BUSHFIRE MANAGEMENT PLAN

SUBDIVISION STAGES 6-8
PRECINCT J - THE AVENUE

Project Number EP14-017(09)

Prepared for Peet Oakford Land Syndicate Limited
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Document Control

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1	March 2016	Andreas Biddiscombe	ADB	Kirsten Knox	KK
				Rohan Carboon	RC
	Report for client review and comment.				
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Executive Summary

Peet Oakford Land Syndicate Limited (Peet Limited) propose to subdivide part of Lot 9002 on Plan 406077 (formerly Lot 5071 Hopkinson Road) for residential land uses. This area is herein referred to as “the site” and its location is shown in **Figure 1**. The site is approximately 12.8 hectares and is located in the locality of Hilbert, within the City of Armadale. The site is zoned ‘Suburban’ under the *Wungong Urban Water Redevelopment Scheme* 2007, and therefore the City of Armadale Town Planning Scheme No. 4 and the Metropolitan Region Scheme (MRS) are not applicable.

This Bushfire Management Plan (BMP) has been prepared to support the proposed residential subdivision of the site, which has been prepared in accordance the *Precinct J Structure Plan* provided in **Appendix A**.

This BMP includes an assessment of bushfire hazard levels in the vicinity of the site (within 100 metres) to ensure that the threat posed by the identified bushfire hazard can be mitigated to acceptable levels appropriate with a residential development, in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015), the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015) and *Australian Standard 3959-2009 Construction of buildings in bushfire prone areas* (AS 3959) (Standards Australia 2009).

The vast majority of the site and surrounding area has historically been cleared of remnant vegetation, with existing vegetation characterised by weed-dominated grasslands with scattered *Melaleuca preissiana* paddock trees, in addition to minor areas of windrow planting. The majority of the 100m assessment area is found within landholdings that have been developed for residential purposes, or are in Peet Limited’s ownership. As part of implementing residential development, the site will be cleared of all vegetation. Areas of grassland and scattered trees within 100m of the site that are located within Lot 9002 will be managed to a minimal fuel condition as low threat vegetation in accordance with clause 2.2.3.2(f) of AS 3959, representing a ‘Low’ bushfire hazard. A small portion of Lot 5072 Hopkinson Road (Lot 5072), situated approximately 80 west of the site, contains grassland vegetation which is not proposed to be managed in the post-development scenario and as such represents a 'Moderate’ bushfire hazard.

An indicative Bushfire Attack Level (BAL) assessment was undertaken as part of the BMP based on the proposed post-development scenario, which indicates that all future lots within the site will be subject to BAL-LOW. This will be confirmed/certified to support the building licence process, through the completion of the BAL certification template provided in **Appendix D**.

The outcomes of this BMP indicate that the bushfire protection performance criteria outlined within the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al*. 2015) can be achieved as part of the proposed development. Bushfire risk will be managed through the following:

- Siting of development to ensure buildings are not exposed to an unacceptable level of radiant flux, without appropriate mitigation measures. A minimum 50m Hazard Separation Zone (HSZ) between dwellings and post-development classified vegetation will be implemented as part of the proposed subdivision of the site, and in most areas surrounding the site this will be up to 100 m wide. A HSZ will be implemented through various management measures to maintain vegetation to a minimal fuel condition and low threat condition in accordance with exclusion 2.2.3.2(f) of AS 3959. This includes:

  - The slashing of grassland areas within Peet Limited's landholding as required to ensure a nominal grass height of 100 mm is not exceeded and will be implemented prior to the commencement of the fire season (November to May annually).
  - The pruning, trimming and general maintenance of *Melaleuca preissiana* trees, which will include the management of any understorey grasses and the collection of fallen plant material (such as branches, bark and leaves). This will be implemented prior to the commencement of the fire season (November to May annually) as required.
- An interconnected public road network will be provided within the development to facilitate the movement of people and emergency appliances. In addition, an interim emergency access way is proposed to ensure two external access options are available at all times until subdivision in the broader Precinct J area progresses.
- Providing a reticulated water supply and fire hydrants (to Water Corporation standards) to ensure emergency services are able to respond to a bushfire event.

Based on the bushfire hazard assessment contained within this BMP, the following key recommendations should be considered for the implementation of the proposed subdivision:

- By implementing this BMP, the bushfire risk to development within the site can be mitigated through the provision of an appropriate HSZ maintained to a minimal fuel condition until subdivision in the broader Precinct J area is progressed, without the need for increased construction standards in accordance with AS 3959.
- The Bushfire Prone Areas determined for the site, as shown in **Figure 11**, could be used by the City of Armadale to update the state-wide *Maps of Bush Fire Prone Areas* (OBRM 2015).
- The indicative BAL assessment undertaken as part of this BMP indicates that all future lots within the sites are rated as BAL-LOW and will therefore not be exposed to an unacceptable level of radiant heat flux.
- **Appendix D** should be completed prior to the building licence stage to confirm/certify the BAL ratings assigned for all future lots within the site, based on the findings of the indicative BAL assessment undertaken as part of this BMP.

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1 Introduction

1.1 Background

This Bushfire Management Plan (BMP) has been prepared on behalf of Peet Oakford Land Syndicate Limited (Peet Limited) to support the proposed subdivision of part Lot 9002 on Plan 406077 (formerly Lot 5071 Hopkinson Road) in the locality of Hilbert. The portion of Lot 9002 proposed for subdivision is herein referred to as "the site" and is located within the north-western portion of the endorsed *Precinct J Structure Plan* (**Appendix A**), and the landholding comprising Precinct J is owned by Peet Limited.

The site is approximately 12.8 hectares (ha) and is located approximately 27 km south-east of the Perth CBD, within the City of Armadale (CoA), as shown in **Figure 1** and **Figure 2**. The site is situated within the *Wungong Urban Water Redevelopment Scheme 2007* (WUWRS) and therefore the CoA Town Planning Scheme (TPS) No. 4 and the Metropolitan Region Scheme (MRS) are not applicable to the site. The proposed subdivision design of the site aligns with the endorsed *Precinct J Structure Plan*, which was prepared in accordance with the *Wungong Urban Water Masterplan* (WUWMP).

The site has been identified as a "Bushfire Prone Area" within the state-wide *Map of Bushfire Prone Areas*, which has been prepared by the Office of Bushfire Risk Management (OBRM) on behalf of the Fire and Emergency Services Commissioner (FES Commissioner), as shown in **Figure 3**. *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) is administered under the *Planning and Development Act 2005* and sets out the requirement for further assessment of bushfire hazard implications on development proposed within areas identified as bushfire prone by the FES Commissioner. The *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al*. 2015) have been prepared to assist in the implementation of SPP 3.7. The bushfire management framework, as generally detailed within SPP 3.7 and the *Guidelines for Planning in Bushfire Prone Areas* has been outlined in **Plate 1**.

The *Planning and Development Act 2005* does not apply within the WUWRS, with planning and development decisions administered by the Metropolitan Redevelopment Authority (MRA) through the *Metropolitan Redevelopment Authority Act 2011*. As such, SPP 3.7 and its policy measures are not applicable to areas within the WUWRS, including the site. Notwithstanding this, Peet Limited have progressed with the preparation of this BMP in order to understand the bushfire hazards within and immediately surrounding the site, and ensure that the threat posed by any identified bushfire hazard can be mitigated within the site to acceptable levels appropriate for a residential development.

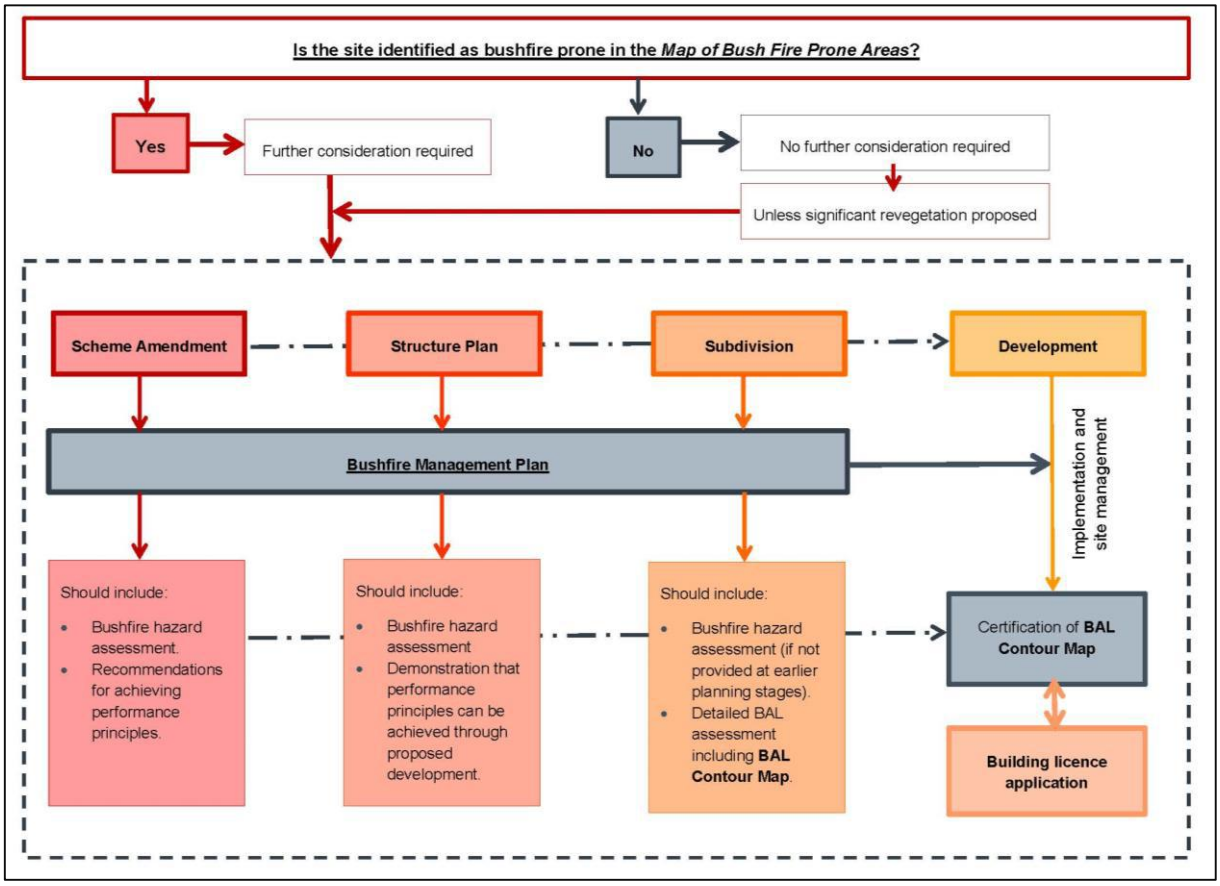

Plate 1: Bushfire planning and assessment process, based on SPP 3.7 (WAPC 2015) and the Guidelines for Planning in Bushfire Prone Areas (WAPC et al. 2015)

1.2 Accreditation

This BMP has been prepared jointly by Emerge Associates and Bushfire Safety Consulting. Bushfire Safety Consulting is owned and operated by Rohan Carboon, an experienced bushfire consultant to the urban planning industry. Rohan has provided technical input and review for the bushfire hazard assessment included within this BMP. Rohan has undergraduate degrees in Environmental Management and postgraduate qualifications in Bushfire Protection and has been providing bushfire risk and hazard assessment and mitigation advice to the urban planning and development industry for more than six years. He first worked professionally in community bushfire safety education in 1999 and has been involved in land management including bushfire suppression since 1993.

Bushfire Safety Consulting is a Corporate Bronze Member of the Fire Protection Association of Australia. Rohan is in the process of obtaining BPAD Level 1 BAL Assessor accreditation under the Fire Protection Association of Australia's new Western Australian accreditation scheme and will also progress to Level 2 and Level 3 accreditation over time as this system is developed.

1.3 Aim of this document

The aim of this BMP is to assess bushfire hazard levels in the vicinity of the site (within 100m) and to ensure the threat posed by any identified bushfire hazard can be mitigated within the site to acceptable levels appropriate for a residential development. In doing so, this BMP aims to minimise the potential impact of bushfires on development within the site, and reduce the threat to life, property and the environment. The bushfire risk will be mitigated to acceptable levels as outlined in the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015).

This BMP is expected to inform future BAL ratings and/or bushfire assessment/s that will be prepared and implemented as part of the future development approval processes and/or building licence.

1.4 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a bushfire management plan.

1.4.1 *Fire and Emergency Services Act 1998*

Areas within Western Australia are designated as bushfire prone by the Fire and Emergency Services (FES) Commissioner through the *Map of Bush Fire Prone Areas* (OBRM 2015). The *Fire and Emergency Services Act 1998* (FES Act) enables the statutory delineation of Bushfire Prone Areas, which are areas within 100 m of classified bushfire prone vegetation. In turn, Bushfire Prone Areas enable the implementation of the regulations and guidelines outlined below. The *Map of Bush Fire Prone Areas* as currently mapped for the site is shown in **Figure 3**.

1.4.2 *Bush Fires Act 1954*

The *Bush Fires Act 1954* (Bush Fires Act) sets out provisions to prevent, control and extinguish bushfire and to reduce the dangers resulting from bushfires, amongst other purposes. The Bush Fires Act addresses various matters including prohibited burning times, enabling Local Government to require landowners and/or occupiers to plough or clear fire breaks to control and extinguish bushfires and to establish and maintain bushfire brigades.

Pursuant to the Bush Fires Act, the City of Armadale publishes annual firebreak advice that can be accessed from: http://www.armadale.wa.gov.au/fire-and-emergency-services.

1.4.3 Planning and Development (Local Planning Scheme Amendment) Regulations 2015

The *Planning and Development (Local Planning Scheme Amendment) Regulations 2015* (WAPC 2015a) (the Regulations) include deemed provisions which reference the FES Commissioner's power to designate bushfire prone areas, and provide a mechanism to apply *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015) and the related assessment requirements through planning and development decisions.

1.4.4 Building Regulations 2012

All building work in Western Australia is required to comply with the requirements of the Building Code of Australia (BCA). The Building Regulations 2012 recognise that properties that are located within designated bushfire prone areas (within the *Map of Bush Fire Prone Areas* (OBRM 2015)) may require additional assessment for bushfire risk and for construction of dwellings to be in accordance with

Australian Standard (AS) 3959-2009 Construction of buildings in bushfire prone areas (Standards Australia 2009).

1.4.5 State Planning Policy 3.7 Planning in Bushfire Prone Areas

The Department of Planning and WAPC have released *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (December 2015). SPP 3.7 aims to:

- Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.
- Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.
- Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.
- Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values and landscape amenity, with consideration of the potential impacts of climate change.

SPP 3.7 makes provision for further detailed bushfire hazard assessment to be undertaken for areas identified as bushfire prone areas within the state *Map of Bush Fire Prone Areas*. It also outlines the information that is required to support the various stages of planning and the potential for bushfire conditions to be applied.

1.4.6 Guidelines for Planning in Bushfire Prone Areas (WAPC et al. 2015)

The *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015) ("the Guidelines") have been prepared by the WAPC and DFES, to assist in the interpretation of SPP 3.7 and provide advice on planning, designing or assessing a proposal within a bushfire prone area. The Guidelines are the predominant document to be used by decision-making authorities and referral agencies when considering the appropriateness of strategic planning proposals, subdivisions, and development applications.

The guidelines address important bushfire risk management and planning issues and outline performance criteria and acceptable solutions to minimise the risk of bushfires in new subdivisions and developments. The guidelines also address management issues including location, siting and design of the development (and consideration of Bushfire Attack Level (BAL) ratings), vehicular access and water requirements.

1.4.7 Australian Standard AS 3959 – 2009 Construction of buildings in bushfire prone areas

The Australian Standard *AS 3959-2009 Construction of buildings in bushfire prone areas* (AS 3959) specifies requirements for the construction of buildings in bushfire prone areas in order to improve their resistance to bushfire attack from embers, radiant heat, flame contact, and combinations of these attack forms.

The objective of AS 3959 is to provide detailed methods of assessing bushfire attack and to prescribe specific construction details for buildings to reduce the risk of ignition from a bushfire, appropriate to the:

- Potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire.
- Intensity of the bushfire attack on the building

2 Proposal and Objectives

Community bushfire safety is a shared responsibility between state and local governments, fire agencies, communities and individuals. The planning and building controls outlined in this BMP, when implemented, will reduce the risk to people and property within the site. How future residents interpret the risk, prepare and maintain their properties and buildings and what decisions and actions they take (i.e. evacuate early or stay and defend or other) will greatly influence the consequences of any bushfire that occurs in the local area in proximity to the site.

The proposed subdivision, as shown in **Figure 4** (and attached in **Appendix A**), sets out the proposed layout of residential development within the site, in accordance with the endorsed *Precinct J Structure Plan*. The objective of this BMP is to enable bushfire management issues to be addressed as part of the subdivision process and also through future development approval (if required) and building licence processes.

Achievable and measurable goals of this plan include ensuring:

- Development is located in an area where the bushfire hazard does not present an unreasonable level of risk to life and property.
- Vehicular access to the development is safe if a bushfire occurs.
- Water is available to the development, so that life and property can be protected from bushfire.
- Development is sited and designed to minimise the effects of a bushfire.

This document sets out the roles and responsibilities of the future developer/s, future residents and the City of Armadale. It is important that the measures and procedures outlined in this BMP are adopted across the various stages of the land use planning and dwelling construction approvals processes.

This BMP provides:

- Identification of those portions of the site designated as Bushfire Prone Areas under the OBRM's *Map of Bushfire Prone Areas* (WAPC *et al*. 2015)
- A description of the site, the surrounding area, fire climate and bushfire history
- A summary of research into the related effects of a bushfire
- A bushfire hazard assessment
- Identification of determined site specific Bushfire Prone Areas based on the assessment of classified vegetation within the site and surrounding 100m
- A description of the proposed road network and how this addresses vehicular access for bushfire risk purposes
- An outline of the water supply requirements within the site for firefighting purposes
- An outline of the requirements for the internal siting of buildings to include asset protection zones
- An indicative BAL assessment to outline the acceptable siting and design of the proposed development in accommodating appropriate bushfire hazard mitigation measures.

It is expected that the BAL ratings assigned for future subdivided lots in the indicative BAL assessment will be confirmed/certified prior to the building licence stage and is discussed further in **Section 5.1.2**.

3 Description of the Area

3.1 General

The site is currently undeveloped and is characterised by areas of weedy grassland, exposed mineral earth and haulage roads, and has historically been cleared of native vegetation for agricultural (grazing) purposes, as shown in **Figure 2**. The site forms part of Precinct J of the *Wungong Urban Water Master Plan*, with the areas directly adjacent to the site in all directions undergoing or identified for urban development, as shown in **Figure 4**.

3.2 Climate and fire weather

The behaviour of bushfires is significantly affected by weather conditions. They burn more aggressively when high temperatures combine with low humidity and strong winds. In Perth and surrounding coastal areas, the fire risk is greatest from summer through autumn when the moisture content in vegetation is low. Summer and autumn days with high temperatures, low humidity and strong winds are particularly conducive to the spread of fire. This threat is increased if thunderstorms develop, accompanied by lightning and little or no rain.

Research indicates that virtually all house losses occur during severe, extreme or catastrophic conditions (Blanchi *et al.* 2010). The Bureau of Meteorology (BoM) (2014) states that extreme fire weather conditions in the Perth region typically occur with strong easterly or north-easterly winds, usually as a result of a strong high pressure system over South Australia. Easterly winds represent approximately 60% of extreme fire weather days (events) compared to fewer than 5% associated with southerly winds. About 15% of Perth events occur in a westerly flow following the passage of a trough.

Very dangerous fire weather conditions often follow a sequence of hot days and easterly winds that culminate when the trough deepens near the coast and moves inland. Winds can change from easterly to northerly and then to westerly during this sequence of climatic events.

Data from Jandakot Airport (located 12 km north-west of the study site) indicate the area experiences warm dry summers and cool wet winters (see **Plate 2**), and is classified as a Mediterranean climate. Mean maximum temperatures vary from 31.7°C in February to 17.9°C in July (BoM 2016).

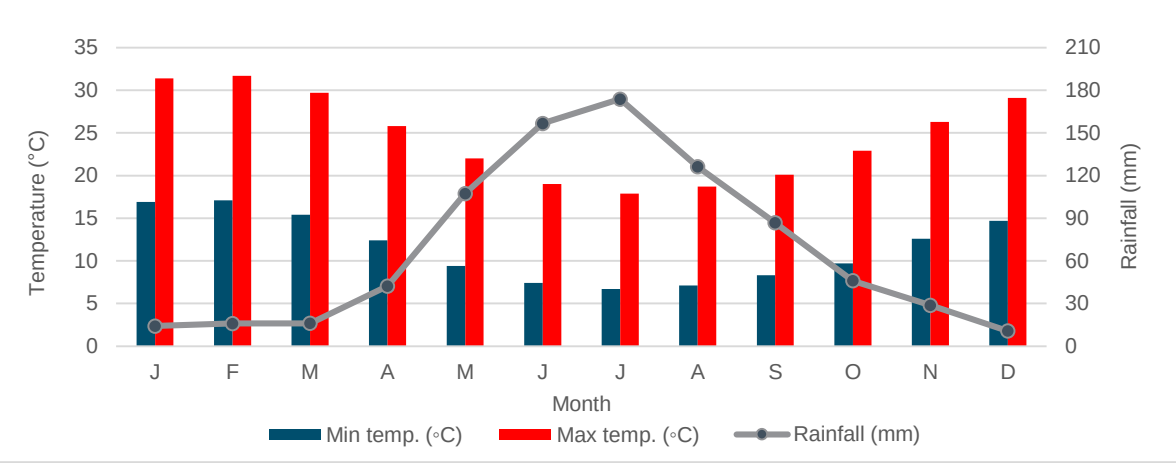

Plate 2: Mean minimum and maximum temperatures and mean rainfall recorded at Jandakot Airport weather station between 1972 and 2016 (BoM 2016)

Data from the Jandakot Airport weather station indicate that the predominant winds near the study site in the summer months at 3 pm are south-westerly (**Plate 3**). Wind strength, direction and frequency from the south-west are dominant and occur 45% to 55% of the time.

