CITY OF ALBANY

LOCAL PLANNING SCHEME NO. 1

LOCAL STRUCTURE PLAN NO. 13

SPECIAL RESIDENTIAL AREA NO. 22
NANARUP & KULA ROADS, LOWER KING

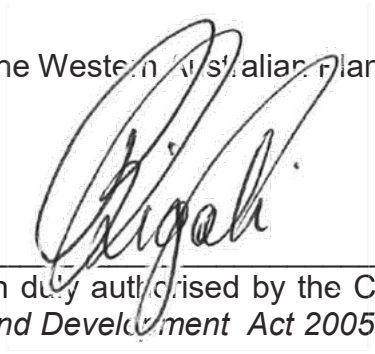
AYTON BAESJOU
PLANNING

ABN: 15 061 140 172
59 Peels Place
Albany WA 6330
Ph 9842 2304 Fax 9842 8494

This structure plan is prepared under the provisions of the City of Albany Local Planning Scheme No. 1.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: **10 JUNE 2021**

Signed for and on behalf of the Western Australian Planning Commission



an officer of the Commission duly authorised by the Commission pursuant to Section 16 of *the Planning and Development Act 2005* for that purpose, in the presence of:

Witness

14 JUNE 2021 Date

10 JUNE 2031 Date of Expiry

Amendments:

Amendment No.	Summary of Amendment	Amendment Type	Date Approved (WAPC)

EXECUTIVE SUMMARY

This Local Structure Plan has been prepared to guide subdivision and development of Lots 105 & 106 Nanarup & Kula Roads in Kalgan Heights/Lower King for Special Residential purposes.

The land is located some 15km from the Albany Central Area and is currently used for rural living Purposes.

In accord with local and state policy promoting the efficient use of underutilised and serviceable land as well as the proposals of the Albany Local Planning Strategy, the Local Structure Plan provides for the intensification of Residential landuse to Special Residential standards. This follows the Precinct Plans and agreements with Council and the Department of Planning, Lands & Heritage established in the zoning, establishment & planning approval of Special Residential Area No. 22. The LSP also aligns with the form, layout and approvability of existing development in the locality.

This Local Structure Plan should be read with and is adjunct to Local Planning Scheme No. 1 Amendment No. 6.

Lot 105 is 2.73ha in area with Lot 106 comprising some 4.15ha.

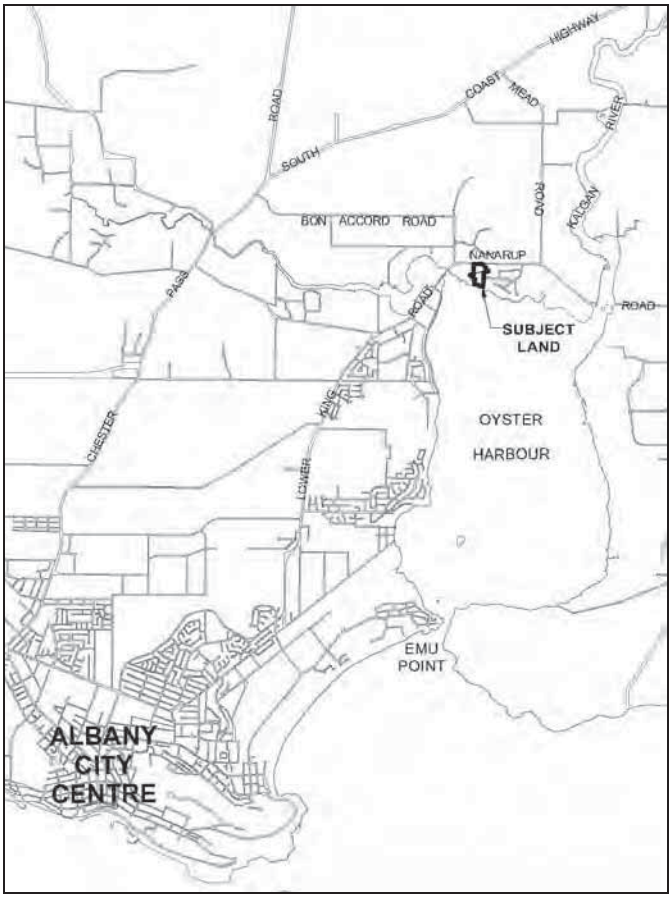
Local Structure Plan Summary:	
Total Area	6.88ha
Existing Lots	2
Lot Yield	5
Dwelling Density	1.377ha/Dw
Estimated Population	12pp
Estimated Additional Population	7pp
School Sites/ Other	NA

Contents

PART 1. – STATUTORY

1.0 Structure Plan Area

The Structure Plan covers Lots 105 & 106 Nanarup and Kula Roads in Kalgan Heights/Lower King as shown below.



