ a bushfire specialist to audit compliance with this bushfire management plan and report back to the City on any issues of



non-compliance or any unforeseen bushfire problems that might have arisen, at a time to be decided by Council.

### **6.11 Implementation of fire management plan**

Responsibility for implementation of this plan will be:

*The developer:* for all commitments set out in Section 6 of this management plan;

*The lot buyers:* for construction of houses meeting the specifications set out in this plan, for compliance with the requirements of the City of Swan, and become familiar with strategies to ensure properties area managed to reduce bushfire hazards as well as how to prepare and act during a bushfire incident within the area. Information is available from the Department of Fire and Emergency Services and the City of Swan websites, literature or by calling the main phone number; and

*The City of Swan:* approval and monitoring the implementation of this Management Plan and management of POS.

## **7. Disclaimer**

The Consultant preparing this Bushfire Management Plan takes no responsibility for the impacts of a future bushfire on any values at the Villag 8 residential development. He has done his best in this strategy to alert residents to the threat of bushfires, and to suggest measures to minimise these threats and potential bushfire damage, but there may occur an unusual combination of events or human actions or lack of actions which could not reasonably have been expected at the time of preparing the Plan. The Consultant takes no responsibility for the standard of bushfire preparedness or damage mitigation undertaken by lot owners in the future.

## **Appendix: Appraisal of Compliance of Fire Management Plan with WAPC/FESA Planning Elements**

### **Element 1: Location**

*Does the development proposal comply with the Performance Criterion by applying Acceptable Solution A1.1?*

Yes. The bushfire hazard on the property will largely disappear following development or will be manageable at the perimeter. The BAL for dwellings adjacent to bushland has been determined and housing construction standards prescribed.

### **Element 2: Vehicular Access**

*Does the development proposal comply with the Performance Criteria by applying Acceptable Solutions A2.1 to A2.1 inclusive?*

Yes. There are multiple access/egress points and all lots will be served by sealed roads a minimum of 20 meters in width.



There are no cul de sacs and no battleaxe lots. No gates or signage will be required as emergency ingress will occur on fully constructed residential roads.

### **Element 3: Water**

*Does the development proposal comply with the Performance Criteria by applying Acceptable Solutions A3.1?*

Yes. All lots will be serviced by reticulated pressurised mains water supply and hydrants will be installed to meet FESA requirements.

### **Element 5: Siting of Development**

*Does the development proposal comply with the Performance Criteria by applying Acceptable Solutions A4.1 to E 4.4 inclusive?*

Yes. Dwellings will be constructed according to the relevant sections of ASA 3959 in the places where this is determined as necessary through determination of BAL. Building protection and Hazard Separation Zones are not required as all lots will be fully cleared before development commences.

### **Element 6: Design of Development**

*Does the development proposal comply with the Performance Criteria by applying Acceptable Solutions A5.1 and A5.2?*

Yes. The development complies fully with the acceptable solutions appropriate to meet the requirements of the Performance Criteria for each Element.