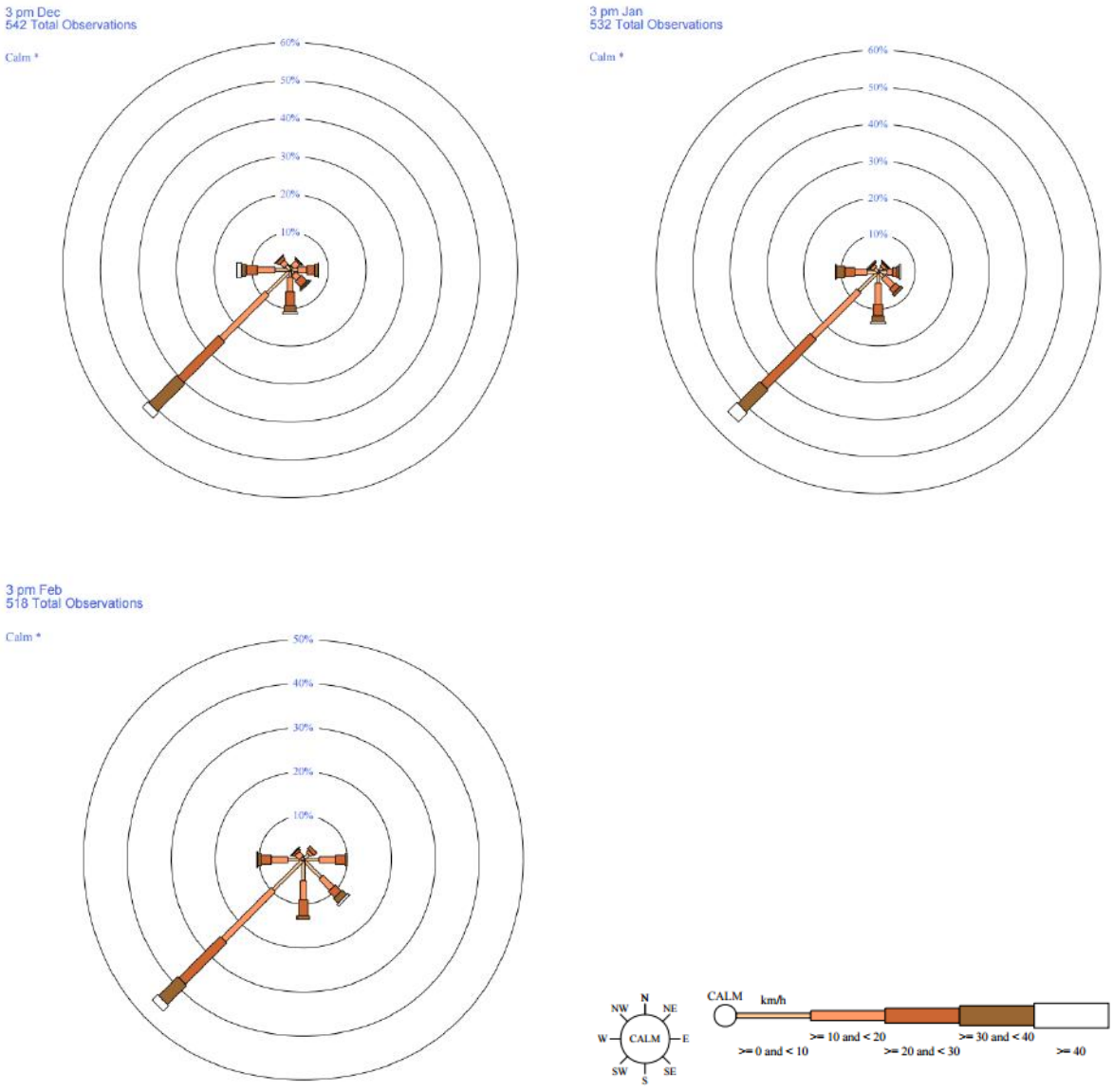

Plate 3: Rose of wind direction and wind speed in km/hr for December, January and February between 1989 – September 2010 at the Jandakot Airport weather station (BoM 2016)

Wind roses summarise the occurrence of winds at a location, showing their strength, direction and frequency. The percentage of calm conditions is represented by the size of the centre circle - the bigger the circle, the higher the frequency of calm conditions. Each branch of the rose represents wind coming from that direction, with north found at the top of the diagram. Eight directions are used. The branches are divided into segments of different thickness and colour, which represent wind speed ranges in that direction. Speed ranges of 10 km/h are used. The length of each segment within a branch is proportional to the frequency of winds blowing within corresponding range of speeds from that direction (BOM, 2010).

3.3 Topography

The natural topographical contours indicate that the site is generally flat, with elevation ranging from approximately 26 metres Australian Height Datum (m AHD) to 27m AHD, as shown in **Figure 5**. As part of the proposed development of the site, up to 2m of sand fill material will be imported onsite to increase separation to groundwater, however the site will remain generally flat.

3.4 Bushfire fuels

The site is dominated by grassland vegetation with scattered occurrences of *Melaleuca preissiana* trees, in addition to a number of windrow plantings. Grassland fuels also occur in Lot 5072 Hopkinson Road, located west of the site and Peet Limited's landholding. The long term bushfire hazard implications for development within the site are discussed further in **Section 4.3** below.

3.5 Land use

The site and greater Lot 9002 landholding is zoned "Suburban" under the WUWRS, which is suitable to allow for the residential development of the site in accordance with the *Precinct J Structure Plan* and proposed subdivision layout.

The site is currently undeveloped, however contains a temporary haulage route to facilitate the transport of sand fill from the southern portion of Lot 9002 to areas of residential development directly north of the site. Areas in the western portion of the site have also been subject to minor sand extraction activities.

The realigned Birrega Living Stream (formerly an agricultural drain) is situated directly adjacent to the northern boundary of the site and is accommodated in a Public Open Space (POS) reserve, as shown in the *Precinct J Structure Plan*. The Birrega Living Stream receives high volumes of surface water runoff from the broader catchment area and as such is commonly inundated to varying levels throughout the year.

Lot 5072 Hopkinson Road is situated approximately 80 m west of the site and is currently undeveloped. Cleared bridal tracks are distributed across Lot 5072 and are utilised occasionally for horse agistment and exercise. Lot 5072 is identified within an 'urban expansion' area in the *Perth and Peel@3.5 Million* suite of strategic planning documents and as such is anticipated that this land will be developed for urban purposes in the future.

3.6 Assets

In accordance with the endorsed *Precinct J Structure Plan* and the proposed subdivision layout (attached in **Appendix A**), the site will support the development of residential lots/dwellings and road reserves, in addition to a number of POS reserves. Dwellings exposed to any bushfire hazard will be those located within 100 m of permanently retained classified vegetation (or within 50 m of permanently retained grassland vegetation).

3.7 Access

The primary access point to the site is provided through an extension of Lexington Avenue, which connects the proposed internal road network with Rowley Road to the north. In order to ensure two access options are available for residents and emergency personnel within the site at all times, an emergency access way is proposed to extend from the east of the site to connect with an existing access point to Hopkinson Road. The proposed road network is shown in **Figure 4**.

3.8 Water supply

Reticulated water will be provided to the entire development. Fire hydrants will be spaced according to Water Corporation and DFES standards and provide emergency services with access to an adequate water supply. Fire hydrants on land zoned for residential purposes are required to be sited at or within 200 m of residential dwellings (Class 1a).

4 Bushfire Context and Current Situation

4.1 Bushfire history

Fires have been common on the Swan Coastal Plain for thousands of years and the anthropological and historical evidence suggests that Aboriginal people regularly burnt this area (Hallam 1975, Abbott 2003).

As land use intensification occurs and urban development replaces rural land and/or areas of native vegetation, bushfire hazards are removed thereby reducing areas that can carry a bushfire. At the same time however, the number of people and assets in the community increases thereby increasing the risk at the bushland interface.

Bushfires are common in the City of Armadale, and as such this BMP plays an important role in ensuring that the development of the land appropriately mitigates the risk and threat posed from bushfire.

4.2 Bushfire risk

The risk management process described in AS/NZS ISO 31000:2009 *Risk management – Principles and guidelines* is a systematic method for identifying, analysing, evaluating and treating emergency risks.

Bushfire risk is determined by assessing:

- Bushfire hazard (i.e. bushfire prone vegetation)
- Threat level (i.e. proximity of the hazard to assets and people)
- Vulnerability of the asset
- Consequence rating (i.e. a rating for the potential outcome once the 'incident' has occurred)
- Likelihood rating (i.e. the chance of an event).

It is not necessary to undertake a standalone site specific risk assessment in accordance with AS/NZS ISO 31000:2009 as part of this BMP, as risk has been considered in the context of the bushfire hazard assessment that has been undertaken (as outlined in **Section 4.3**) in accordance with AS 3959 the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015).

The vulnerability of assets, such as dwellings, is impacted by several factors. Some factors relate to the way a bushfire behaves at a site, other factors are related to the design and construction materials in the building and siting of surrounding elements. Infrastructure, utilities and human behaviour are also factors. Leonard (2009) identified the following factors as relevant to bushfire behaviour:

- Terrain (slope)
- Vegetation (overall fuel load, steady state litter load, bark fuels, etc.)
- Weather (temperature, relative humidity and wind speed)
- Distance of building from unmanaged vegetation
- Individual elements surrounding the building that are either a shield or an additional fuel source
- Proximity to surrounding infrastructure
- Building design and maintenance
- Human behaviour (ability to be present and capacity to fight the fire)
- Access to the building and how that influences human behaviour

- Water supply for active and/or passive defence
- Power supply.

Where buildings are lost, this is likely to occur as a result of their vulnerability to the mechanisms of bushfire attack. Buildings constructed to increased standards under AS 3959 are more likely to survive a bushfire than buildings that do not conform to these construction standards, although building survival is not guaranteed.

The site is identified as bushfire prone within the Map of Bush Fire Prone Areas (OBRM 2015), as shown in **Figure 3**, and as such the requirements of AS 3959 apply.

4.3 Bushfire hazard

Assessing bushfire hazards takes into account the classes of vegetation within the site and surrounding area for a minimum of 100m, in accordance with AS 3959. The assignment of vegetation classifications is based on an assessment of vegetation structure, which includes consideration of the various fuel layers of different vegetation types. For example, fuel layers in a typical forest environment can be broken-down into five segments as illustrated in **Plate 4** below. These defined fuel layers are used in the following descriptions regarding vegetation types, fuel structure and bushfire hazard levels.

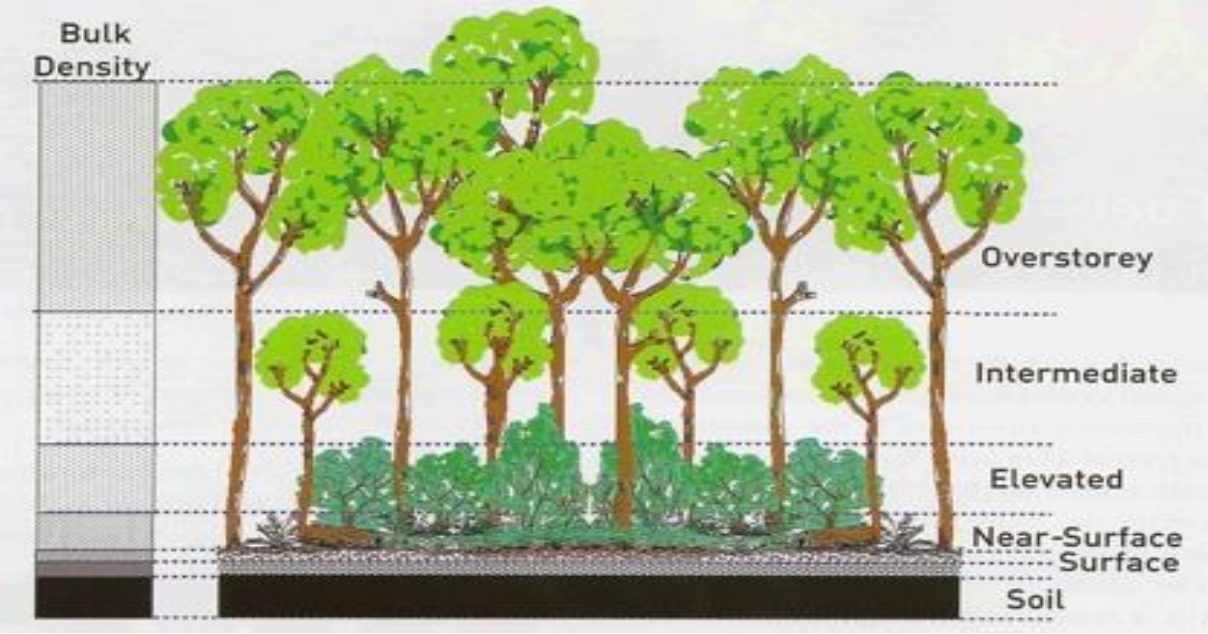

Plate 4: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

4.3.1 Existing vegetation types and structure

4.3.1.1 Vegetation within the site

The majority of native vegetation within the site has historically been cleared to support agricultural (grazing) land uses.

Grassland vegetation occurs across the majority of the site. This vegetation is generally dominated by weed species and provides surface level fuel loads. This vegetation is not currently subject to any routine management measures. An example of the grassland vegetation within the site is shown in **Plate 5**.

A number of paddock trees in windrow formation within the site have been classified according to their understorey of grassland, as their structure and fuel loads to not warrant higher classification under AS 3959. An example of the windrow planting within the site is shown in **Plate 6**.

The remainder of the site is comprised of non-vegetated areas, in accordance with the exclusions detailed in Section 2.2.3.2(e) of AS 3959. These areas include exposed mineral earth and constructed haulage roads.

The extent of existing vegetation within the site and the assigned AS 3959 vegetation classifications are shown in **Figure 6**.

Plate 5: Grassland dominated by weeds which occurs across the majority of the site

Plate 6: Windrow planting within the site

4.3.1.2 Vegetation surrounding the site (within 100m)

Grassland vegetation surrounds the majority of the site, including areas within the adjacent Lot 5072 Hopkinson Road, as shown in **Plate 7**. This vegetation is generally dominated by weed species and provides surface level fuel loads. This vegetation is not currently subject to any routine management measures.

A number of scattered paddock trees, the majority of which are *Melaleuca preissiana* species, occur in areas surrounding the site to the south-west and north-east. These areas of vegetation have been classified according to their understorey of grassland in accordance with Note 2 under Table 2.3 of AS 3959, as their structure, distribution and fuel loads do not warrant higher classification under AS 3959. An example of this vegetation is shown in **Plate 8**.

The remainder of the area surrounding the site is comprised of non-vegetated areas, in accordance with the exclusions detailed in Section 2.2.3.2(e) of AS 3959. These areas include exposed mineral earth and constructed haulage roads and the Birrega Living Stream.

The extent of existing vegetation within 100m of the site and the assigned AS 3959 vegetation classifications are shown in **Figure 6**.

Plate 7: Grassland vegetation in the adjacent Lot 5072

Plate 8: Scattered Melaleuca preissiana trees situated south-west of the site

4.3.2 Bushfire hazard assessment – existing site conditions

As part of the bushfire hazard assessment process, the bushfire hazard rating of each vegetation type identified within and immediately surrounding the site was determined using Appendix Two of the Guidelines, as shown in **Figure 7** and summarised below:

- 'Low' bushfire hazards are represented by non-vegetated areas, including exposed mineral earth, constructed haulage roads and the Birrega Living Stream.
- 'Moderate' bushfire hazards are represented by grassland areas.
- No 'Extreme' bushfire hazard occur within or adjacent to the site.

4.3.3 Post-development vegetation types and structure

4.3.3.1 Vegetation within the site

All existing vegetation within the site is proposed to be cleared as part of implementing the proposed subdivision design. The post-development scenario (i.e. following residential development) will result in the following vegetation types occurring within the site:

- **Low threat vegetation** within POS areas, described as 'maintained public reserves and parklands' under Section 2.2.3.2(f) of AS 39593. POS areas within the site will be landscaped for recreational and stormwater management purposes, which will likely involve the structured planting of trees, plants and other vegetation, which will be irrigated and maintained to a minimum fuel condition.
- **Non-vegetated areas** consisting of the internal road network, footpaths and buildings, in accordance with Section 2.2.3.2(e) of AS 3959.

Post-development AS 3959 vegetation classifications of the site are shown in **Figure 8**.

4.3.3.2 Vegetation surrounding the site (within 100m)

All classified vegetation within 100m of the site and found within Lot 9002 will be managed to a minimum fuel condition and thus classified as low-threat vegetation in accordance with exclusion 2.2.3.2(f) of AS 3959. This will involve:

- The slashing of grassland areas as required to ensure a nominal grass height of 100 mm is not exceeded and will be implemented prior to the commencement of the fire season (November to May annually).
- The pruning, trimming and general maintenance of *Melaleuca preissiana* trees, which will include the management of any understorey grasses and the collection of fallen plant material (such as branches, bark and leaves) prior to the commencement of the fire season (November to May annually), as required.

Figure 9 delineates the areas of vegetation within the site which will require ongoing management to maintain the assumed post-development vegetation classifications.

The implementation of the above management measures will ensure that fuel loads are minimised to a level which is insufficient to significantly increase the severity of a potential bushfire attack, in accordance with the definition of low-threat vegetation outlined in AS 3959. The proposed management of vegetation within Lot 9002 will be undertaken by the landowner (Peet Limited) and/or their designated contractors.

Given the adjacent Lot 5072 is not owned by Peet Limited, it is assumed that no management of this area will occur. Thus, it is assumed that grassland vegetation currently occurring within Lot 5072 will remain in its existing unmanaged state in the post-development scenario and will continue to provide surface fuel loads. This is shown in **Figure 9**.

4.3.4 Bushfire hazard assessment – post development site conditions

The post-development bushfire hazard rating changes substantially compared to the pre-development conditions due to the removal of classified vegetation within the site to accommodate development, and the management of most classified vegetation within 100m of the site to a low threat level.

The post-development bushfire hazard ratings within and immediately surrounding the site are shown in **Figure 10** and summarised below.

- "Low" bushfire hazards are represented by non-vegetated areas (roads, footpaths, buildings, the Birrega Living Stream and areas of exposed mineral earth) and low-threat vegetation maintained at a minimum fuel load condition (POS areas, areas of managed grassland and maintained *Melaleuca preissiana* trees).
- "Moderate" bushfire hazards are represented by grassland areas within the adjacent Lot 5072.
- No 'Extreme' bushfire hazards will occur within or surrounding the site post-development.

4.3.5 Post-development bushfire prone areas

Based on the outcomes of the bushfire hazard assessment, site-specific bushfire prone areas have been determined for the post-development scenario. Bushfire prone areas are defined as those within 100m of a 'Moderate' or 'Extreme' bushfire hazard, with the exception of grassland areas for which areas within 50m are considered bushfire prone.

The only applicable bushfire hazard in the post development scenario is the portion of grassland within the adjacent Lot 5072 Hopkinson Road, with areas within 50m of this hazard identified as bushfire prone, as shown in **Figure 11**. No areas within the site are identified as bushfire prone in the post-development scenario.

4.3.6 Effective slope

The effective slope under classified vegetation in the post-development scenario is shown in **Figure 12** and is described as effectively flat or upslope under the portion of classified grassland located in Lot 5072 Hopkinson Road.

4.4 Summary of bushfire threat

Based on the post-development scenario, the only area of classified vegetation within the vicinity of the site is grassland vegetation within the adjacent Lot 5072 Hopkinson Road. This vegetation has been identified as having a 'Moderate' bushfire hazard rating. This area of classified vegetation is located at least 80m from the western boundary of the site. In order to ensure no areas within the site are exposed to an unacceptable level of bushfire risk (i.e. greater than BAL-29), an indicative BAL assessment has been undertaken, and is detailed within **Section 5.1.2**.

All other areas of vegetation within the site or the 100m assessment area will be managed as low threat vegetation and/or to a minimal fuel level and is therefore considered to be a 'Low' bushfire hazard.

5 Bushfire Mitigation Strategy

This BMP provides an outline of the mitigation strategies that will ensure that as development progresses in accordance with the proposed subdivision, an acceptable solution and/or performance-based system of control is adopted for each bushfire hazard management issue. This approach is consistent with Appendix Four of the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015).The management issues addressed as part of this BMP are:

- Location of the development
- Siting and design of the development
- Vehicular access
- Water supply.