2.0 Content of Local Structure Plan

The Local Structure Plan (LSP) comprises two parts being:

1. Statutory; containing the Local Structure Plan Map (Following Page)
2. Explanatory; referring to the background for and issues inherent in the Local Structure Plan per Local Planning Scheme No. 1 Amendment No. 6.

3.0 Relationship to Local Planning Scheme No. 1

In any conflict between scheme clauses or provisions and the LSP, the provisions or clauses of the scheme shall prevail.

Words and expressions used in the LPS have the same meaning as given in Local Planning Scheme No. 1.

Pursuant to clause 27 Schedule 2 Part 4 of the Planning and Development (Local Planning Schemes) Regulations 2015, due regard is to be given to the requirements of the Local Structure Plan in any subdivision and development applications.

4.0 Operation

The LSP will come into effect following certification by the Western Australian Planning Commission.

5.0 Subdivision and Development Conditions

In addition to the general clauses of the Scheme and the Special Provisions of Schedule 15 relating to Special Residential Area No. 22, subdivision is to follow the LSP Map. Minor variations may be approved by the Western Australian Planning Commission.

Prior to subdivision, the landowner to investigate whether approval is required for the Aboriginal Heritage Place, Registered site - Protected Area.

Consultation to be carried out with landowners on Lots 526 & 527 Kula Road and Nambucca Rise.

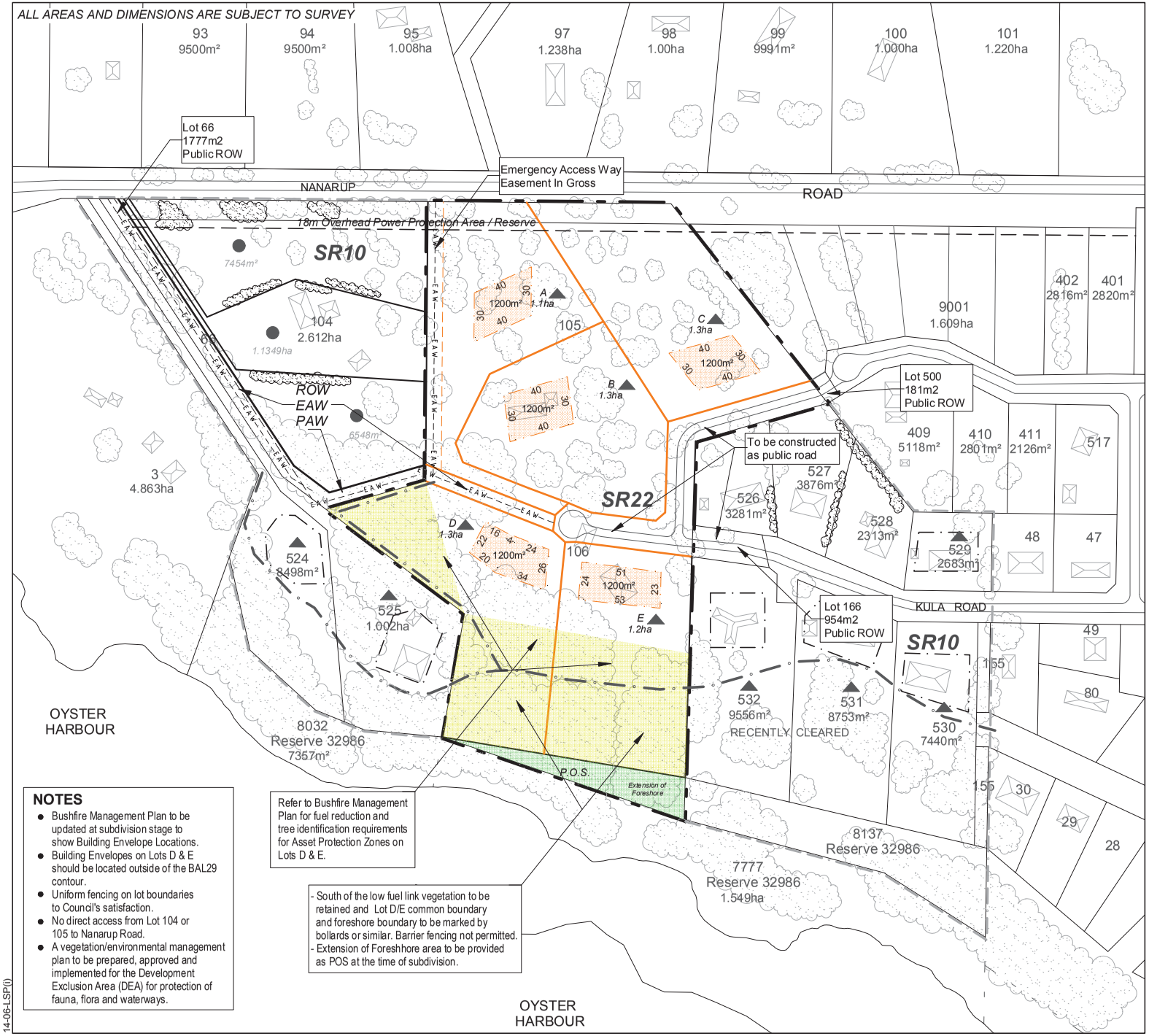
A Site and Soil Evaluation to be carried out prior to subdivision.