For the proposed residential development of the site, acceptable solutions are proposed for all four management issues in accordance with the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al*. 2015), and is discussed in **Section 5.1** below.

5.1 Bushfire risk management

As previously discussed, it is not necessary to undertake a specific bushfire risk assessment as per AS/NZS ISO 31000:2009 *Risk management – Principles and guidelines*. Land use planning bushfire risk mitigation and building control strategies are detailed in the following sections and provide responses to the bushfire protection performance criteria outlined in Appendix Four of the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015). The compliance checklist is attached as **Appendix B**.

5.1.1 Element: Location

5.1.1.1 Intent

To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.

5.1.1.2 Acceptable Solution A1.1 Development location

The proposed subdivision of the site meets Acceptable Solution A1.1 as no portion of the site will be exposed to a bushfire hazard exceeding a “Low” or “Moderate” rating in the post development scenario, as shown in **Figure 10**. Furthermore, based on the outcomes of the indicative BAL assessment no portion of the site will be exposed to an unacceptable level of radiant heat flux (i.e. BAL-29 is not exceeded). This is detailed further in **Section 5.1.2**.

5.1.2 Element: Siting and design of development

5.1.2.1 Intent

To ensure the siting and design of development minimises the level of bushfire impact.

5.1.2.2 Background

The extent of post-development classified vegetation (shown in **Figure 8**) is restricted to the area of grassland within the adjacent Lot 5072 Hopkinson Road.

5.1.2.3 Building siting and potential management considerations

AS 3959 has six categories of Bushfire Attack Level (BAL) which trigger varying degrees of increased construction standards in residential developments within 100m of classified vegetation. In the case of grassland vegetation, the extent to which BAL ratings apply is limited to 50m from the boundary of the classified grassland vegetation, as defined by AS 3959.

5.1.2.4 Methodology and assumptions

An indicative BAL assessment has been undertaken in order to determine the maximum level of radiant heat flux to which proposed future dwellings within the site could be exposed, and has been carried out based on the post development vegetation classification and effective slopes outlined in **Section 4.3**.

The criteria used to undertake the BAL assessment is as follows:

- Designated FDI: 80
- Flame temperature: 1090
- Effective slope: flat/upslope
- Vegetation classification: grassland
- Setback distances: As per Table 2.4.3 of AS 3959, and shown in **Table 1** below.

5.1.2.5 BAL outcome

BAL ratings for all proposed subdivided lots within the site were determined using the methodology in Appendix A of AS 3959. This methodology is also outlined in Appendix Four of the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al*. 2015). Based on the outcomes of the indicative BAL assessment, all proposed subdivided lots within the site will be exposed to a BAL rating of BAL-LOW. The BAL contour map and the specific BAL ratings for all proposed subdivided lots within the site are shown in **Figure 13** and **Figure 14** respectively.

Table 1: Results of indicative BAL assessment

AREA OF CLASSIFIED VEGETATION	VEGETATION CLASSIFICATION	EFFECTIVE SLOPE	SETBACK	BAL ACHIEVED
West of the site, within Lot 5072	Grassland	Flat/upslope	8-12 metres	BAL-29
			12-17 metres	BAL-19
			17-50 metres	BAL-12.5

An assessment of BAL-LOW means the risk is considered to be very low. Whilst there is still some degree of bushfire risk, it is insufficient to warrant any specific construction requirements under AS 3959.

It is expected that the BAL ratings assigned for future subdivided lots in the indicative BAL assessment will be confirmed/certified prior to the building licence stage. This will involve the completion of **Appendix D**, which can then be used to inform the building design process.

Based on the indicative BAL assessment, no future lots within the site will be subject to a notification pursuant to section 70A of the *Transfer of Land Act 1893* placed on the certificate(s) of title indicating that the lot is subject to construction standards in accordance with AS 3959.

5.1.2.6 Acceptable solution A2.1: Asset Protection Zone

The Asset Protection Zone (APZ) is a low fuel area immediately surrounding a building. Features such as irrigated landscapes, gardens, driveways, roads and areas with reduced fuel loads maintained to two tonnes per hectare or less can form part of an APZ.

An APZ is not required within the site as a Hazard Separation Zone managed to a minimal fuel condition has been provided between the site and nearby bushfire hazards and is discussed further below.

5.1.2.7 Acceptable solution A2.2: Hazard Separation Zone

A Hazard Separation Zone (HSZ) is a fuel managed zone to create separation between dwellings and bushfire hazards. This generally extends out to 100m from buildings, with the exception of situations where areas of grassland vegetation are the only applicable hazard, in which case a minimum 50m HSZ is required between buildings and areas of classified grassland vegetation.

The minimum 50m HSZ will be implemented as part of the proposed subdivision of the site, and in most areas surrounding the site will be up to 100m wide. A HSZ will be implemented through various management measures to maintain vegetation to a minimal fuel condition and low threat condition in accordance with exclusion 2.2.3.2(f) of AS 3959.

The management measures which underpin the implementation of the HSZ will be undertaken by the landowner (Peet Limited) or their designated contractors. The areas which will require management are shown in **Figure 9**, and these measures are detailed as follows:

- The slashing of grassland areas as required to ensure a nominal grass height of 100 mm is not exceeded and will be implemented prior to the commencement of the fire season (November to May annually).
- The pruning, trimming and general maintenance of *Melaleuca preissiana* trees, which will include the management of any understorey grasses and the collection of fallen plant material (such as branches, bark and leaves) prior to the commencement of the fire season (November to May annually), as required.

The implementation of the proposed HSZ for the site will ensure no proposed subdivided lot within the site will exceed a BAL-LOW rating, as demonstrated in the indicative BAL assessment.

5.1.3 Element: Vehicular access

5.1.3.1 Intent

To ensure vehicular access serving a subdivision/development is available and safe during a bushfire event.

5.1.3.2 Acceptable solution A3.1: Two access routes

The indicative road network of the proposed subdivision is shown in **Figure 4**. The network integrates with the existing Lexington Avenue to the north, providing access to Rowley Road. In the future, as subdivision progresses within Lot 9002, formal road access will also be provided to the east to Hopkinson Road. Multiple major roads can be accessed via Rowley Road, including Tonkin Highway to the west of the site and Hopkinson Road to the east of the site.

In order to ensure two external access options are available at all times, in the interim and until formal road access is provided, an emergency access way (as per the Guidelines) is proposed to extend from the east of the site to connect with an existing access point to Hopkinson Road. This secondary access point will only be accessible in the case of an emergency.

5.1.3.3 Acceptable solution A3.2: Public roads

In accordance with the Guidelines, surrounding public roads and all new public roads and laneways within the site will comply with the following minimum standards:

- Minimum trafficable surface: 6 metres
- Horizontal clearance: 6 metres
- Vertical clearance: 4.5 metres
- Maximum grades over <50 metres: 1 in 10
- Minimum weight capacity: 15 tonnes
- Maximum crossfall: 1 in 33
- Minimum inner radius of curves: 8.5 metres.

5.1.3.4 Acceptable solution A3.6: Emergency access way

In accordance with the Guidelines, the proposed emergency access way extending from the east of the site to connect with an existing access point to Hopkinson Road will comply with the following minimum standards:

- No further than 600 metres from a public road
- Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency.
- Must be signposted
- Minimum trafficable surface: 6 metres
- Horizontal clearance: 6 metres
- Vertical clearance: 4.5 metres
- Maximum grades over <50 metres: 1 in 10
- Minimum weight capacity: 15 tonnes
- Maximum crossfall: 1 in 33
- Minimum inner radius of curves: 8.5 metres.

5.1.4 Element: Water

5.1.4.1 Intent

To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

5.1.4.2 Acceptable Solution A4.1: Reticulated water

The development is located within an Emergency Services Levy (ESL) Category 1 area, which indicates that emergency bushfire response is provided by a network of metropolitan career fire and rescue service stations and the State Emergency Service. Fire response services require ready access to an adequate water supply during bushfire emergencies.

The development will be provided with a reticulated water supply, together with fire hydrants that will be installed by the developer/s to meet the specifications of Water Corporation (Design Standard DS 63) and DFES. Fire hydrants on land zoned for residential purposes are required to be sited at or within 200 m of residential dwellings (Class 1a).

The Water Corporation would be responsible for all hydrant maintenance and repairs.

5.2 Future development

This BMP and the indicative BALs (see **Figure 14**) are expected to inform the implementation of the subdivision and construction requirements for future dwellings. The indicative BAL assessment indicates that all future lots will be subject to BAL-LOW (which requires no specific increased construction standard under AS 3959). This will be confirmed/certified to support the building licence process, through the completion of **Appendix D**.

5.3 Access and fire breaks

Compliance with the City of Armadale annual firebreak notice is required across the entire site until such a time as development is completed, and public road access must provide two access options at all stages of development.

5.4 Public education

Community bushfire safety is a shared responsibility between individuals, the community, government and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website and Bushfire Ready Groups. *Prepare. Act. Survive.* (DFES, 2012) provides excellent advice on preparing for and surviving the bushfire season. Other downloadable brochures are available from http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx.

The City of Armadale provides bushfire safety advice to residents available from their website http://www.armadale.wa.gov.au/fire-and-emergency-services. Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high risk areas.

5.5 Assessment of bushfire management strategies

The bushfire hazard which could potentially threaten the site is associated with grassland areas in the adjacent Lot 5072, approximately 80m west of the site. This hazard has been addressed through the provision of a HSZ to ensure that dwellings are not exposed to an unacceptable level of risk (and for the site this means that BAL-LOW is not exceeded).

By undertaking a bushfire hazard assessment for the site, this BMP determines the site specific bushfire prone areas for the site, based on the assessment of classified vegetation in accordance with AS 3959. These determined bushfire prone areas, shown in **Figure 11**, may be used by the City of Armadale to inform any update of the *Map of Bush Fire Prone Areas*, where appropriate.

5.6 Implementing the Bushfire Management Plan

The following table outlines the future and/or ongoing responsibilities of the developer/s, future lot owners or residents, and the City of Armadale relating to bushfire risk mitigation.

As outlined in **Table 2** below, the future owners/occupiers of lots within the site, as created through future subdivision stages, are to maintain a reduced level of risk from bushfire within their properties (where applicable), and will be responsible for undertaking, complying and implementing measures to protect their own assets (and people under their care) from the threat and risk of bushfire.

Table 2: Responsibilities for the implementation of the BMP

MANAGEMENT ACTION	TIMING
DEVELOPER/S	
Confirm/certify BAL ratings determined as part of the preparation of this BMP through the completion of **Appendix D**. The assessment recommendations are to be submitted to the City of Armadale and accommodated in the lot clearances and/or Local Development Plan outcomes.	Prior to building licence processes.
For each new lot created within areas exposed to a BAL rating exceeding BAL-LOW, lodge a Section 70A Notification on the Certificate of Title in order to alert purchasers and successors in title of the existence of the overarching BMP and specifically the requirements associated with meeting the AS 3959 construction standards.	At the creation of titles, however this is not expected to be applicable to any proposed subdivided lots within the site.
Install the public roads to standards outlined in **Section 5.1.3** and ensure two access ways are provided at all times.	As part of subdivision and development.
On all vacant land, comply with the City of Armadale Fire Control Notices as published.	Ongoing, where applicable.
Install reticulated water supply and hydrants to Water Corporation, DFES and the City of Armadale standards.	As part of subdivision and development.
Establish and maintain the HSZ within the site to standards as specified in this document.	As part of subdivision and development, and ongoing where applicable.
Provide detailed hydrant plans to the City of Armadale and DFES local fire station for monitoring.	At subdivision approval stage.
Make a copy of this BMP available to each lot owner subject to AS 3959 construction standards, along with the *Homeowners Bush Fire Survival*	As part of the sale of lots.

MANAGEMENT ACTION	TIMING
Manual, Prepare, Act, Survive (or similar suitable documentation) and the City of Armadale's Fire Control Notice.	
PROPERTY OWNER/OCCUPIER	
Ensuring that all lots comply with the City of Armadale Fire Control Notices as published.	Ongoing, where applicable.
Maintaining each property in good order to minimise bushfire fuels in accordance with the requirements outlined in this BMP.	Ongoing, where applicable.
Ensuring that where hydrants are located, they are not obstructed and remain visible at all times.	Ongoing, where applicable.
Ensuring construction of dwelling/s complies with AS 3959, if required.	As part of dwellings design and construction.
If dwellings are subject to additional construction in the future, such as renovations, AS 3959 compliance is required if applicable.	As part of design and construction.
CITY OF ARMADALE	
Providing fire prevention and preparedness advice to landowners upon request, including the *Homeowners Bush Fire Survival Manual, Prepare, Act, Survive* (or similar suitable documentation) and the City of Armadale's Fire Control Notice.	Ongoing, as requested.
Monitoring bush fuel loads in road reserves and liaising with relevant stakeholders to maintain fuel loads at safe levels.	Ongoing, as required.
Maintaining public roads to appropriate standards and ensuring compliance with the City of Armadale Fire Control Notices.	Ongoing, as required.
DEPARTMENT OF FIRE AND EMERGENCY SERVICES	
DFES emergency fire personnel are responsible for responding to emergency situations relating to bushfire within the City of Armadale. Where bushfire threatens the site, the local brigade will utilise the internal road network of the site to protect life and property.	Ongoing, as required.
WATER CORPORATION	
The Water Corporation is responsible for the repair of water hydrants.	Ongoing, when required.

6 Conclusions and Recommendations

6.1 Conclusion

The site is designated as bushfire prone within the state *Map of Bushfire Prone Areas*. Whilst not specifically required within the WUWRS, this BMP addresses the requirements of SPP 3.7 and the *Guidelines for Planning in Bushfire Prone Areas* (WAPC *et al.* 2015) and it has been demonstrated that the bushfire protection performance criteria outlined in the guidelines (WAPC *et al.* 2015) can be achieved through:

- Siting of development to ensure buildings are not exposed to an unacceptable level of radiant flux, without appropriate mitigation measures. A minimum 50m HSZ between dwellings and post-development classified vegetation will be implemented as part of the proposed subdivision of the site, and in most areas surrounding the site will be up to 100m wide. A HSZ will be implemented through various management measures to maintain vegetation to a minimal fuel condition and low threat condition in accordance with exclusion 2.2.3.2(f) of AS 3959, including:
    - The slashing of grassland areas as required to ensure a nominal grass height of 100 mm is not exceeded and will be implemented prior to the commencement of the fire season (November to May annually).
    - The pruning, trimming and general maintenance of *Melaleuca preissiana* trees, which will include the management of any understorey grasses and the collection of fallen plant material (such as branches, bark and leaves) prior to the commencement of the fire season (November to May annually), as required.
- An interconnected public road network will be provided within the development to facilitate the movement of people and emergency appliances. In addition, an interim emergency access way is proposed to ensure two external access options are available at all times until subdivision in the broader Precinct J area progresses.
- Providing a reticulated water supply and fire hydrants (to Water Corporation standards) to ensure emergency services are able to respond to a bushfire event.

This BMP and the indicative BALs are expected to inform the implementation of the subdivision and construction requirements for future dwellings. The indicative BAL assessment indicates that all future lots will be subject to BAL-LOW. This will be confirmed/certified to support the building licence process, through the completion of **Appendix D**.

6.2 Recommendations

Based on the bushfire hazard assessment contained within this BMP, the following key recommendations should be considered for the implementation of the proposed subdivision:

- By implementing this BMP, the bushfire risk to development within the site can be mitigated through the provision of an appropriate HSZ until subdivision in the broader Precinct J area is progressed, without the need for increased construction standards in accordance with AS 3959.
- The Bushfire Prone Areas determined for the site, as shown in **Figure 11**, could be used by the City of Armadale to update the state-wide *Maps of Bush Fire Prone Areas* (OBRM 2015).
- The indicative BAL assessment undertaken as part of this BMP indicates that all future lots within the sites are rated as BAL-LOW and will therefore not be exposed to an unacceptable level of radiant heat flux.

- **Appendix D** should be completed prior to the building licence stage to confirm/certify the BAL-LOW ratings assigned for all future lots within the site, based on the findings of the indicative BAL assessment undertaken as part of this BMP.

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8 Glossary

AS	Australian Standard
AHD	Australian Height Datum
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BMP	Bushfire Management Plan
BOM	Bureau of Meteorology
COA	City of Armadale
DFES	Department of Fire and Emergency Services (was FESA)
ESL	Emergency Services Levy
FESA	Fire and Emergency Services (now DFES)
HSZ	Hazard Separation Zone
LPS	Local Planning Scheme
POS	Public Open Space
TPS	Town Planning Scheme
VBRC	Victorian Bushfires Royal Commission
WAPC	Western Australian Planning Commission