A Development Exclusion Area to be included on Lot 106 which excludes buildings, effluent disposal and clearing of vegetation.

POS foreshore reserve to be ceded as 'Parks and Reserves' prior to subdivision.

LOCAL STRUCTURE PLAN No. 13

City of Albany
Local Planning Scheme No. 1
Special Residential Area 22
Lower King, City of Albany



NOTES

- Bushfire Management Plan to be updated at subdivision stage to show Building Envelope Locations.
- Building Envelopes on Lots D & E should be located outside of the BAL29 contour.
- Uniform fencing on lot boundaries to Council's satisfaction.
- No direct access from Lot 104 or 105 to Nanarup Road.
- A vegetation/environmental management plan to be prepared, approved and implemented for the Development Exclusion Area (DEA) for protection of fauna, flora and waterways.

Refer to Bushfire Management Plan for fuel reduction and tree identification requirements for Asset Protection Zones on Lots D & E.

- South of the low fuel link vegetation to be retained and Lot D/E common boundary and foreshore boundary to be marked by bollards or similar. Barrier fencing not permitted.
- Extension of Foreshore area to be provided as POS at the time of subdivision.

LEGEND

- Subject Land
- Existing Lot Boundaries
- Proposed Lot Boundaries
- Existing Buildings
- Indicative Building Envelope
- Existing Vegetation
- Tree/Shrub Planting
- Low Fuel Link/FSA
- Emergency Access Way
- POS- Addition to Foreshore Area
- Development Exclusion Area (excludes buildings, effluent disposal & clearing of vegetation)
- Lots where the keeping of stock may be considered
- Lots where building envelopes are not to exceed 1200m².

Map Creator -	BQ/MRT
Copyright -	Ayton Baesjou Planning
Sources -	Landgate (Cadastre & Contours)
Datum -	AHD
Contact -	Ayton Baesjou Planning
Disclaimer -	Subject to Verification & Survey

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14-06-LSP(i)

PART 2 – EXPLANATORY

The land is located some 15km north east of the Albany City Centre and is accessed via Lower King Road.

Immediately north of Nanarup Road is the Sheringa Park Special Rural Estate accommodating lots from 1ha in size. This is an established and quality development providing high amenity house sites in a spacious environment.

To the east and west is Special Residential Zone Area No. 10 (SR10) accommodating established lots from 4000m^2 in area. Further east, this zone melds into the Kalgan Heights residential zone which provides quality high amenity house sites from 2000m^2 in size.

As a part of Amendment No. 6 to Local Planning Scheme No. 1 which transfers the land to Special Residential Area No. 22, a Local Structure Plan (Map) is required. This plan identifies the future lot layout and associated spatial subdivision and development issues and requirements following on from the Special Provisions identified in in Schedule 15 necessary to apply to the land.

As a result, reference should be made to the Amendment No. 6 reports and technical assessments covering site and capability, bushfire safety, existing provisions, servicing and the requirements for future subdivision.

The LSP depicts the general layout, outlines building envelopes, access arrangements and the other subdivisional components necessary to provide for development.

The land is in a sewerage sensitive area and therefore the minimum lot size is 1 hectare.

A Development Exclusion Area (DEA) is located on the southern part of the subject site, which excludes development, effluent disposal or clearing of vegetation. An environmental management plan is to be prepared and approved identifying values which relate to fauna, flora and waterways prior to subdivision.

Supporting the LSP, Amendment No. 6 and the existing special residential controls include measures to:

- Include the land within Special Residential Area No. 22 and reference the LSP Map as the guide to the future subdivision and development of the land.
- Provide for subdivisional and development servicing as necessary.
- Provide for landowner notifications covering agricultural activities and bushfire safety.
- Implement Bushfire Management Plan requirements and apply specific bushfire safety provisions.
- Provide prudent landuse control and approval requirements.
- Provide building envelope and effluent disposal location control.

Appendix 1.