FIGURES

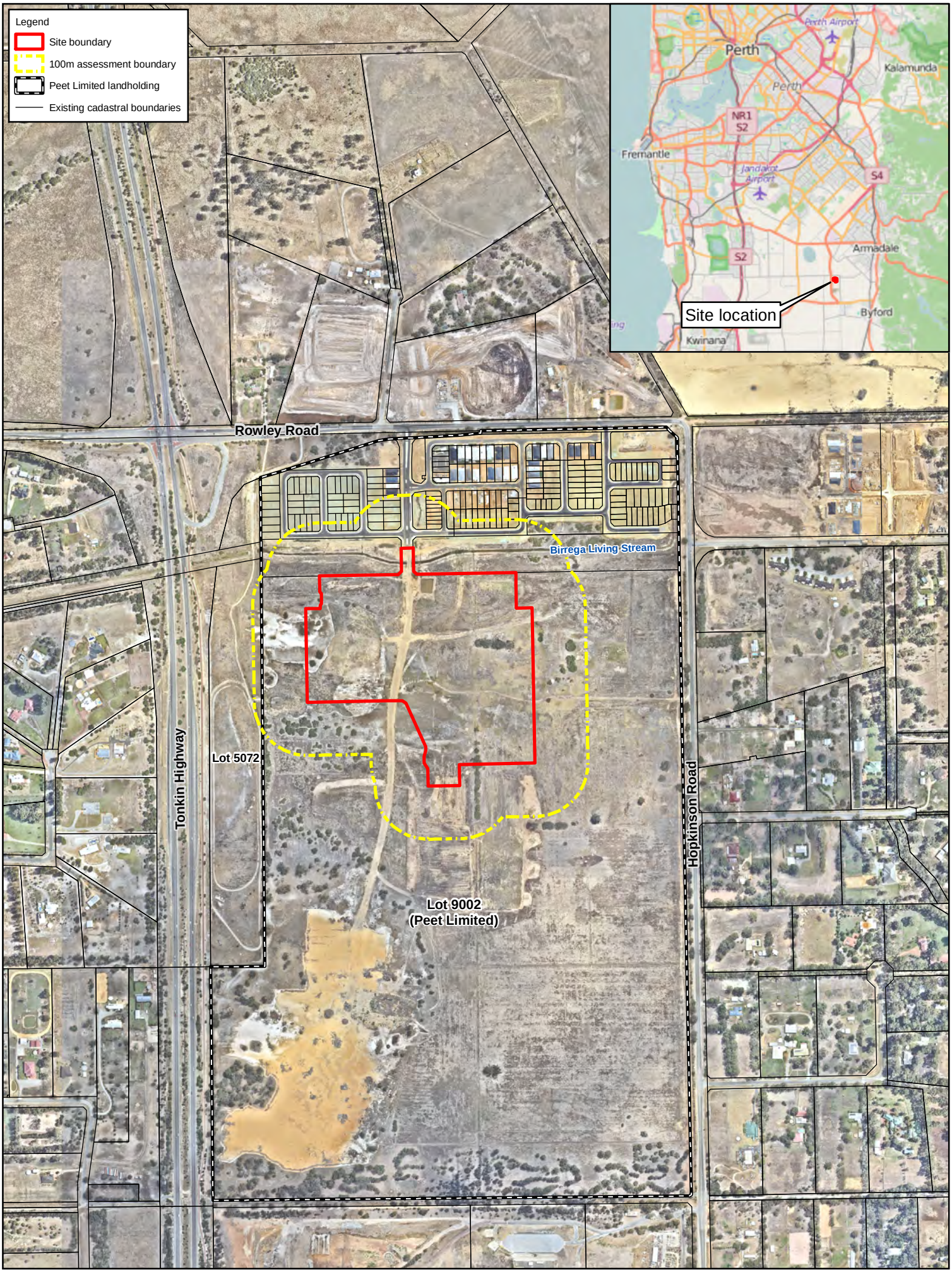

Figure 1: Location Plan

Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F61

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:9,000@A4

0 50 100 200 300 Metres

emerge ASSOCIATES
Integrated Science & Design

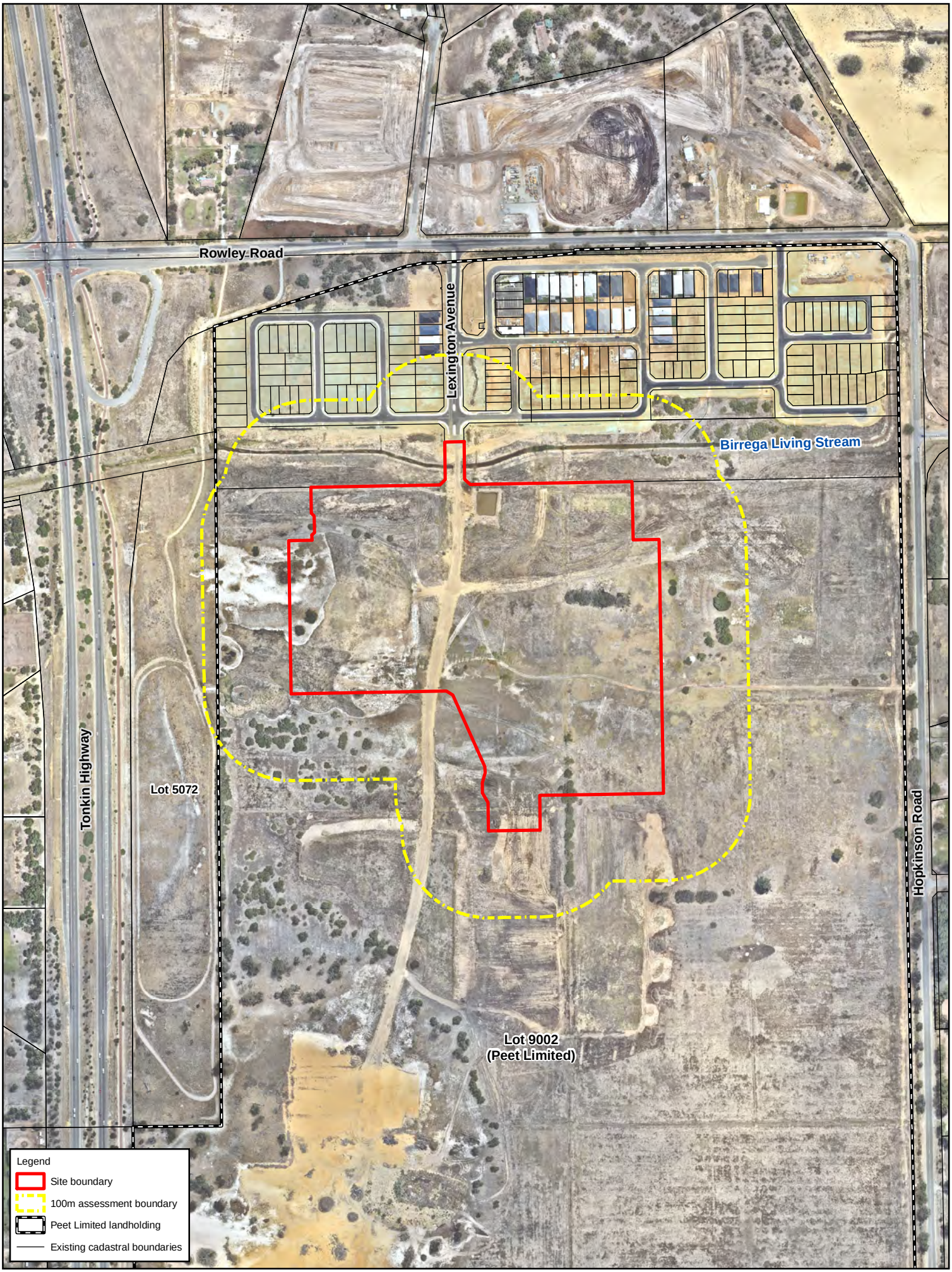

Figure 2:	**Site Plan**	**Plan Number: EP14-017(09)--F62**	
Project:	Subdivision Stages 6-8 Precinct J - The Avenue	Drawn: ADB	Date: 11/03/2016
		Approved: KK	Date: 16/03/2016
Client:	Peet Oakford Land Syndicate Limited	Checked: ADB	Scale: 1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
Integrated Science & Design

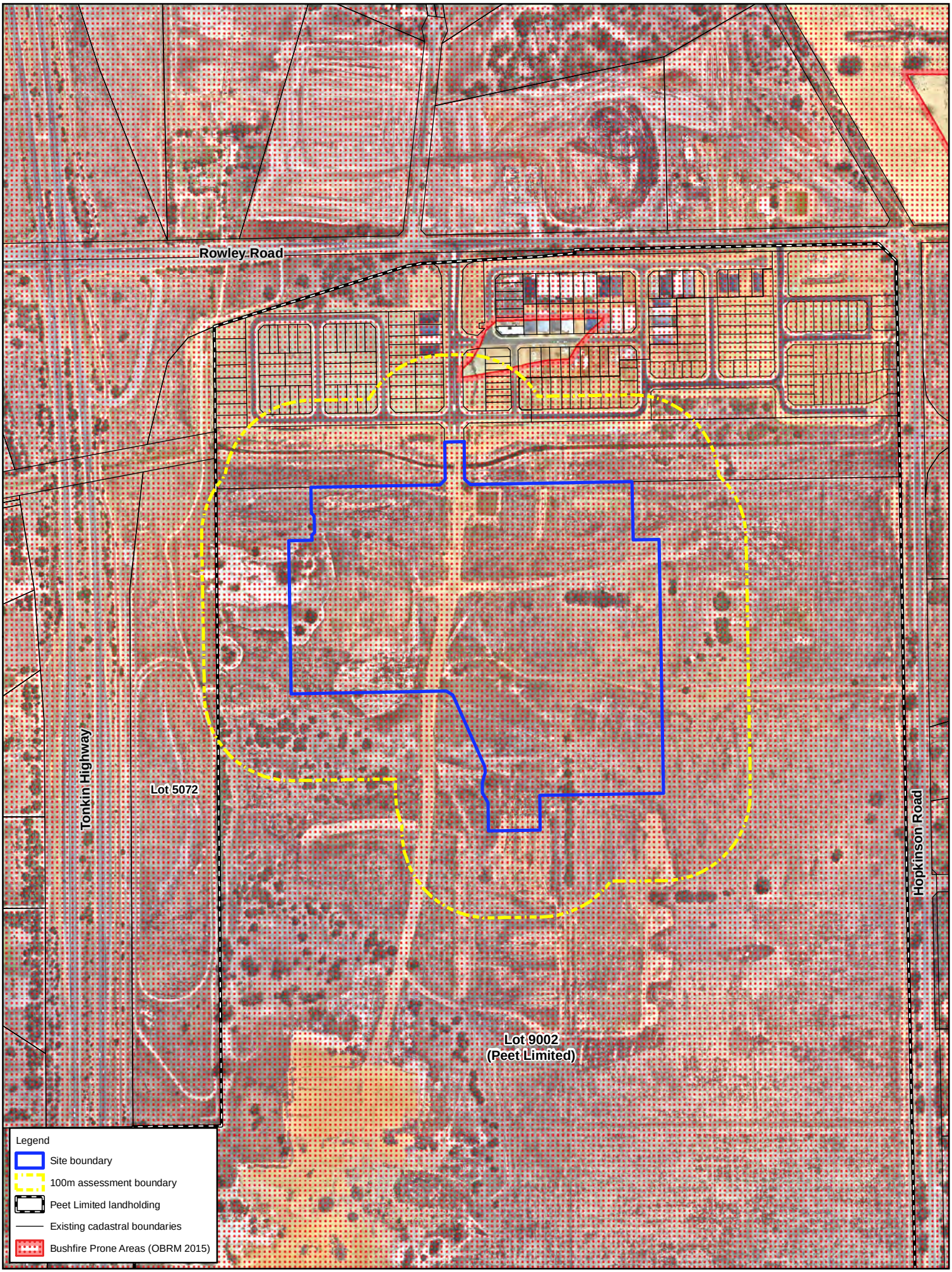

Figure 3: Map of Bushfire Prone Areas (OBRM 2015)

Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F63

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

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Integrated Science & Design

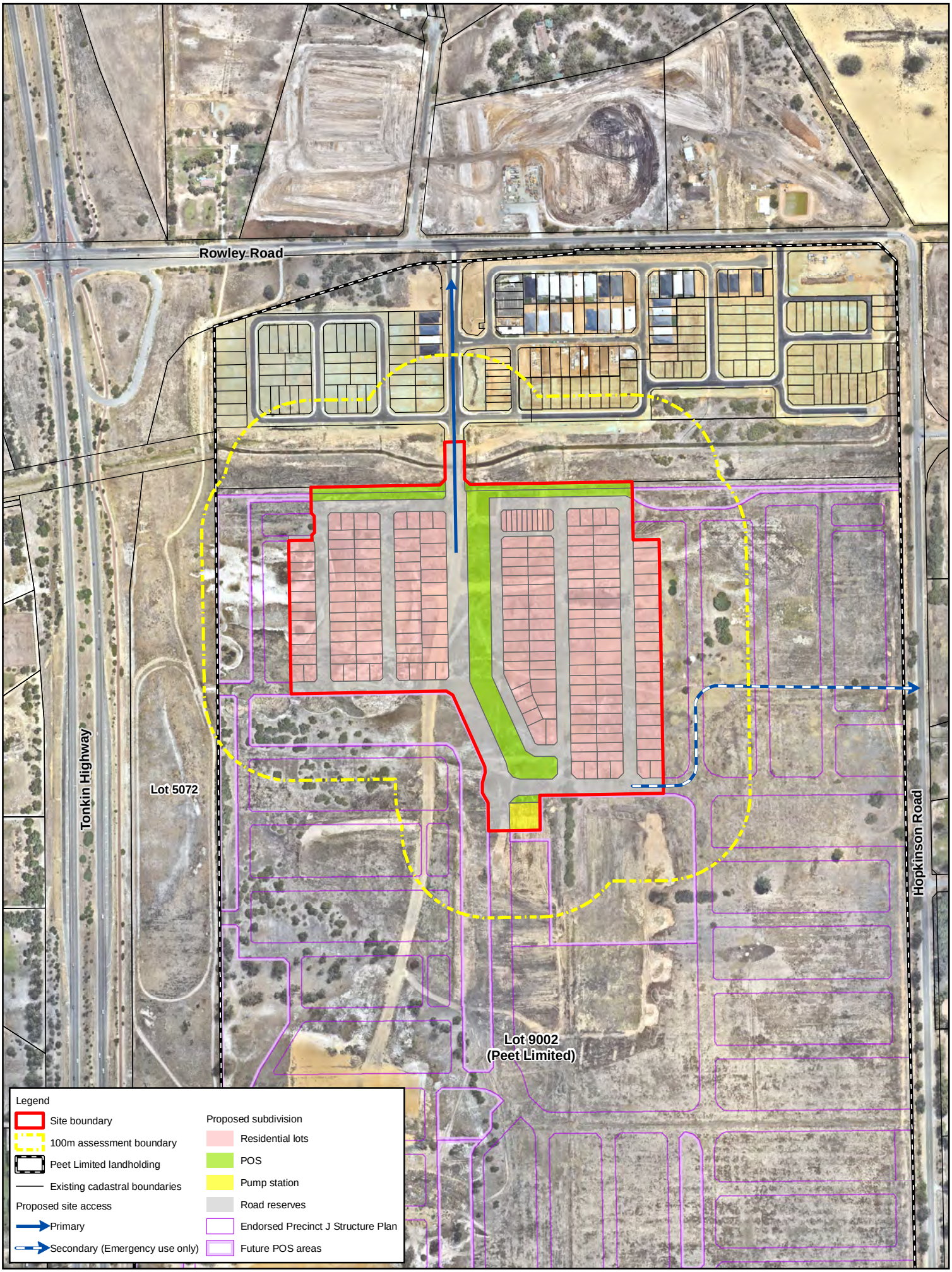

Figure 4: Proposed Subdivision

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F64

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

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Integrated Science & Design

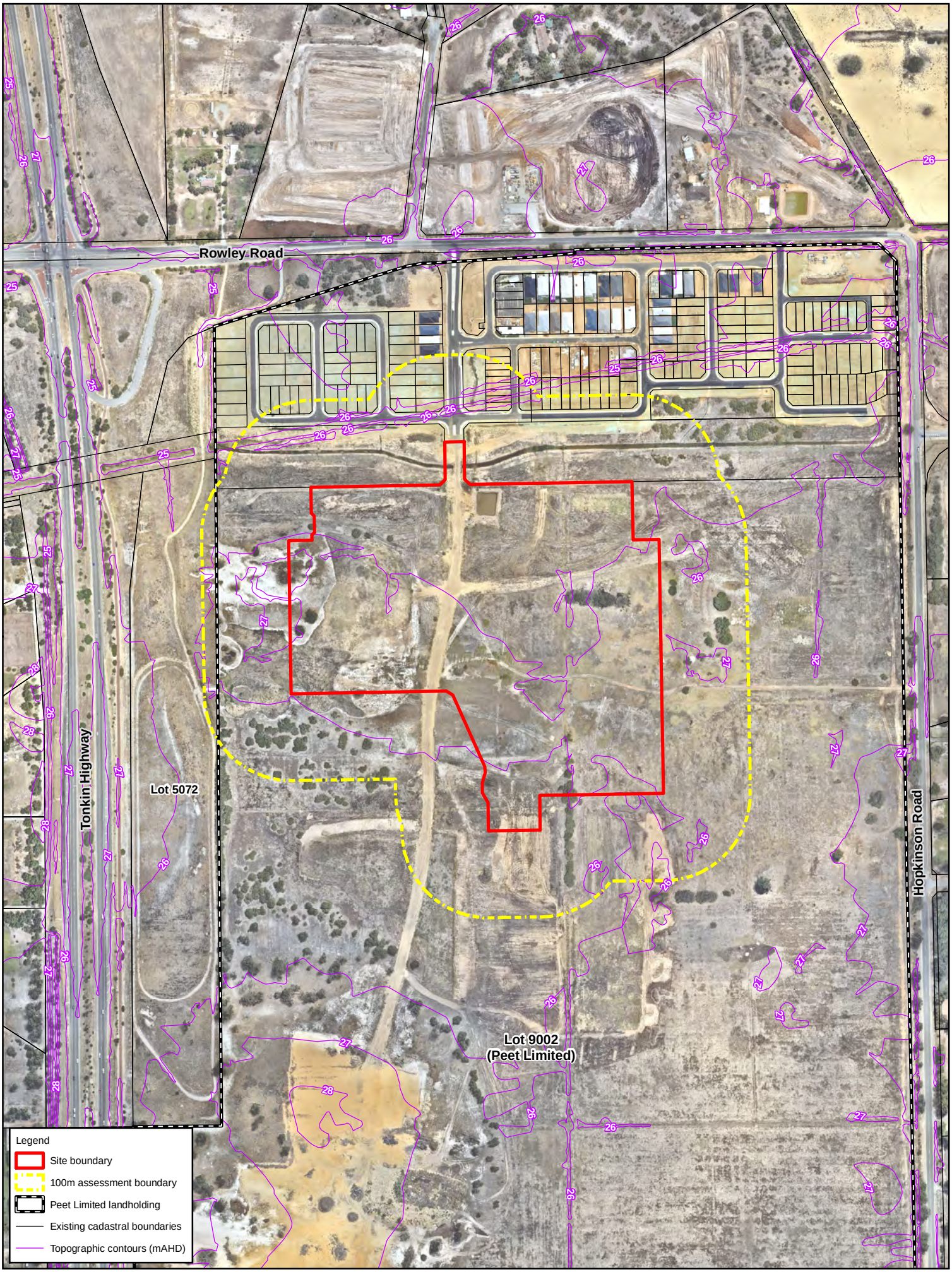

Figure 5: Site Topography

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F65

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
Integrated Science & Design

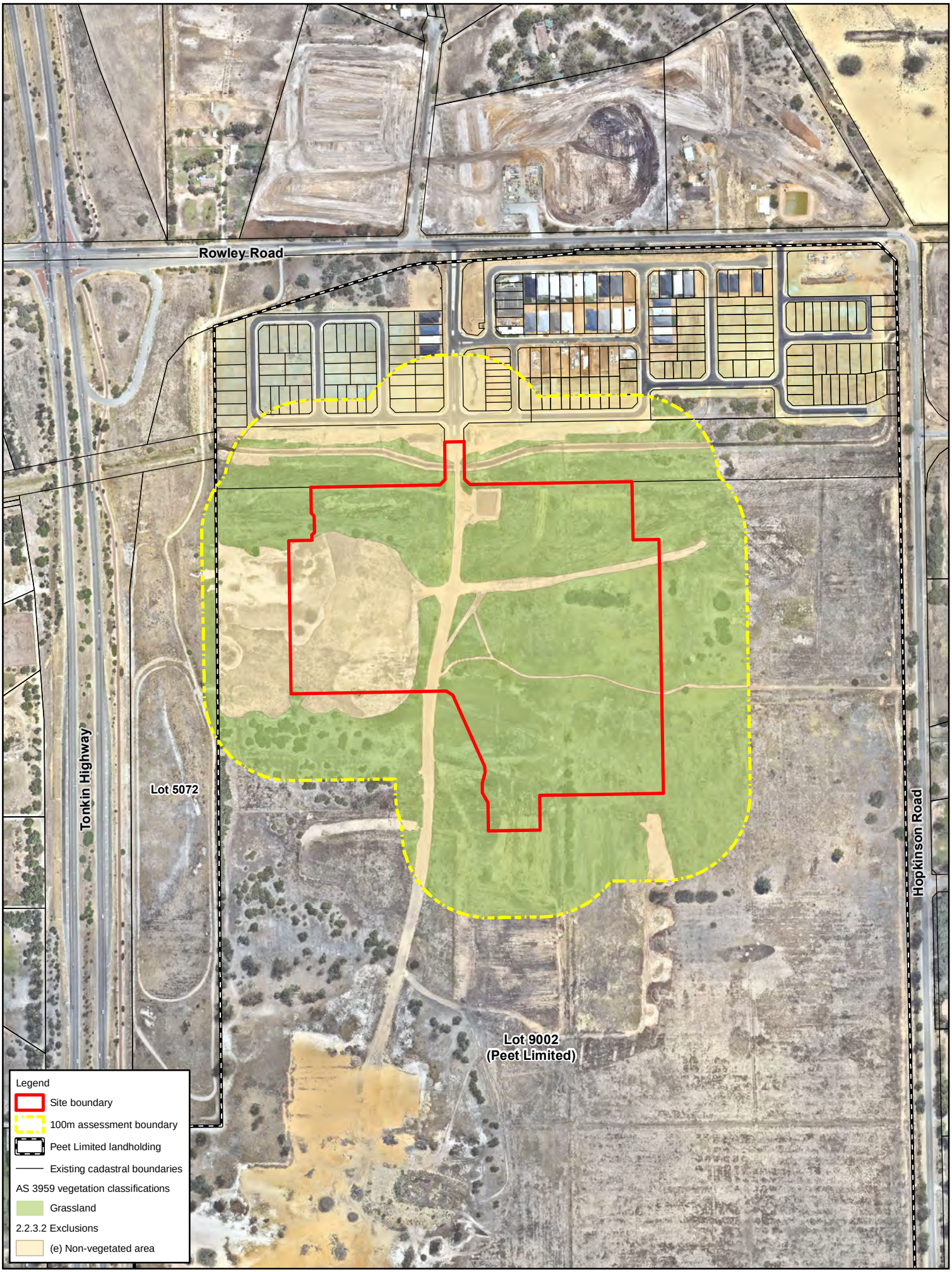

Figure 6:	**Existing Site Conditions – AS 3959 Vegetation Classification**
Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F66

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

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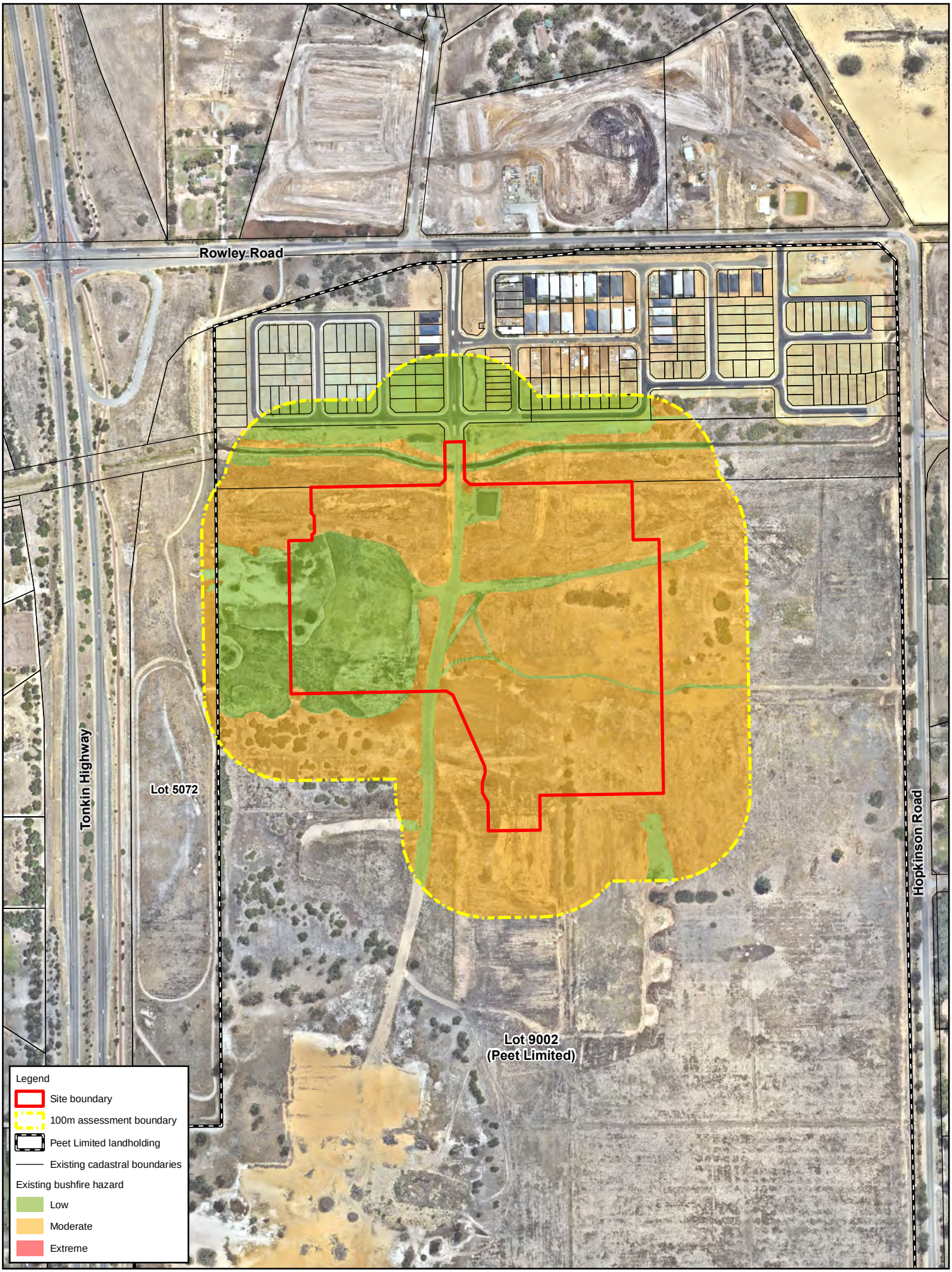