Bushfire Management Plan

Lots 105 & 106 Nanarup Road, Lower King

BioDiverse Solutions Pty Ltd

Bushfire Management Plan Coversheet

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

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 105 and 106 Nanarup Road		
Suburb: Lower King	**State:** WA	**P/code:** 6330
Local government area: City of Albany		
Description of the planning proposal: To support a proposed Local Structure Plan.		
BMP Plan / Reference Number: AB009	**Version:** 1.4	**Date of Issue:** 10/11/2020
Client / Business Name: GA Clark Nominees Pty Ltd		

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

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

This proposal if for a Local Structure Plan

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

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Kathryn Kinnear	Level 2	BPAD30794	01/02/2021
Company Bio Diverse Solutions		**Contact No.** 9842 1575	

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

Signature of Practitioner  **Date** 10/11/2020

Lots 105 and 106
Nanarup Road,
Lower King WA 6330

Bushfire Management Plan

10/11/2020

Kathryn Kinnear

Bio Diverse Solutions

DOCUMENT CONTROL

TITLE

Title: Bushfire Management Plan – Lots 105 and 106 Nanarup Road Bushfire Management Plan
Author (s): Kathryn Kinnear
Reviewer (s): Nick Ayton
Job No.: AB009
Client: GA Clark Nominees Pty Ltd.

REVISION RECORD

Revision	Summary	Revised By	Date
Draft Id 20/07/2017	Internal QA Review	Bianca Theyer	20/07/2017
Draft Id 20/07/2017	Issued to client for review	K. Kinnear	20/07/2017
Final Id 02/08/2017	Issued to client	K. Kinnear	08/09/2017
Final Id 06/07/2018	Issued to client	K. Kinnear	06/07/2018
Final Id 10/11/2020	Amended/Updated Plan Reissued to client	K. Kinnear	10/11/2020

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Building in Bushfire Prone Areas, WAPC SPP3.7, Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Bio Diverse Solutions
29 Hercules Crescent
Albany WA 6330

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1. Executive Summary

GA Clark Nominees Pty Ltd commissioned Bio Diverse Solutions (Bushfire Consultants) to prepare a Bushfire Management Plan to guide all future bushfire management for the proposed development of a Local Structure Plan at Lot 105 and 106 Nanarup Road, Kalgan WA.

The proposed Structure Plan for the Subject Site consists of 5 lifestyle size lots ranging in size from 1.1ha to 1.3ha. The lots will form part of the adjoining established Kalgan Heights residential development. The Structure Plan will also include the extension of Kula Road to link back onto Nambucca Rise as well as an Emergency Access Way and a Public Right of Way to improve local access for the area. The Local Structure Plan (Ayton Baesjou Planning, 2018) has been included as Appendix A.

The subject site was assessed as having internal areas of Low fuel/non-vegetated, Forest Type A. BAL contouring across the subject site has allocated BAL 29 or less to apply to any proposed dwellings on the lots. The existing dwellings can meet BAL 29 or less. All future buildings can achieve an APZ area associated with a BAL allocation of BAL 29, BAL 19 or BAL 12.5. APZ areas in Lots 1-6 are to extend across the lot boundary and can conform to WAPC requirements with minimum clearing (already to APZ standard), some minor tree removal might be required by future lot owners depending on final placement of dwelling on the lot. The developer will be required to maintain APZ areas across the future lots until sold to new to owners.

Access will be provided in two alternative directions to separate destinations. Kula Road is planned to link back onto Nambucca Rise. An Emergency Access Way and a Public ROW is to be constructed to enable safe access/egress to Nanarup Road to the west. This will give the greater developed area of Kalgan Heights an alternative access route, which presently does not exist. The EAW measures 261m meeting Acceptable Solutions and is between 6-10m wide along and the Public Row measures 395. This will be gazetted as an easement in gross to allow for emergency access/egress in a bushfire event. Cul-de-sacs are to be avoided in bushfire prone areas but cannot be avoided due to the arrangement and shape of existing lots. This has long been established by the precinct/outline planning prepared at the time of surrounding zoning and development. The Cul-de-sac of Kula Road will only service more than 3 lots and will be significantly shortened to approximately 60m at that point the access will be improved by linking Kula Road and Nambucca Rise, however a public road for everyday vehicle use cannot be extended to Nanarup Road due to constrained sightlines and road safety issues.

Reticulated Scheme Water will be provided to the development and installed as per WCWA requirements.

An assessment to the WAPC Guidelines for Planning in Bushfire Prone Areas (vers 1.3, 2017) Acceptable Solutions of the 4 bushfire protection criteria is summarised over the page.

Table 1: Bushfire protection criteria applicable to the site

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant BAL 29 or less applied to lots and existing buildings
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	Compliant, APZ in BAL 29 or less
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	Compliant two access to 2 destinations
	A3.2 Public Road	Yes	Compliant
	A3.3 Cul-de-sacs	Yes	Compliant
	A3.4 Battle axes	NA	NA >10m in width
	A3.5 Private driveways	Yes	Compliant
	A3.6 Emergency Access Ways	Yes	Compliant
	A3.7 Fire Service Access Ways	Yes	Compliant
	A3.8 Firebreaks	Yes	Compliant on parent lot, APZ applicable to future lots
Element 4 – Water	A4.1 Reticulated areas	Yes	Compliant
	A4.2 Non-reticulated areas	NA	N/A
	A4.3 Individual lots in non-reticulated areas	N/A	N/A

2. Introduction

GA Clarke Nominees Pty Ltd commissioned Bio Diverse Solutions (Bushfire Consultants) to prepare a Bushfire Management Plan (BMP) to guide all future bushfire management for the proposed Structure Plan Lot 105 and 106 Nanarup Road, Kalgan WA. This BMP has been prepared to assess the subject site to the current and endorsed Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and State Planning Policy 3.7 (WAPC, 2015).