Figure 7:	**Existing Site Conditions – Bushfire Hazard Assessment**
Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F67

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
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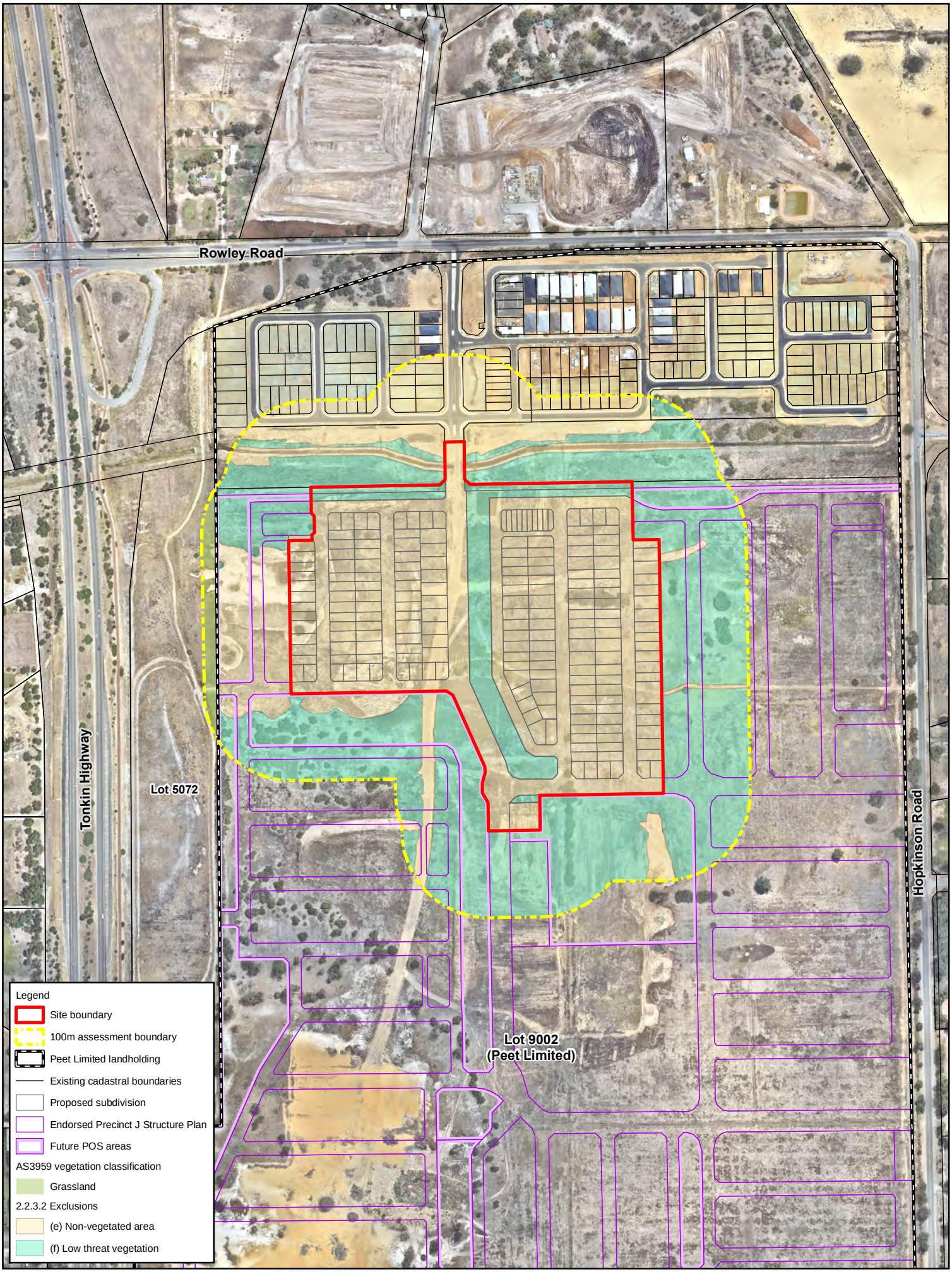

Figure 8: **Post Development Site Conditions – AS 3959 Vegetation Classification**

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F68

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
Integrated Science & Design

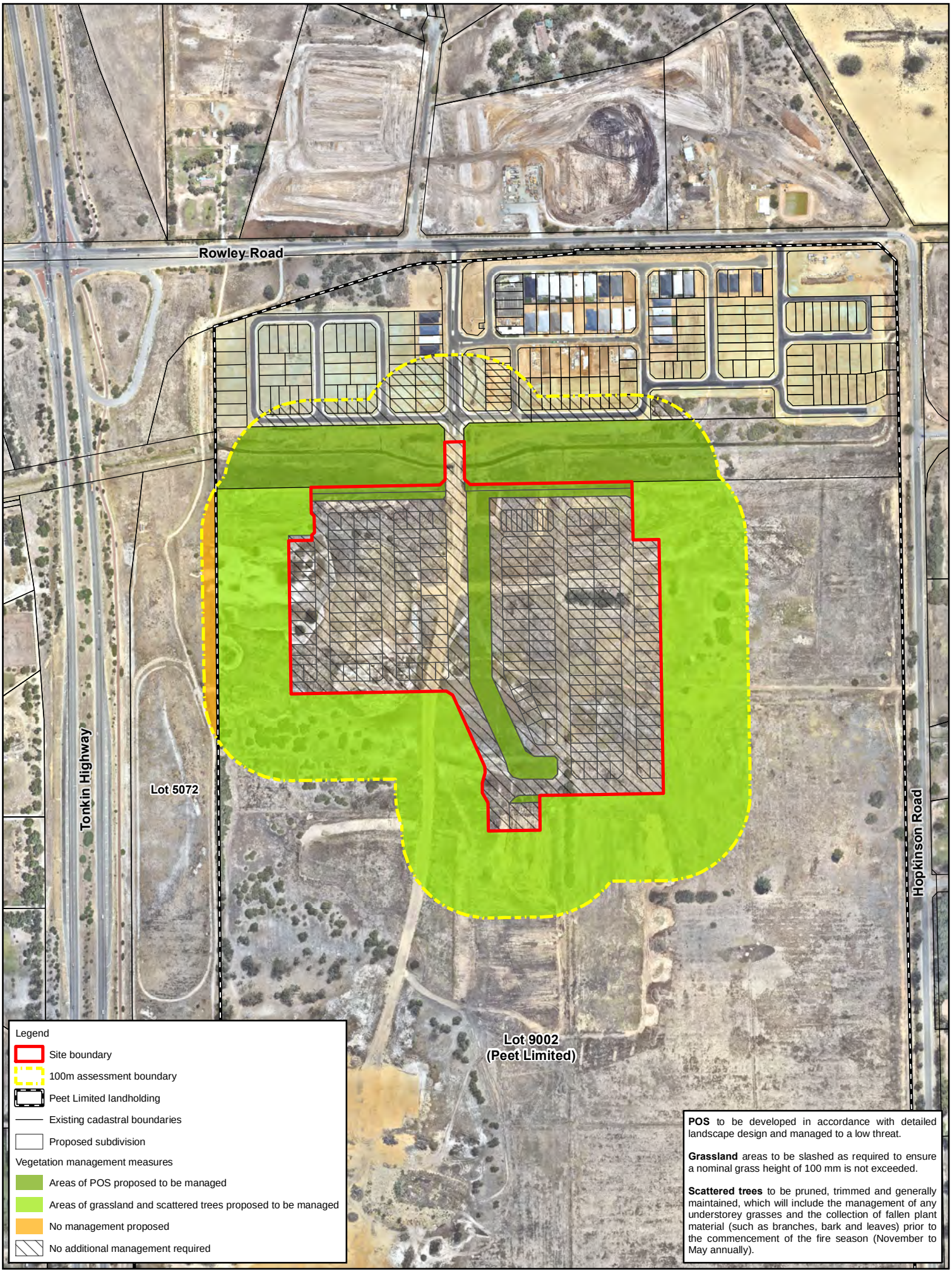

Figure 9:	**Post Development Site Conditions – Vegetation Management Requirements**
Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F69			
Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

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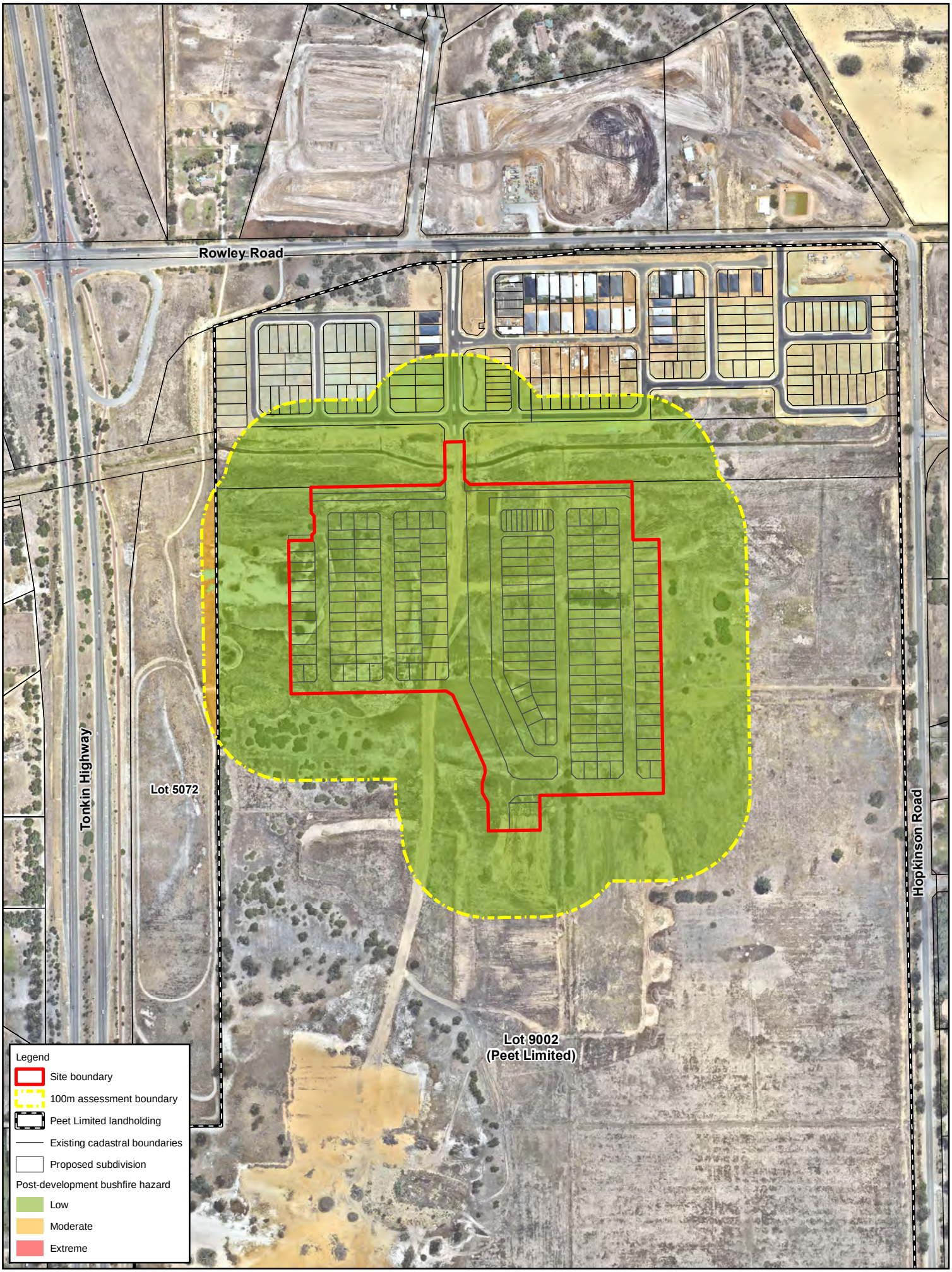

Figure 10: Post Development Site Conditions – Bushfire Hazard Assessment

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F70			
Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
Integrated Science & Design

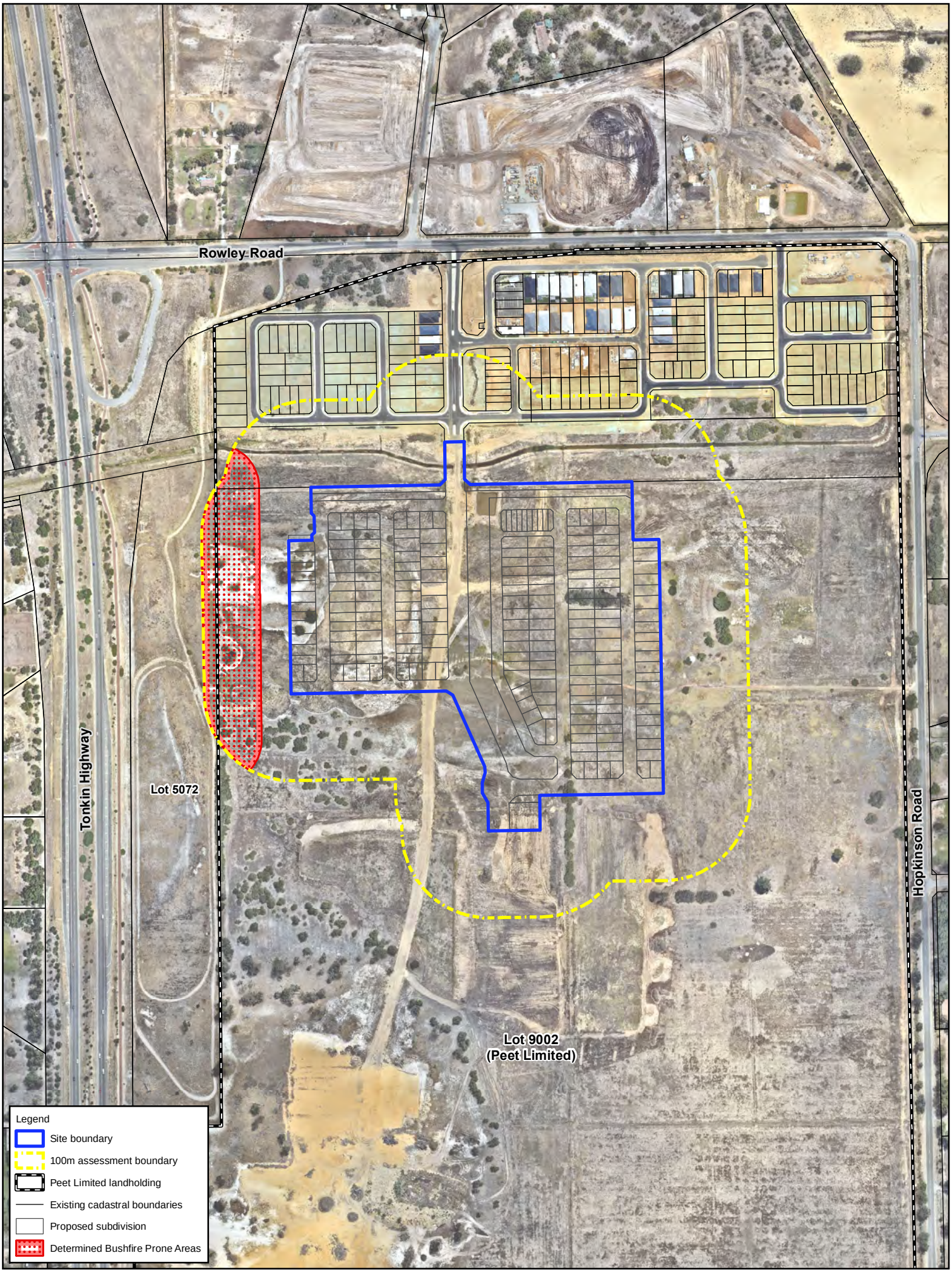

Figure 11:	**Post Development Site Conditions – Determined Bushfire Prone Areas**
Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F71

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
Integrated Science & Design

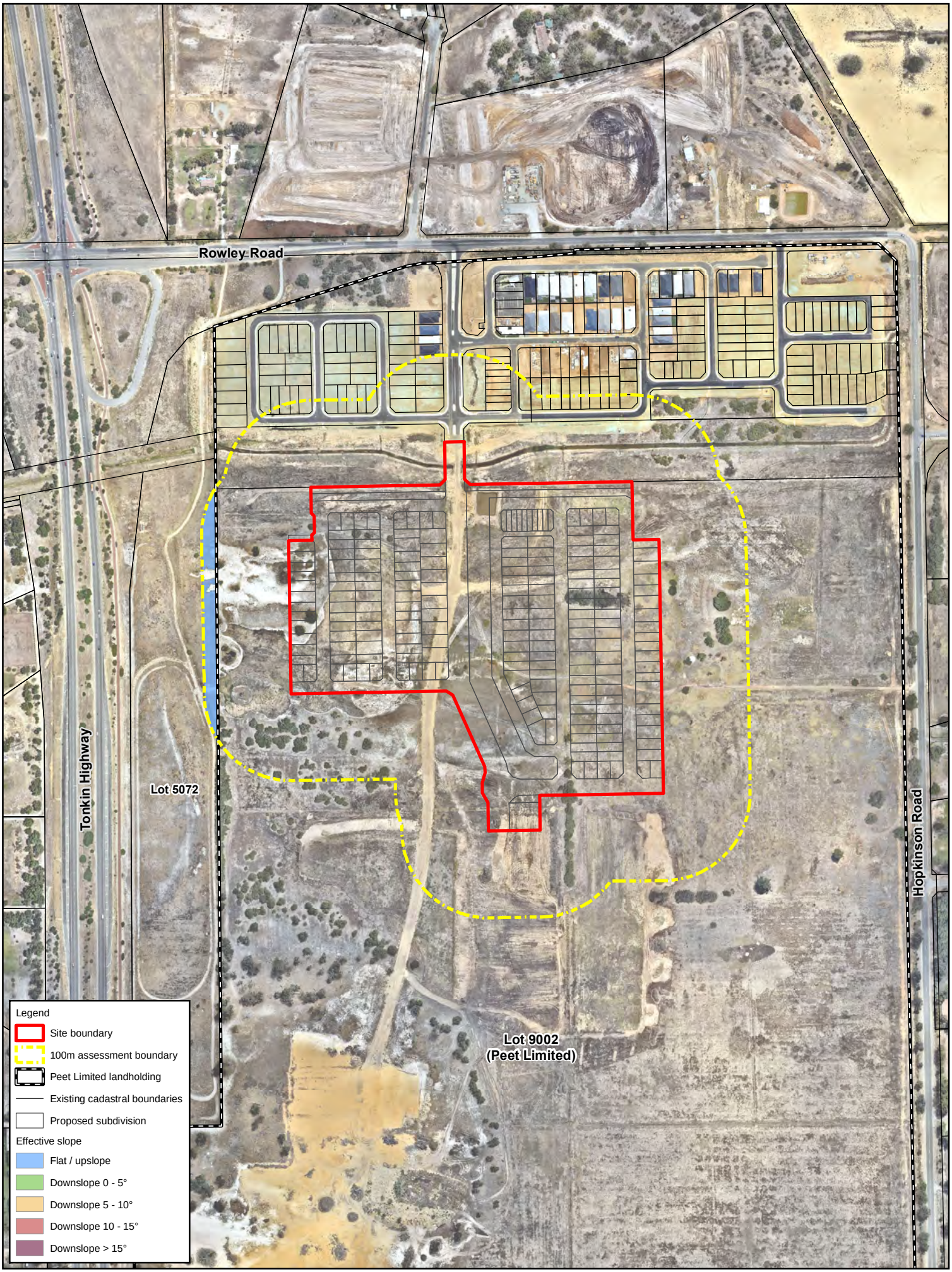

Figure 12: Post Development Site Conditions – Effective Slope

Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F72

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

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Please note: These indicative BAL ratings have been prepared to detail the bushfire risk posed by adjacent vegetation to the site only. BAL ratings for classified vegetation outside the 100 m assessment area have not been considered. Therefore, it is possible that areas outside the site boundary but within the 100 m assessment area may have different BAL ratings to that outlined within this figure. However this will not change the indicative BAL ratings within the site boundary.