Such planning takes into consideration standards and requirements specified in various documents such as Australian Standard (AS) 3959-2018, Western Australian Planning Commission (WAPC) Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017) and State Planning Policy 3.7 (WAPC, 2015). These policies, plans and guidelines have been developed by WAPC to ensure uniformity to planning in designated "Bushfire Prone Areas" and consideration of the relevant bushfire hazards when identifying or investigating land for future development.

2.1. Location

Lots 105 and 106 Nanarup Road (herein referred to as the Subject Site) is 7.1ha and located approximately 13km northeast of the Albany CBD adjoining the Kalgan Heights development in the suburb of Lower King. The Subject Site is bound by Nanarup Road to the north, Oyster Harbour to the south, Kalgan Heights residential development to the east and private lifestyle size properties to the west. The location of the Subject Site is shown on Figure 1.

Figure 1: Location Plan

2.2. Development Proposal

The proposed Structure Plan for the Subject Site consists of 5 lifestyle size lots ranging in size from 1.1ha to 1.3ha. The lots will form part of the adjoining established Kalgan Heights residential development. The Structure Plan will also include the extension of Kula Road from the east to link back onto Nambucca Rise. The Local Structure Plan (Ayton Baesjou Planning, 2018) has been included as Appendix A.

2.3. Statutory Framework

This document and the recommendations contained within are aligned to the following policy and guidelines:

- *Planning and Development Act 2005*;
- *Planning and Development Regulations 2018;*
- *Planning and Development (Local Planning Scheme) Regulations 2015;*
- State Planning Policy 3.7 Planning in Bushfire Prone Areas;
- Guidelines for Planning in Bushfire Prone Areas;
- *Building Act 2011;*
- *Building Regulations 2012;*
- Building code of Australia (National Construction Code);
- *Fire and Emergency Services Act 1998*.
- AS 3959-2018 “Construction of Buildings in Bushfire Prone Areas” current and endorsed standards;
- *Bushfires Act 1954*; and
- City of Albany Annual Fire Management Notice.

The publicly released Bushfire Prone Area Mapping (OBRM, 2019) shows that the majority of the Subject Site and surrounding development is located within a Bushfire Prone Area (situated within 100m of >1 ha of bushfire prone vegetation). Bushfire Prone Area Mapping is shown on Figure 2.

Figure 2: Bushfire Prone Area Mapping

2.4. Suitably Qualified Bushfire Consultant

This BMP has been prepared by Kathryn Kinnear (nee White), who has 10 years operational fire experience with the (formerly) DEC (1995-2005) and has the following accreditation in bushfire management:

- Incident Control Systems;
- Operations Officer;
- Prescribed Burning Operations;
- Fire and Incident Operations;
- Wildfire Suppression 1, 2 & 3;
- Structural Modules – Hydrants and hoses, Introduction to Structural Fires, and Fire extinguishers; and
- Ground Controller.

Kathryn Kinnear currently has the following tertiary Qualifications:

- BAS Technology Studies & Environmental Management;
- Diploma Business Studies; and
- Graduate Diploma in Environmental Management.

Kathryn Kinnear is an accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794). Bio Diverse Solutions are Bronze Corporate Members of the Fire Protection Australia Association and Kathryn is a suitably qualified Bushfire Practitioner to prepare this Bushfire Management Plan.

3. Environmental Considerations

3.1. Native Vegetation – Modification and Clearing

Some areas of native forest vegetation are present within the subject site as such there is no separation from the classified vegetation to the building envelopes. The intention is to selectively remove and/or modify the vegetation from and around the affected building envelopes to the extent required so that proposed building envelopes can have a house located within BAL-29 or lower. See BAL-29 APZ's on Figure 5 Works Program Map. The vegetation modification will be to a low threat state and meet the requirements of Schedule 1: WAPC APZ Standards.

Note: Planning approval must be obtained prior to clearing of native vegetation.

3.2. Revegetation/Landscaping Plans

There is no planned revegetation planned as part of this proposal.

4. Objectives

The objectives of this BMP are to assess the bushfire risks associated with the existing site and the proposed Structure Plan to reduce the occurrence of, and minimise the impact of bushfires, thereby reducing the threat to life, property and the environment. It also aims to guide the Structure Plan design by assessing the proposed Structure Plan according to the Bushfire Protection Criteria Acceptable Solutions as outlined in the Guidelines for Planning in Bushfire Prone Areas Vers 1.3 (WAPC, 2017).