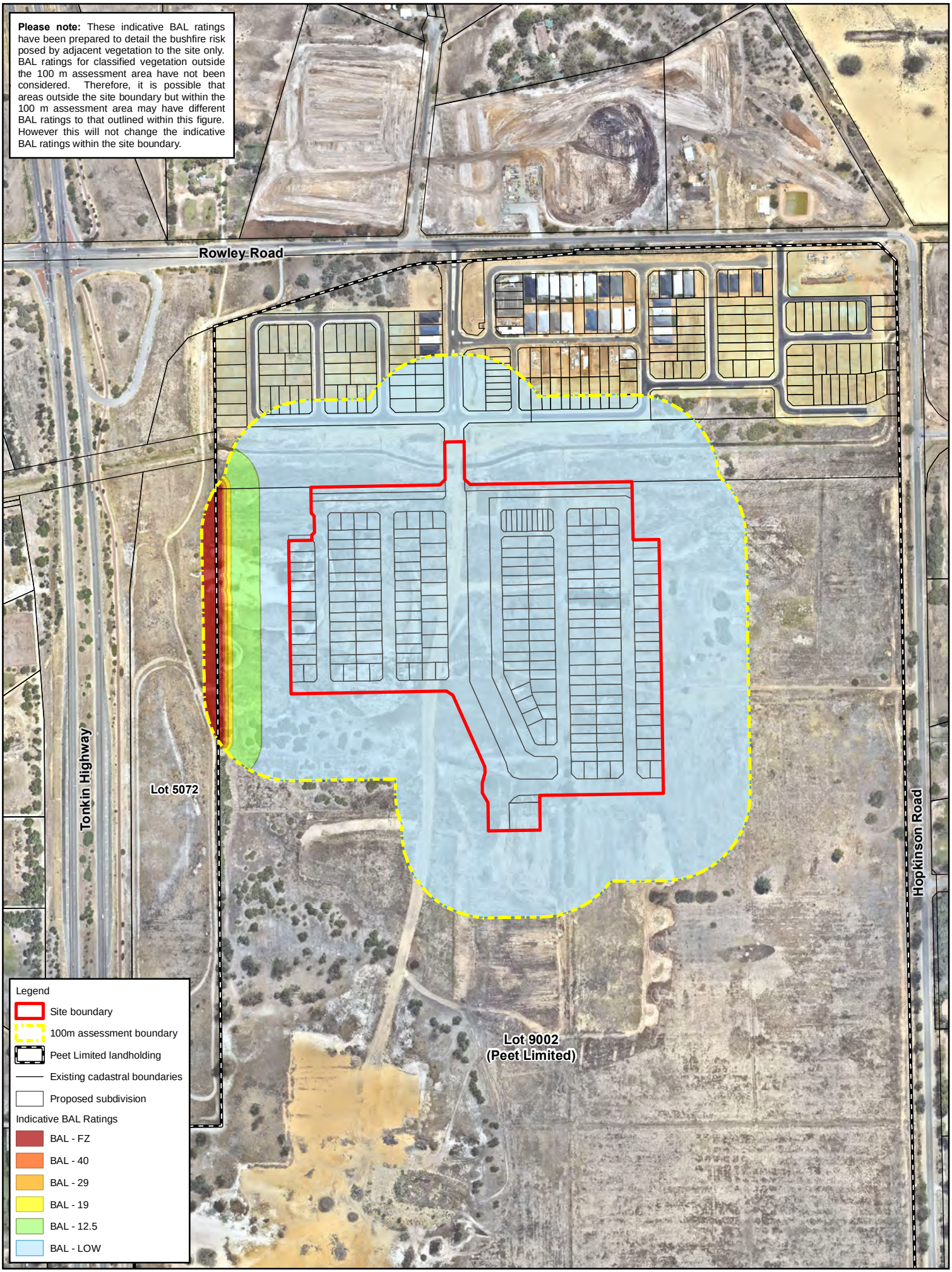

Figure 13: **Post Development Site Conditions – Bushfire Attack Level Contour Map**

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F73

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:5,500@A4

0 50 100 200 Metres

emerge ASSOCIATES
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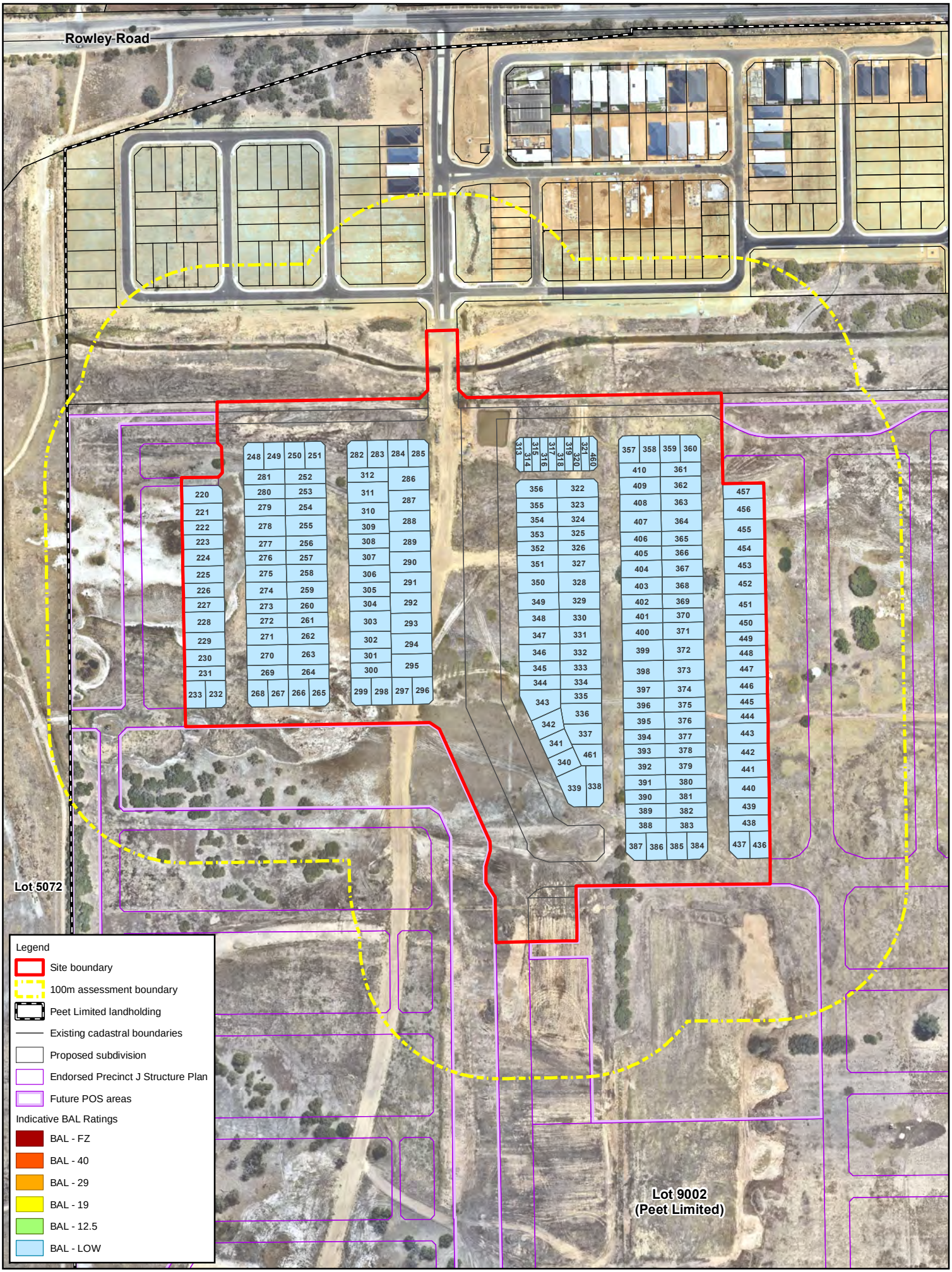

Figure 14: **Post Development Site Conditions – Lot Specific Indicative Bushfire Attack Levels**

Project: Subdivision Stages 6-8
Precinct J - The Avenue

Client: Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F74

Drawn:	ADB	Date:	11/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:3,500@A4

0 25 50 100 Metres

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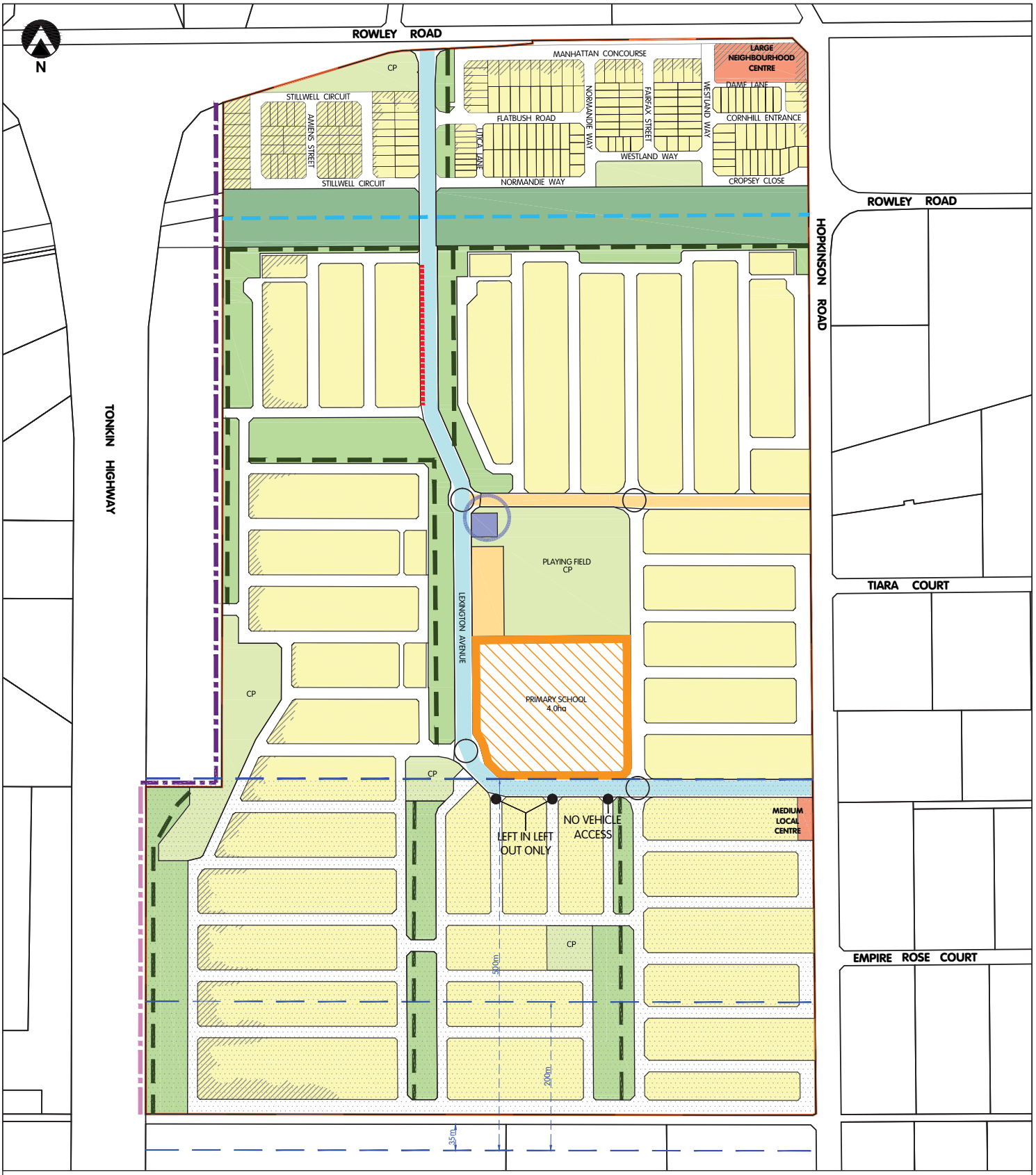
Integrated Science & Design

APPENDIX A

PRECINCT J STRUCTURE PLAN AND PROPOSED STAGES 6-8 SUBDIVISION

Roberts Day (2016)



LEGEND

- SUBJECT LAND
- EXISTING LOT BOUNDARY
- PROPOSED CELL BOUNDARY
- ARMADALE LANDFILL AND RECYCLING FACILITY BUFFER
- PARK AVENUE
- CP — COMMUNITY PARK LESS PLAYING FIELD
- LIVING STREAM (BIRREGA MAIN DRAIN)
- SUBURBAN
- EDUCATION
- PUMP STATION
- COMMUNITY INFRASTRUCTURE PLAN (CIP)
- NEIGHBOURHOOD ACTIVITY CENTRE
- PLAYING FIELD
- ROAD AVENUE A
- ROAD AVENUE B
- PROTECTED REVERSING LANE
- LOWER ORDER ROAD
- 30M PUMP STATION BUFFER
- NOISE WALL
- NOISE ATTENUATION TO BE CONFIRMED AT SUBDIVISION STAGE
- NOISE ATTENUATION BUILDING REQUIREMENTS TO BE IMPOSED THROUGH LOCAL DEVELOPMENT PLANS
- DEVELOPMENT WITHIN THE LANDFILL FACILITY BUFFER IS NOT PERMITTED UNTIL SUCH TIME THE FACILITY IS DOWNGRADED OR CEASES TO OPERATE UNLESS DEEMED A NON-SENSITIVE LAND USE.

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CADASTRAL INFORMATION
SOURCE:
YYMMDD:
DWG REF:
PROJECTION: PCG94

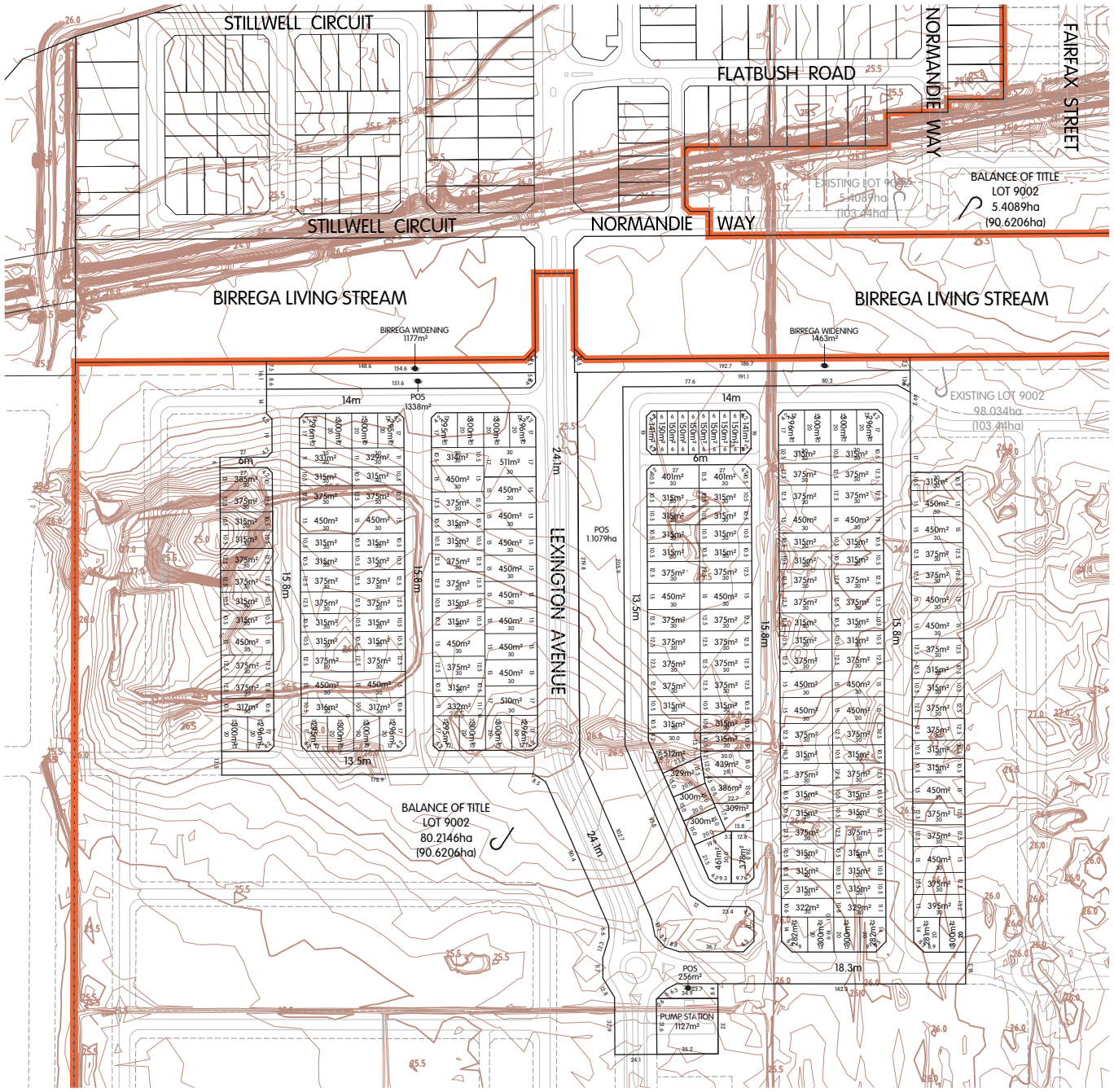
AERIAL PHOTOGRAPHY
SOURCE: NEARMAP
YYMMDD: NA

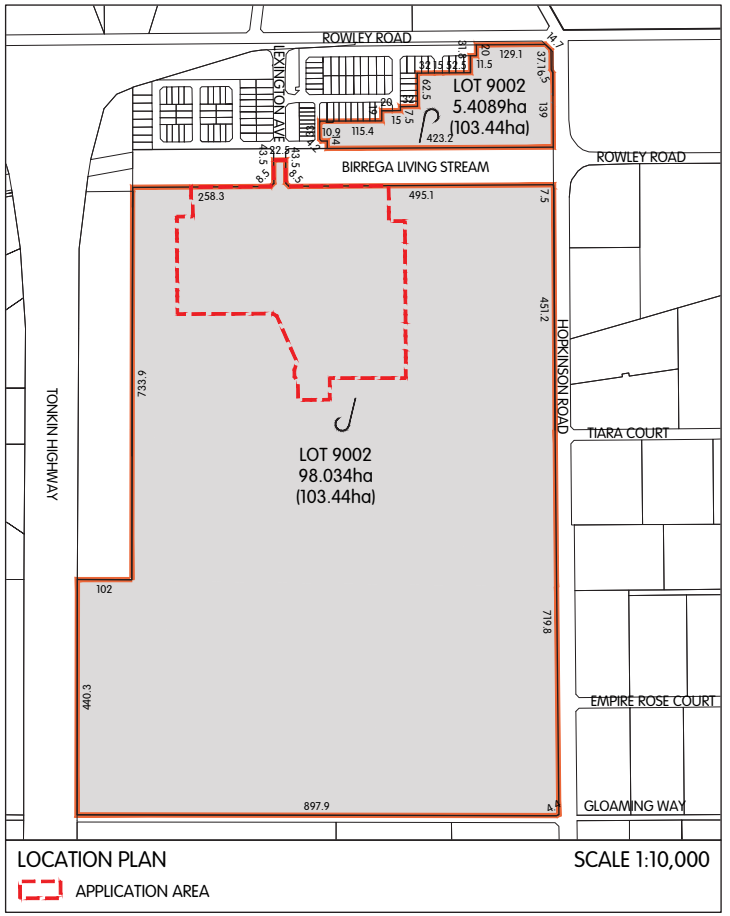
SIZE A3
1:5000
0 metres 50 100 150 200 250

REV	DESCRIPTION	YYMMDD	DRAWN	APPR'D
L	NOISE ATTENUATION	160308	HH	AM
K	MOVE INTERSECTION 35M	160303	HH	AM
J	PROTECTED LANE ADDED	160125	RF	AM
I	UPDATES	160121	RF	AM
H	CELL BOUNDARY MODS	160115	RF	AM
G	ROAD RES. & CARRIAGE	160111	RF	AM
F	ROAD RESERVE CHANGES	160107	RF	AM
E	RE DESIGN	160106	RF	AM

STRUCTURE PLAN
Precinct J
City of Armadale

REF NO. **PEE OAK**
DRAW NO. **RD1 200**
REV. **L**





LEGEND

- SUBJECT LAND
- EXISTING LOT BOUNDARY
- PROPOSED LOT BOUNDARY
- EXISTING CONTOURS
- PROPOSED ROAD CARRIAGEWAY
- FUTURE DEVELOPMENT

Lot Range	No. of Lots
119 - 159	10
234 - 319	91
320 - 449	65
450 - 499	30
500 - 549	4

Lot Yield

Existing Lot	1
Balance Lot	1
POS Reserve / Playing Feild	3
Reserve for Drainage / Pump	3
Residential Lots	201
Total	208

N

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CADASTRAL INFORMATION
SOURCE: WHELANS
YYMMDD:
DWG REF:
PROJECTION: PCG94

SIZE A3
1:2500 0 metres 25 50 75 100 125

REV	DESCRIPTION	YYMMDD	DRAWN	APP'D
B	PARK AVE REFINEMENT	160229	HH	AM
A	SUBDIVISION PLAN	160224	RF	AM

LOT 9002 SUBDIVISION PLAN - STAGES 6-8
Precinct J - Oakford
City of Armadale

REF NO. **PEE OAK** | DRAW NO. **RD1 302** | REV. **B**

APPENDIX B

COMPLIANCE CHECKLIST

Appendix B: Compliance Checklist

ELEMENT/QUESTION	RESPONSE
1: Location	
Does the proposal comply with the performance criteria by applying acceptable solution A1.1?	Yes.
2: Siting and design of the Development	
Does the proposal comply with the performance criteria by applying acceptable solution A2.1?	No. However the performance criteria P2 is achieved through the provision of a compliant HSZ.
Does the proposal comply with the performance criteria by applying acceptable solution A2.2?	Yes.
3: Vehicular access	
Does the proposal comply with the performance criteria by applying acceptable solution A3.1?	Yes.
Does the proposal comply with the performance criteria by applying acceptable solution A3.2?	Yes.
Does the proposal comply with the performance criteria by applying acceptable solution A3.3?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.4?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.5?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.6?	Yes.
Does the proposal comply with the performance criteria by applying acceptable solution A3.7?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.8?	Not applicable.
4: Water	
Does the proposal comply with the performance criteria by applying acceptable solution A4.1?	Yes.
Does the proposal comply with the performance criteria by applying acceptable solution A4.2?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A4.3?	Not applicable.