The BMP aims to:

- Achieve consistency with objectives and policy measures of SPP 3.7 (WAPC, 2015);
- Assess any building requirements to AS3959-2018 (current and endorsed standards) and BAL Construction;
- Assess the Structure Plan proposal against the Bushfire Protection Criteria Acceptable Solutions as outlined in the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017);
- Understand and document the extent of the bushfire risk to the Subject Site;
- Prepare bushfire risk management measures for bushfire management of all land within the Subject Site with due regard to people, property, infrastructure and the environment;
- Nominate individuals and organisations responsible for fire management and associated works within the Subject Site; and
- Ensure alignment to the recommended assessment procedure which evaluates the effectiveness and impact of proposed, as well as existing, bushfire risk management measures and strategies.

5. Spatial consideration of bushfire threat

A site inspection was conducted on the 23rd of August 2016 by Kathryn Kinnear to assess the current land use, topography/slope, vegetation and conditions of the site and its surroundings. Photographs of the Subject Site and surrounding areas were taken and have been presented in this report. The site was reassessed on the 3rd of November 2020 by Jason Benson to recheck the vegetation.

5.1. Land use

The site consists predominately of parkland (a combination of cleared areas/manicured lawns and clumps of remnant trees and shrubs) with areas closer to the harbour embankment consisting of remnant vegetation. There are two dwellings on the Subject Site both located centrally and consisting of a medium to large house with the southernmost dwelling also having a large and a small shed. The Subject Site is used for residential purposes only. Land use on the Subject Site is shown on Photographs 1 to 2.

Photograph 1 – View of parkland gardens within Subject Site.

Photograph 2 – View of southernmost house within Subject Site.

5.2. Surrounding land uses

The Subject Site is surrounded by residential development (Kalgan Heights) to the east, Nanarup Road Reserve and rural property to the north, residential properties with parkland style gardens to the west and Oyster Harbour and foreshore to the south. The surrounding areas are shown on Photographs 3 to 6.

Photograph 3 – View looking west along Nanarup Road Reserve.

Photograph 4 – View of low fuel areas within the developed area of Kalgan Heights to the east.

Photograph 5 – View looking south towards Oyster Harbour.

Photograph 6 – View of an adjacent rural residential property.

5.3. Topography

The Subject Site generally slopes from north to south, from a high point of 35m AHD in the north to 5m AHD along the southern boundary of the site. The northern and central portions of the site are relatively flat with the southern portion of the site descending steeply towards Oyster Harbour. Topographic contours (5 metre contours) are shown on Figure 3.

The effective slopes (measured as per AS3959-2018) for the Subject Site are generally low in the central and northern areas ranging from 1.2 to 5.5 degrees. The effective slope in the southern portion is relatively steep (16 to 19 degrees). The effective slopes for the Subject Site and surrounding areas are shown on Figure 3.

5.4. Bushfire fuels – Vegetation

The subject site lies within the Jarrah Forest IBRA bioregion. Hearn et al (2002) describes the bioregion as; '*Duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo - Marri woodlands on clayey soils. Eluvial and alluvial deposits support Agonis shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands.'*

The vegetation has been mapped on a broad scale by J.S. Beard (Shepherd et al 2002) in the 1970's, where a system was devised for state-wide mapping and vegetation classification based on geographic, geological, soil, climate structure, life form and vegetation characteristics (Sandiford and Barrett 2010). A GIS search of J.S. Beards (DEC, 2005) vegetation classification places the Subject Site within one System and Vegetation Association (Source DEC Pre-European Vegetation GIS dataset, 2005):

- **System Association Name:** Kwornicup
- **Vegetation Association Number:** 3
- **Vegetation Description:** Medium forest; Jarrah-Marri.

The vegetation across the Subject Site and surrounding areas consists predominately of parkland (a combination of cleared areas/manicured lawns and clumps of remnant trees and shrubs) consistent with lifestyle size residential lots in the area. There is also a large area of remnant vegetation covering the southern portion of the site towards the harbour embankment, which extends in a narrow strip towards the centre of the site. The area of remnant vegetation is categorised as low forest consisting predominantly of Jarrah and Marri trees, the forest is multilayered and underlain with native grasses and shrubs.

All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.3 and Exclusions as per Clause 2.2.3.2 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified over the page. Each plot is representative of the Vegetation Classification to AS3959-2018 Table 2.3 and shown on the Vegetation Classification Mapping (Figure 3).

Plot	1	Classification or Exclusion Clause	Forest Type A
			**Location:** Located internal to the site and external to the site to the east and west. **Separation distance:** 0m. **Dominant species & description:** Low Jarrah-Marri forest. Multi-layered vegetation structure. **Vegetation coverage:** 30 – 70%. **Average vegetation height:** 13-18m (tree height). **Surface fuel loading:** 25 - 35 t/ha. **Effective slope:** Downslope >0-5 degrees.
Photo Id 1: View to the south-east towards forest vegetation located internal to the site in the north-west.			