Applicant Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:

Name: Rohan Carboon

Date: 16/03/2016

APPENDIX C

CITY OF ARMADALE FIRE CONTROL NOTICE

CITY OF Armadale

Fire Break Notice and Bushfire Information **2015/16**

What's Inside

Contents

CEO's Message

Our community prides itself on the area's lush bushland and natural beauty. It is one of the things our community tells us they love the most about living in the district. In order to protect this natural beauty and bushland property owners and residents must be vigilant against the threat of fire. Bushfires are a real risk in WA and we must ensure our community is always prepared against the potential threat.

Every household, whether in the hills surrounded by bushland or in the new and developed suburbs, needs to be prepared for the possibility of fire. We all have a responsibility to help reduce the risk of fire and increase safety for everyone.

This booklet is a guide to help you maintain your house and property to protect your home, family, neighbours and community in the event of a fire. It also outlines your legal requirements for maintaining your property against bushfire risk. Please take the time to read it as it will help you reduce the vulnerability of your neighbourhood to bushfire. It will also help you to make the right decisions should a bushfire approach.

R S Tame
Chief Executive Officer

Dates You Must Remember

Due to unseasonal weather conditions these dates may be extended or shortened. You must check with the City of Armadale Ranger Services for details.

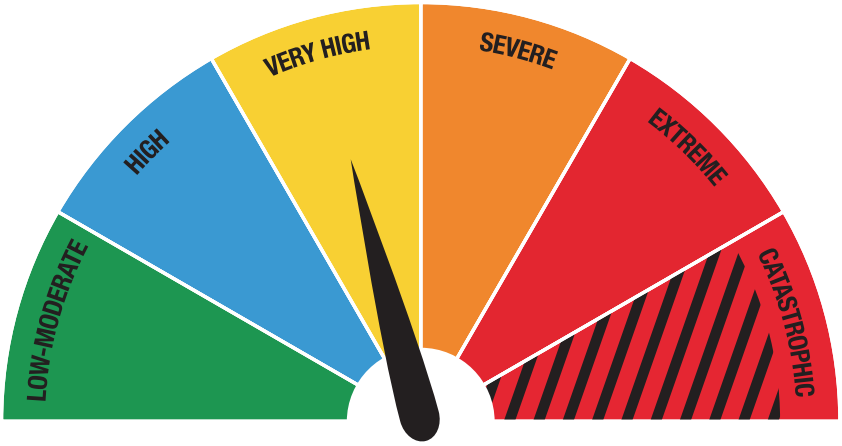
Restricted Burning Period - Permits Required	
1 October to 30 November inclusive	
Burning Garden Refuse	See Page 11
BBQ	Yes
Bush/Grass	Permit Required
BURNING PROHIBITED	
1 December to 31 March inclusive	
Burning Garden Refuse	PROHIBITED
BBQ	PROHIBITED
Bush/Grass	PROHIBITED
Restricted Burning Period - Permits Required	
1 April to 31 May inclusive	
Burning Garden Refuse	See Page 11
BBQ	Yes
Bush/Grass	Permit Required

Note: Fire Danger Rating for a particular day can overrule Permits.

Fire Danger	Burning Garden Refuse	BBQ	Burning Bush/Grass
HIGH	Yes	Yes	Yes
VERY HIGH	No	Gas/Electric only	No
SEVERE	No	Gas/Electric only	No
EXTREME	No	Gas/Electric only	No
CATASTROPHIC	No	Gas/Electric only	No

Firebreaks must be installed before 1 December 2015 and maintained clear of flammable material up to and including 14 March 2016.

FOR ALL FIRES CALL 000



Fire Danger Index

CATASTROPHIC	Total Fire Bans will be declared. Some fires will be unpredictable, difficult to control and move very fast.
EXTREME	Total Fire Bans will be declared. Some fires will be unpredictable, difficult to control and move very fast.
SEVERE	Total Fire Bans are likely. Some fires will be unpredictable, difficult to control and move very fast.
VERY HIGH	Total Fire Bans may be declared. Some fires may be unpredictable, difficult to control and may be fast moving.
HIGH	Fires can be controlled but there is still a potential threat.
LOW	Fires can be easily controlled and are slow moving.

During a Total Fire Ban

You must not light a fire in the open air or use any equipment in the open air that is likely to emit sparks.

This includes lighting wood fuel barbeques, pizza ovens or candles, and using angle grinders, welders or lawnmowers.

Hazard Reduction Program

To reduce fire hazards around your property:

Autumn to Winter

- Tree pruning – remove lower branches and check that power lines are clear. Use a professional contractor.
- Reduce fuel levels around the house – clear long grass, leaves, twigs and flammable shrubs.
- Ensure petrol and other flammables are safely stored, away from the main dwelling.
- Make sure your fire-fighting equipment is in good working order and serviced where required.
- Make sure all residents of your property are aware of your emergency plan including evacuation routes.

Spring

- Move woodpiles and stacked timber away from the main dwelling.
- Keep grass short.
- Clean gutters and roof debris.
- Install firebreaks in accordance with the Firebreak Notice (see page 13), your Variation to Firebreak Order or your Firebreak Management Plan.
- Chemical spraying of firebreaks and low fuel zones – final applications and maintenance.

Early Summer

- Water lawns, trees and shrubs near the buildings to keep them green.
- Re-check fire fighting equipment, screens, water supplies, and that gutters remain clear.

Long Term Precautions

- Ensure firebreaks are prepared in accordance with the latest Firebreak Notice or any Variation to Firebreak Order or Fire Management Plan issued by Council.
- Make sure that the buildings are safe – fit wire fly screens and shutters, fill gaps in roof/wall spaces, fit fire screens to evaporative air conditioners and have them operable to provide a water only supply.
- Give consideration to installing external building sprinkler systems and back up power for emergencies.
- Ensure the access to emergency water supplies has the correct fittings, is unobstructed and the route trafficable.
- Get basic training in fire fighting from your local Bushfire Brigade or even join your local Brigade.
- Join or start a local Bushfire Ready Group.

Firebreak Contractors

As a service to owners and occupiers of land within the district, the City maintains a list of contractors who may be willing to assist landowners to comply with the Firebreak Notice. The City is not recommending any contractor, the list is made available simply as a resource to the owner/occupier of land.

The engagement of a contractor is an agreement between the owner/occupier and the contractor. Therefore it is for the owner/occupier to consider whether a contractor is suitable or otherwise, and to satisfy themselves that the contractor has in place appropriate insurances applicable to the work they are requested to perform.

Landowners, particularly absentee owners should not assume the contractor has undertaken all the work that might be required to achieve compliance with the Firebreak Notice. Regardless of any contractual relationship between the parties the landowner remains legally responsible to ensure full compliance with the Firebreak Notice is achieved.

Evaporative Air Conditioners

Your evaporative air conditioning unit can catch fire from embers coming from bushfires, or even small backyard fires, that can happen in your neighbourhood.

If a fire starts in your air conditioner, it can spread quickly throughout your home. For further information on how to keep your property safe, contact DFES on 1300 657 209 or visit www.dfes.wa.gov.au.

Prepare. Act. Survive

Bushfires happen every summer, they can start suddenly and without warning. People have been killed or seriously injured, and homes destroyed during bushfires. If you live in or near bush, fire is a real risk to you and your family.

You need to understand the bushfire risk to your family and home so you can make decisions now on what you will do if a bushfire starts. Firefighters are preparing for the bushfire season and will do everything they can to make your community safe. Many firefighters are volunteers and take time away from their families during bushfires.

You need to help them by developing your bushfire survival plan and preparing your home to make it as safe as possible. Whether you choose to leave for a safer place or you choose to actively defend, preparation is the key to your survival.

Information in this brochure will help you prepare your home, family and business and develop a plan so you can act to make sure you survive. Before summer starts you need to decide what you will do if a bushfire threatens.

PREPARE your family, home or business – know your bushfire risk and have a bushfire survival plan.

ACT on the fire danger ratings – put your preparations into action, do not wait and see.

SURVIVE by monitoring conditions if a fire starts – know the bushfire warning alert levels and what you will do if you are caught in a fire.

For further information contact DFES on 1300 657 209 or visit www.dfes.wa.gov.au.

Burning Permits

Residents are encouraged to remove and dispose of potential flammable material from their properties before the onset of summer. If you must resort to controlled burning, a permit is required.

When and Where to Obtain a Permit to Burn

A Permit to Burn is required for the burning of any bush, garden rubbish or refuse between 1 October and 30 November, and 1 April and 31 May.

Burning permits can be obtained from the City's Ranger Services between the hours of 3pm and 4pm on Monday, Wednesday and Friday. If you are unable to attend during these hours contact Ranger Services on 9394 5000 for alternative arrangements.

Burning permits may also be issued at the City's Pound on Kilburn Lane, Kelmscott between the hours of 9am and 10am on Saturdays and Sundays, however burning is prohibited on Sundays and public holidays. You may also make arrangements to obtain a permit from a Bush Fire Brigade Fire Control Officer (see telephone numbers on back cover).

Anyone who applies for a Permit to Burn may be required to complete a declaration to ensure that the issuing of a permit will not result in any contravention of the *Bush Fires Act 1954*, or any Local Law.

Even when a Burning Permit has been issued, no fire is to be lit when the fire danger rating is VERY HIGH or above.

Fire Danger Rating information is broadcast on ABC local radio, and displayed on Fire Danger Rating Today sign boards located on Brookton Highway Kelmscott, Roleystone Fire Station and Bedfordale Fire Station.

No permits are issued during the Prohibited Burning Period. Permit holders are required to adhere to all conditions on the permit. Special conditions may apply. For permits (in residential areas) at all other times, contact Ranger Services on 9394 5000.

Please Note: Permits to Burn will not be issued in relation to properties under 1200sqm in size.

Penalties

Failure to maintain 3 metre firebreak	$250
Offences relating to lighting a fire in open air	$250
Setting fire to bush during prohibited burning time	$250
Failure of occupier to extinguish bushfire	$250
Refusal to provide name and address	$100
Failure to produce permit to burn	$100

Major offences result in Court action with fines ranging from $1000 to $25,000, imprisonment for fourteen (14) years, or both.

When and How to Burn

Fire Danger
No burning of any type is permitted, including incinerators, on days of **VERY HIGH, SEVERE, EXTREME** or **CATASTROPHIC** fire danger rating.

Please check the Weather Information Service.
Call 1196.

Don't Fuel Fires

- Don't have thick vegetation right up to the walls of your home.
- Clear all flammable material from around houses, sheds and fences.
- Store firewood, timber, petrol and kerosene well away from the house.
- Don't have flammable trees such as conifers near buildings.
- Clear all dead leaves out of gutters regularly.
- Remove dead trees and branches which, when burning, could drop onto your roof.
- Remove rubbish regularly.
- Rake up leaves, twigs and dead material regularly.
- Burn off dry grass and vegetation at the approved times and in the approved manner.

Advice is Available

Further advice on how to protect your home, and when and how to burn-off is available from your local Volunteer Bush Fire Brigade or the City of Armadale's Ranger Services.

Bush and Grass on any Land

Burning of bush and grass is totally prohibited between 1 December and 31 March inclusive. For all other fires, permits are required between 1 October and 30 November inclusive and between 1 April and 31 May inclusive.

Hints for Burning

- Don't light a fire on a hot and windy day.
- Don't try to burn more than you can control.
- Inform your neighbours.
- Make sure smoke and sparks will not affect neighbour's washing or open windows.
- Cut or rake long grass around trees, buildings and fences before burning.
- Burn against the wind.
- On a sloping block, burn from the top down.
- Have a hose or spray pack to dampen down fierce fires.

Garden Refuse and Rubbish

Between 1 October and 30 November and 1 April and 31 May inclusive, small heaps (up to one cubic metre) of garden refuse may be burnt on the ground between 6pm and 11pm, but only after a 5 metre wide fire break has been cleared around the fire and at least one able bodied person must be in attendance at all times.

Burning is PROHIBITED ON DAYS OF VERY HIGH, SEVERE, EXTREME or CATASTROPHIC fire danger rating.

Health Local Law

The City of Armadale Health Local Laws prohibit the burning of any rubber, plastic, food scraps or green garden materials which can cause the generation of smoke or odour in such quantities as to cause a nuisance to other persons.

Barbeques and Incinerators

Gas and electric barbeques are permitted at any time in approved locations.

NO garden refuse, wood, solid fuel barbecues or Webers are permitted to be used under any circumstance ON VERY HIGH, SEVERE, EXTREME or CATASTROPHIC fire danger days.

Bushfire Ready Groups

Bushfire Ready is a community driven program established by DFES in collaboration with local government to increase the resilience of the community to bushfire risk.

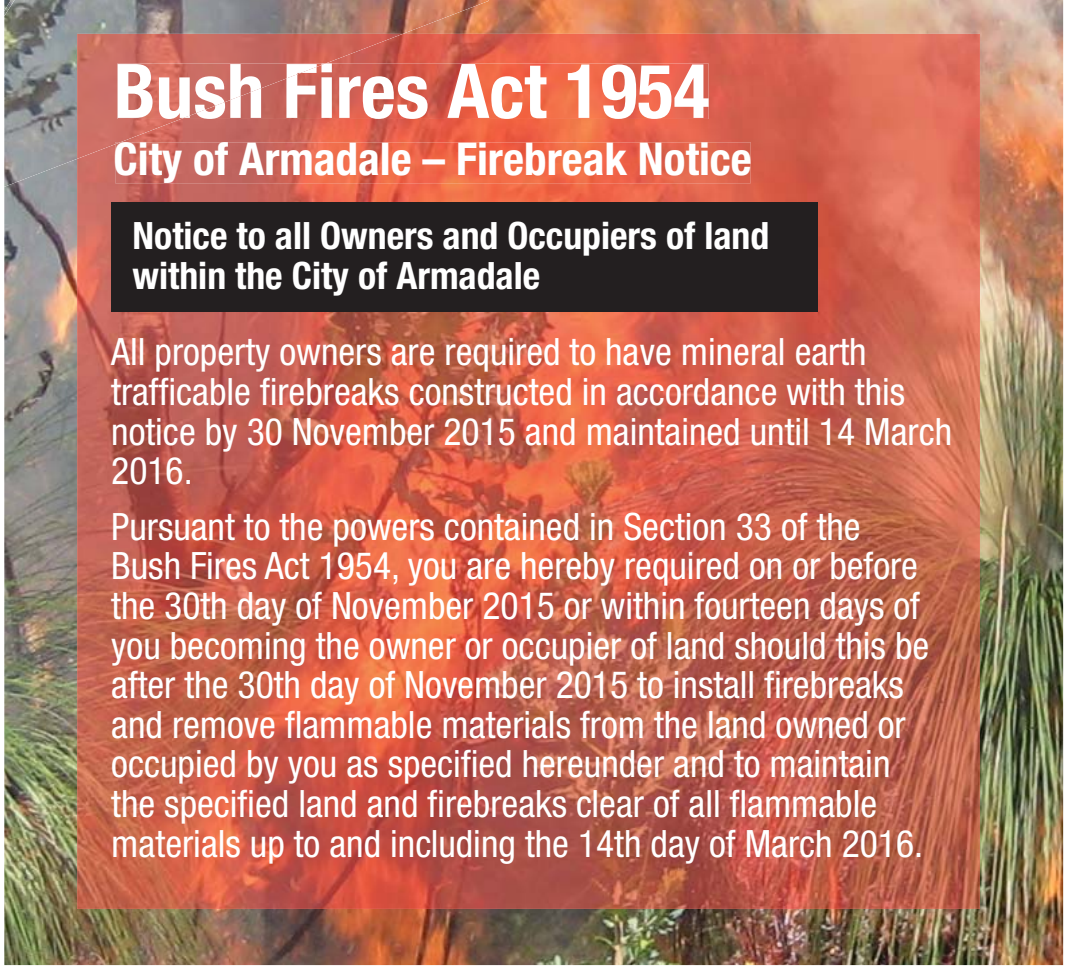
Bushfire Ready aims to build community resilience by providing an opportunity for neighbours to network, share ideas and information and develop and implement strategies to reduce their bushfire risk.

In a dangerous bushfire, a fire truck may not be available to protect every home. This means residents and homeowners need to be responsible for their own safety.

The program is coordinated by a trained volunteer Bushfire Ready facilitator and supported by local Fire Services personnel. All Bushfire Ready Group Facilitators are required to be a member of a Bushfire Brigade, Volunteer Fire and Rescue Service or Volunteer Emergency Service.

Local government in collaboration with DFES play a vital role in facilitating activities to reduce bushfire risk throughout the community. Engaging with the community helps people to prepare, act and survive during bushfire season.

For further information about Bushfire Ready or to form a group in your area call 1300 657 209 or free call 1800 199 084.



Bush Fires Act 1954

City of Armadale – Firebreak Notice

Notice to all Owners and Occupiers of land within the City of Armadale

All property owners are required to have mineral earth trafficable firebreaks constructed in accordance with this notice by 30 November 2015 and maintained until 14 March 2016.

Pursuant to the powers contained in Section 33 of the Bush Fires Act 1954, you are hereby required on or before the 30th day of November 2015 or within fourteen days of you becoming the owner or occupier of land should this be after the 30th day of November 2015 to install firebreaks and remove flammable materials from the land owned or occupied by you as specified hereunder and to maintain the specified land and firebreaks clear of all flammable materials up to and including the 14th day of March 2016.

Definitions

FIREBREAK	means a strip of land that has been cleared of all trees, bushes, grasses and any other object or thing or flammable material, leaving clear bare mineral earth. This includes the trimming back of all overhanging trees, bushes, shrubs and any other object or thing over the firebreak area.
FLAMMABLE	means any bush, plant, tree, grass, mineral, vegetable, substance, object, thing or material that may, or is likely to, catch fire and burn.
TRAFFICABLE	means to be able to travel from one point to another in a 4x4 fire vehicle on a firm and stable surface, unhindered without any obstruction or getting stuck bogged or trapped.
VERTICAL AXIS	means a continuous vertical uninterrupted line at a right angle to the horizontal line of the firebreak.

All Areas of Land less than 5000m²
(within the City of Armadale)

Have the entire land clear of all flammable material by mowing, slashing or other means. All grasses are to be maintained below five (5) centimetres in height and all trees, bushes, shrubs are to be trimmed back over driveways and access ways to all buildings to three (3) metres wide with a clear vertical axis over it to afford access for emergency services to all structures and points of the property.

On any lot having an area of less than 5000m², the keeping of grass on the lot at all times covered by this notice to a height less than five (5) centimetres may be accepted in lieu of clearing a firebreak.

All Areas of Land over 5000m²
(within the City of Armadale)

Install bare mineral earth trafficable firebreaks clear of all flammable material to a minimum of three (3) metres wide immediately inside all external boundaries of the land with all overhanging branches, trees, limbs etc. to be trimmed back to four (4) metres wide with a clear vertical axis over the firebreak area. Install bare mineral earth trafficable firebreaks to a minimum of three (3) metres wide immediately surrounding all buildings, sheds and haystacks or groups of buildings situated on the land, with all overhanging branches, trees, limbs etc. to be trimmed back to three (3) metres wide with a clear vertical axis over the firebreak area. This includes driveways and access to all buildings on the land.

Installation methods may vary to suit your property environment, these may include, but are not limited to ploughing, cultivating, scarifying, burning, grading, and chemical spraying.