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional Photo of Plot 1.**
Photo Id 2: View to the north-east towards small patch forest vegetation located internal to the site in the north.			

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional Photo of Plot 1.**
Photo Id 3: View to the west south-west towards forest vegetation located central to the site in the north.			

Plot	1 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional Photo of Plot 1.**
Photo Id 4: View to the south-east towards forest vegetation located on the eastern side of the subject site.			
Plot	**2**	**Classification or Exclusion Clause**	**Woodland Type B**
			**Location:** Located to the southwest external to the site. **Separation distance:** 0m. **Dominant species & description:** Low Jarrah-Marri forest. Multi-layered vegetation structure. Long unburnt. Some evidence of prescribed burning further south. **Vegetation coverage:** 30 – 70%. **Average vegetation height:** 13-18m (tree height). **Surface fuel loading:** 25 - 35 t/ha. **Effective slope:** Downslope >5-10 degrees.
Photo Id 5: View to the south-west towards forest vegetation located on the western side of the subject site.			
Plot	**2 cont.**	**Classification or Exclusion Clause**	**Forest Type A**
			**Additional Photo of Plot 2.**
Photo Id 6: View to the south-west towards forest vegetation located on the western side of the subject site.			

Plot	3	Classification or Exclusion Clause	Forest Type A
			**Location:** Located internal and external to the site to the west. **Separation distance:** 0m. **Dominant species & description:** Low Jarrah-Marri forest. Multi-layered vegetation structure. Long unburnt. **Vegetation coverage:** 30 – 70% **Average vegetation height:** 13 – 18m (trees). **Surface fuel loading:** 25 - 35 t/ha. **Effective slope:** Downslope >15-20 degrees.
Photo Id 7: View to the south-east towards forest vegetation located on the western side of the subject site.			
Plot	**3 cont.**	**Classification or Exclusion Clause**	**Forest Type A**
			**Additional Photo of Plot 3.**
Photo Id 8: View to the east towards forest vegetation located on the south western corner of the subject site.			
Plot	**4**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)**
			**Location:** Internal an external to the site in the north, east and west. **Description:** APZ areas surrounding existing buildings and lots managed in a low threat state including managed lawns and gardens and parkland cleared vegetation. Low threat vegetation is managed as per Schedule 1: Standards for Asset Protections Zones. Excluded as per AS3959 exclusion clause 2.2.3.2 (f). **Available fuel loading:** <2 t/ha.
Photo Id 9: View to the south-west towards managed low threat vegetation located on adjacent lot to the north-west of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**

Photo Id 10: View to the east north-east towards managed low threat vegetation located within the subject site to the north-west.

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**

Photo Id 11: View to the north-west towards managed low threat vegetation located within the subject site to the north-east.

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**

Photo Id 12: View to the south-west towards managed APZ area located central west of the subject site.

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			Additional Photo of Plot 4.
Photo Id 13: View to the south towards managed low threat vegetation located central east of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			Additional Photo of Plot 4.
Photo Id 14: View to the north through managed APZ area located internal to the subject site in the east.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			Additional Photo of Plot 4.
Photo Id 15: View to the north-east towards managed low threat vegetation and APZ area located on adjacent lot to the south-west of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**
Photo Id 16: View to the east towards managed low threat vegetation located central east of the subject site.			
Plot	**4 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)**
			**Additional Photo of Plot 4.**
Photo Id 17: View to the north north-west towards managed low threat vegetation in the foreground and APZ in the background located central east of the subject site.			
Plot	**4 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)**
			**Additional Photo of Plot 4.**
Photo Id 18: View to the west towards managed low threat vegetation located central east of the subject site.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**

Photo Id 19: View to the south south-east towards managed low threat vegetation located on adjacent lot to the north-east of the subject site.

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 4.**

Photo Id 20: View to the east north-east towards managed low threat vegetation located on nearby lot to the north of the subject site.

Plot	5	Classification or Exclusion Clause	Forest Type A
			**Location:** Located to the north external to the site (Nanarup Road Reserve). **Separation distance:** 0m **Dominant species & description:** Low Jarrah-Marri forest. Multi-layered vegetation structure. Long unburnt. **Vegetation coverage:** 30 – 70% **Average vegetation height:** 8 - 13m (tree height). **Surface fuel loading:** 25 - 35 t/ha. **Effective slope:** Downslope >0-5 degrees.

Photo Id 21: View to the west north-west towards thin strip of forest vegetation located within the Nanarup Road Reserve to the north-west of the subject site.

Plot	5 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional Photo of Plot 5.**

Photo Id 22: View to the east south-east towards thin strip of forest vegetation located within the Nanarup Road Reserve to the north-west of the subject site.