If the requirements of this notice are carried out by burning, such burning must be in accordance with the relevant provisions of the *Bush Fires Act 1954*.

Mowed firebreaks are Not Permitted.

Hazard Reduction

In addition to the provisions of this notice you may be required to carry out further works which are considered necessary by Council or an Authorised Officer of the City and specified by way of a separate written notice forwarded to the address as shown on the City of Armadale rates record for the relevant land.

Application to Vary Firebreak Requirements

If it is considered impracticable for any reason whatsoever to clear firebreaks or establish other arrangements as required by this notice, you may apply in writing to the City of Armadale, or its duly Authorised Officers no later than the 1st day of November 2015 for permission to provide firebreaks in alternative positions on the land. If permission is not granted by the City or its duly Authorised Officers you must comply with the requirements of this notice.

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

This option must first be discussed with an Authorised Officer of the City, and approved in writing. All firebreaks and other alternative arrangements allowed by the preceding parts of this notice must be established on or before the 30th day of November 2015 (or within 14 days of you becoming the owner or occupier should this occur after that date) and remain clear of flammable material up to and including the 14th day of March 2016.

Council does not issue exemptions to the Firebreak Notice.

Does your property have a Fire Management Plan?

All properties with a Fire Management Plan approved as part of subdivision consent shall comply with the plan in its entirety. Penalty: $5000

Fuel Storage

On all land where fuel drum ramps are located and where fuel dumps (whether containing fuel or not) are stored, clear maintained firebreaks three (3) metres wide are required with a clear vertical axis over it, around any drum, ramp or stack of drums.

No Burning on Sundays or Public Holidays

Except when specifically authorised to do so for purpose of fuel reduction by a Bush Fire Control Officer (BFCO) appointed by the City under the provisions of the *Bush Fires Act 1954,* an owner or occupier of land shall not set fire to, or cause or allow to be set on fire, any bush, rubbish or refuse whatsoever on a Sunday or a day that is a Public Holiday.

Penalties

The penalty for failing to comply with this notice is a fine not exceeding $5000 and a person in default is also liable whether prosecuted or not to pay the costs of performing the work directed by this notice if it is not carried out by the owner and/or occupier by the date required by this notice.

By order of the City of Armadale

Emergency Numbers

FIRE • AMBULANCE • POLICE • 000

Fire Control Officers

Chief Bush Fire Control Officer City of Armadale	 9394 5000 0419 912 515
Deputy Chief Fire Control Officer Matthew Plowman	 0407 509 128
Roleystone Fire Control Officer Matthew Plowman Fire Station Jarrah Road Roleystone	 0407 509 128
Bedfordale Fire Control Officer Fire Station Waterwheel Road Bedfordale	 0447 722 336
Fire and Rescue Service Permanent Staff Volunteer	 9497 9046 9399 5611
Ranger Services	9394 5000

Burning Permit Issuing Officers

Roleystone Matthew Plowman	 0407 509 128
Bedfordale Michael Hall	 0447 722 336
Armadale Fire and Rescue Permanent Staff Fire and Rescue Volunteer Ranger Services	 9497 9046 9399 5611 9394 5000

7 Orchard Avenue Armadale
9394 5000
info@armadale.wa.gov.au
www.armadale.wa.gov.au

CITY OF Armadale

This document is available in alternative formats on request

APPENDIX D

BAL CERTIFICATION TEMPLATE FOR SUBDIVISION STAGES 6-8

Appendix B: BAL Certification template for subdivision stages 6-8

This template should be completed prior to the building licence processes within subdivision stages 6-8, in order to certify/confirm the indicative BAL ratings determined through the indicative BAL assessment completed as part of the BMP. This will provide an accurate and reasonable outline of the bushfire risk posed to the site from adjacent classified vegetation. A template for the certification process has been provided below.

NOTE: The BAL ratings indicated within this document have not been certified.

Certified BAL ratings for exposed lots

This BAL assessment has been prepared jointly by Emerge Associates and Bushfire Safety Consulting. Bushfire Safety Consulting is owned and operated by Rohan Carboon, an experienced bushfire consultant to the urban planning industry. Rohan has provided technical input and review for the bushfire risk assessment included within this BAL assessment. Bushfire Safety Consulting is a Corporate Bronze Member of the Fire Protection Association of Australia.

Certification checklist

This BAL Assessment provides an accurate and reasonable outline of the bushfire risk posed to the site from adjacent classified vegetation. **Table D1** below provides a checklist outlining the certification process followed for this BAL assessment.

Table D1: Certification checklist

ITEM	YES/NO	COMMENTS
Has a Bushfire Management Plan or BAL Assessment report (or similar) been prepared for the site?	Yes.	*Bushfire Management Plan - Subdivision Stages 6-8 Precinct J – The Avenue* (Emerge Associates and Bushfire Safety Consulting Pty Ltd).
If yes to the above, is the post development vegetation classification mapping provided in the BMP still accurate?		To be completed. Where applicable, include photographs showing vegetation.
Where fuel load management of is proposed/outlined in the BMP or BAL Assessment report (or similar), has management been undertaken on site?		To be completed. Where applicable, include photographs showing vegetation.
Based on the outcomes of this BAL assessment, are any lots within the site exposed to BAL ratings of BAL 12.5 or greater?		To be completed.
Is a BAL contour map attached?		Indicative BAL Contour Map included. To be confirmed through certification.
Has this assessment been verified by an accredited bushfire consultant?		To be completed.

Specified BAL ratings

The results of the indicative BAL Assessment have been certified and show that all future dwellings within the site can have their bushfire risk mitigated through appropriate management of vegetation within 100 m of the site or through the provision of appropriate setbacks to classified vegetation. The BAL ratings determined for individual lots within the site are shown in **Figure D1** (attached separately to this Appendix), and are detailed in **Table D2** below which outlines the specific standard that a dwelling must be built to within an exposed lot.

Based on the outcomes of the BAL assessment, all proposed lots within the site are rated as BAL-LOW and therefore there is no requirement for increased construction standards in accordance with AS 3959.

BAL Ratings

BAL-29
BAL-19
BAL-12.5
BAL-LOW

Table D2: Specified BAL ratings for exposed lots

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
220	BAL-LOW	>50 metres	To be completed	
221	BAL-LOW	>50 metres	To be completed	
222	BAL-LOW	>50 metres	To be completed	
223	BAL-LOW	>50 metres	To be completed	
224	BAL-LOW	>50 metres	To be completed	
225	BAL-LOW	>50 metres	To be completed	
226	BAL-LOW	>50 metres	To be completed	
227	BAL-LOW	>50 metres	To be completed	
228	BAL-LOW	>50 metres	To be completed	
229	BAL-LOW	>50 metres	To be completed	
230	BAL-LOW	>50 metres	To be completed	
231	BAL-LOW	>50 metres	To be completed	
232	BAL-LOW	>50 metres	To be completed	
233	BAL-LOW	>50 metres	To be completed	
248	BAL-LOW	>100 metres	To be completed	
249	BAL-LOW	>100 metres	To be completed	
250	BAL-LOW	>100 metres	To be completed	
251	BAL-LOW	>100 metres	To be completed	
252	BAL-LOW	>100 metres	To be completed	
253	BAL-LOW	>100 metres	To be completed	
254	BAL-LOW	>100 metres	To be completed	
255	BAL-LOW	>100 metres	To be completed	
256	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
257	BAL-LOW	>100 metres	To be completed	
258	BAL-LOW	>100 metres	To be completed	
259	BAL-LOW	>100 metres	To be completed	
260	BAL-LOW	>100 metres	To be completed	
261	BAL-LOW	>100 metres	To be completed	
262	BAL-LOW	>100 metres	To be completed	
263	BAL-LOW	>100 metres	To be completed	
264	BAL-LOW	>100 metres	To be completed	
265	BAL-LOW	>100 metres	To be completed	
266	BAL-LOW	>100 metres	To be completed	
267	BAL-LOW	>100 metres	To be completed	
268	BAL-LOW	>100 metres	To be completed	
269	BAL-LOW	>100 metres	To be completed	
270	BAL-LOW	>100 metres	To be completed	
271	BAL-LOW	>100 metres	To be completed	
272	BAL-LOW	>100 metres	To be completed	
273	BAL-LOW	>100 metres	To be completed	
274	BAL-LOW	>100 metres	To be completed	
275	BAL-LOW	>100 metres	To be completed	
276	BAL-LOW	>100 metres	To be completed	
277	BAL-LOW	>100 metres	To be completed	
278	BAL-LOW	>100 metres	To be completed	
279	BAL-LOW	>100 metres	To be completed	
280	BAL-LOW	>100 metres	To be completed	
281	BAL-LOW	>100 metres	To be completed	
282	BAL-LOW	>100 metres	To be completed	
283	BAL-LOW	>100 metres	To be completed	
284	BAL-LOW	>100 metres	To be completed	
285	BAL-LOW	>100 metres	To be completed	
286	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
287	BAL-LOW	>100 metres	To be completed	
288	BAL-LOW	>100 metres	To be completed	
289	BAL-LOW	>100 metres	To be completed	
290	BAL-LOW	>100 metres	To be completed	
291	BAL-LOW	>100 metres	To be completed	
292	BAL-LOW	>100 metres	To be completed	
293	BAL-LOW	>100 metres	To be completed	
294	BAL-LOW	>100 metres	To be completed	
295	BAL-LOW	>100 metres	To be completed	
296	BAL-LOW	>100 metres	To be completed	
297	BAL-LOW	>100 metres	To be completed	
298	BAL-LOW	>100 metres	To be completed	
299	BAL-LOW	>100 metres	To be completed	
300	BAL-LOW	>100 metres	To be completed	
301	BAL-LOW	>100 metres	To be completed	
302	BAL-LOW	>100 metres	To be completed	
303	BAL-LOW	>100 metres	To be completed	
304	BAL-LOW	>100 metres	To be completed	
305	BAL-LOW	>100 metres	To be completed	
306	BAL-LOW	>100 metres	To be completed	
307	BAL-LOW	>100 metres	To be completed	
308	BAL-LOW	>100 metres	To be completed	
309	BAL-LOW	>100 metres	To be completed	
310	BAL-LOW	>100 metres	To be completed	
311	BAL-LOW	>100 metres	To be completed	
312	BAL-LOW	>100 metres	To be completed	
313	BAL-LOW	>100 metres	To be completed	
314	BAL-LOW	>100 metres	To be completed	
315	BAL-LOW	>100 metres	To be completed	
316	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
317	BAL-LOW	>100 metres	To be completed	
318	BAL-LOW	>100 metres	To be completed	
319	BAL-LOW	>100 metres	To be completed	
320	BAL-LOW	>100 metres	To be completed	
321	BAL-LOW	>100 metres	To be completed	
322	BAL-LOW	>100 metres	To be completed	
323	BAL-LOW	>100 metres	To be completed	
324	BAL-LOW	>100 metres	To be completed	
325	BAL-LOW	>100 metres	To be completed	
326	BAL-LOW	>100 metres	To be completed	
327	BAL-LOW	>100 metres	To be completed	
328	BAL-LOW	>100 metres	To be completed	
329	BAL-LOW	>100 metres	To be completed	
330	BAL-LOW	>100 metres	To be completed	
331	BAL-LOW	>100 metres	To be completed	
332	BAL-LOW	>100 metres	To be completed	
333	BAL-LOW	>100 metres	To be completed	
334	BAL-LOW	>100 metres	To be completed	
335	BAL-LOW	>100 metres	To be completed	
336	BAL-LOW	>100 metres	To be completed	
337	BAL-LOW	>100 metres	To be completed	
338	BAL-LOW	>100 metres	To be completed	
339	BAL-LOW	>100 metres	To be completed	
340	BAL-LOW	>100 metres	To be completed	
341	BAL-LOW	>100 metres	To be completed	
342	BAL-LOW	>100 metres	To be completed	
343	BAL-LOW	>100 metres	To be completed	
344	BAL-LOW	>100 metres	To be completed	
345	BAL-LOW	>100 metres	To be completed	
346	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
347	BAL-LOW	>100 metres	To be completed	
348	BAL-LOW	>100 metres	To be completed	
349	BAL-LOW	>100 metres	To be completed	
350	BAL-LOW	>100 metres	To be completed	
351	BAL-LOW	>100 metres	To be completed	
352	BAL-LOW	>100 metres	To be completed	
353	BAL-LOW	>100 metres	To be completed	
354	BAL-LOW	>100 metres	To be completed	
355	BAL-LOW	>100 metres	To be completed	
356	BAL-LOW	>100 metres	To be completed	
357	BAL-LOW	>100 metres	To be completed	
358	BAL-LOW	>100 metres	To be completed	
359	BAL-LOW	>100 metres	To be completed	
360	BAL-LOW	>100 metres	To be completed	
361	BAL-LOW	>100 metres	To be completed	
362	BAL-LOW	>100 metres	To be completed	
363	BAL-LOW	>100 metres	To be completed	
364	BAL-LOW	>100 metres	To be completed	
365	BAL-LOW	>100 metres	To be completed	
366	BAL-LOW	>100 metres	To be completed	
367	BAL-LOW	>100 metres	To be completed	
368	BAL-LOW	>100 metres	To be completed	
369	BAL-LOW	>100 metres	To be completed	
370	BAL-LOW	>100 metres	To be completed	
371	BAL-LOW	>100 metres	To be completed	
372	BAL-LOW	>100 metres	To be completed	
373	BAL-LOW	>100 metres	To be completed	
374	BAL-LOW	>100 metres	To be completed	
375	BAL-LOW	>100 metres	To be completed	
376	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
377	BAL-LOW	>100 metres	To be completed	
378	BAL-LOW	>100 metres	To be completed	
379	BAL-LOW	>100 metres	To be completed	
380	BAL-LOW	>100 metres	To be completed	
381	BAL-LOW	>100 metres	To be completed	
382	BAL-LOW	>100 metres	To be completed	
383	BAL-LOW	>100 metres	To be completed	
384	BAL-LOW	>100 metres	To be completed	
385	BAL-LOW	>100 metres	To be completed	
386	BAL-LOW	>100 metres	To be completed	
387	BAL-LOW	>100 metres	To be completed	
388	BAL-LOW	>100 metres	To be completed	
389	BAL-LOW	>100 metres	To be completed	
390	BAL-LOW	>100 metres	To be completed	
391	BAL-LOW	>100 metres	To be completed	
392	BAL-LOW	>100 metres	To be completed	
393	BAL-LOW	>100 metres	To be completed	
394	BAL-LOW	>100 metres	To be completed	
395	BAL-LOW	>100 metres	To be completed	
396	BAL-LOW	>100 metres	To be completed	
397	BAL-LOW	>100 metres	To be completed	
398	BAL-LOW	>100 metres	To be completed	
399	BAL-LOW	>100 metres	To be completed	
400	BAL-LOW	>100 metres	To be completed	
401	BAL-LOW	>100 metres	To be completed	
402	BAL-LOW	>100 metres	To be completed	
403	BAL-LOW	>100 metres	To be completed	
404	BAL-LOW	>100 metres	To be completed	
405	BAL-LOW	>100 metres	To be completed	
406	BAL-LOW	>100 metres	To be completed	

LOT NUMBER	INDICATIVE BAL RATING	MINIMUM SEPARATION ACHIEVED BETWEEN DWELLING AND CLASSIFIED VEGETATION	BAL CERTIFIED? (YES / NO)	COMMENTS AND EXCEPTIONS
407	BAL-LOW	>100 metres	To be completed	
408	BAL-LOW	>100 metres	To be completed	
409	BAL-LOW	>100 metres	To be completed	
410	BAL-LOW	>100 metres	To be completed	
436	BAL-LOW	>100 metres	To be completed	
437	BAL-LOW	>100 metres	To be completed	
438	BAL-LOW	>100 metres	To be completed	
439	BAL-LOW	>100 metres	To be completed	
440	BAL-LOW	>100 metres	To be completed	
441	BAL-LOW	>100 metres	To be completed	
442	BAL-LOW	>100 metres	To be completed	
443	BAL-LOW	>100 metres	To be completed	
444	BAL-LOW	>100 metres	To be completed	
445	BAL-LOW	>100 metres	To be completed	
446	BAL-LOW	>100 metres	To be completed	
447	BAL-LOW	>100 metres	To be completed	
448	BAL-LOW	>100 metres	To be completed	
449	BAL-LOW	>100 metres	To be completed	
450	BAL-LOW	>100 metres	To be completed	
451	BAL-LOW	>100 metres	To be completed	
452	BAL-LOW	>100 metres	To be completed	
453	BAL-LOW	>100 metres	To be completed	
454	BAL-LOW	>100 metres	To be completed	
455	BAL-LOW	>100 metres	To be completed	
456	BAL-LOW	>100 metres	To be completed	
457	BAL-LOW	>100 metres	To be completed	
460	BAL-LOW	>100 metres	To be completed	
461	BAL-LOW	>100 metres	To be completed	

Applicant declaration

I declare that the information provided is true and correct to the best of my knowledge.

Name and signature:

Organisation:

Date:

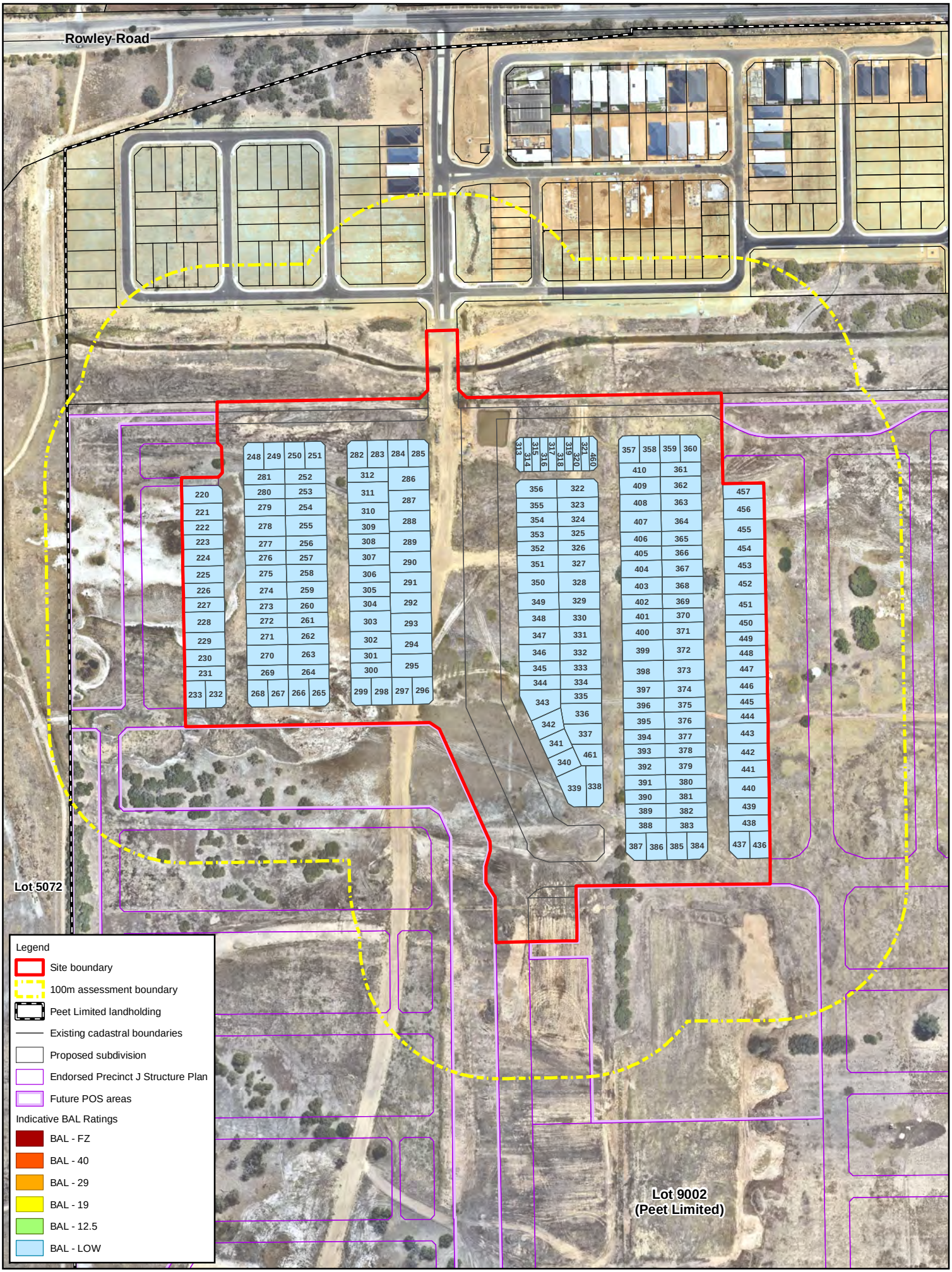


Figure D1: Indicative Bushfire Attack Levels

Project:	Subdivision Stages 6-8 Precinct J - The Avenue
Client:	Peet Oakford Land Syndicate Limited

Plan Number: EP14-017(09)--F75

Drawn:	ADB	Date:	16/03/2016
Approved:	KK	Date:	16/03/2016
Checked:	ADB	Scale:	1:3,500@A4

0 25 50 100 Metres

emerge ASSOCIATES
Integrated Science & Design