Plot	5 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (f)
			**Additional Photo of Plot 5.**

Photo Id 23: View to the west north-west towards thin strip of forest vegetation located within the Nanarup Road Reserve to the north of the subject site.

Plot	6	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exc. 2.2.3.2 (e)
			**Location:** North and south of the subject site. **Description:** Roads, driveways, hardstand areas and waterways. Excluded as per exclusion clause AS3959 2.2.3.2 (e).

Photo Id 24: View facing east along Nanarup Road located to the north-west.

Figure 3: Vegetation Mapping

Plot Number	Vegetation Type	Effective Slope
1	Forest Type A	Downslope >0-5 degrees
2	Forest Type A	Downslope >5-10 degrees
3	Forest Type A	Downslope >15-20 degrees
4	Excluded 2.2.3.2 (f)	N/A
5	Forest Type A	Downslope >0-5 degrees
6	Excluded 2.2.3.2 (e)	N/A

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Jurisdiction: Level 2 - WA

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Existing Dwelling
- Proposed Lots
- Photo Point
- 5m Contours
- Slope Degrees
- Separation Distance

Vegetation

- Forest Type A
- Low fuel or non vegetated 2.2.3.2

Scale
1:2,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
GA Clark Nominees
Lots 105 and 106 Nanarup Road
Albany, WA 6333

Vegetation Classes

BAL Assessor	QA Check	Drawn by
JB	KK	SA
STATUS	**FILE**	**DATE**
FINAL	AB009	6/11/2020

6. Bushfire Attack Levels (BAL)

Bushfire Attack Level (BAL) is the process in AS39598-2018 for measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact. The threat or risk of bushfire attack is assessed by an accredited BAL Assessor. BAL rating determinations are of 6 levels BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, BAL FZ. Building is generally not recommended in BAL-40 or BAL-FZ areas. The BAL rating is determined by the distance of the building to vegetation, slope and vegetation type adjacent to the dwelling. Refer to Figure 4.

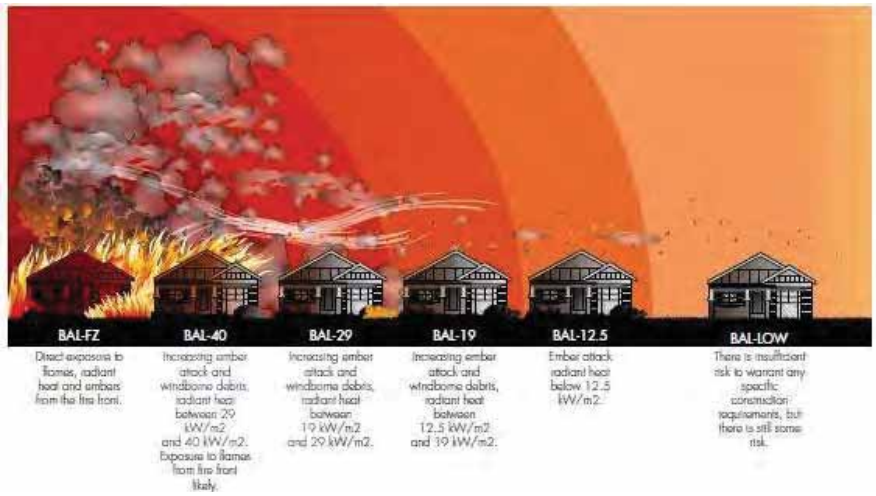

Figure 4: Building to BAL

Bushfire Attack Level (BAL) has been calculated using the Method 1 procedure as outlined in AS3959-2018. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI);
- Vegetation Classes;
- Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

The outcomes of the above inputs then allocate a specified BAL construction/setback for proposed buildings.

6.1. Fire Danger Index

The Western Australian adopted FDI is 80 as outlined in AS3959-2018 and endorsed by Australasian Fire and emergency Services Authorities Council. The FDI input for this project is also therefore 80.

6.2. Vegetation Classes

All vegetation within 150m of the Subject Site was classified. The vegetation classes (as described in Section 4.4) are shown on Figure 3 and listed below.

- Forest Type A;
- Exclusion 2.2.3.2 (f); and
- Exclusion 2.2.3.2 (e).

6.3. Slope Under Classified Vegetation

Slope under classifiable vegetation (Effective Slope) was assessed in accordance with Section 2.2.5 of AS3959-2018. Table 2 below summarises the slopes assigned to each plot of classifiable vegetation for the BAL calculation.

Table 2: Effective slope allocation to classified vegetation

Plot Number	Vegetation Classification	Effective Slope
1	Forest Type A	Downslope >0-5 degrees
2	Forest Type A	Downslope >5-10 degrees
3	Forest Type A	Downslope >15-20 degrees
4	Low fuel or non-vegetated areas Exc 2.2.3.2 (f)	N/A
5	Forest Type A	Downslope >0-5 degrees
6	Low fuel or non-vegetated areas Exc 2.2.3.2 (e)	N/A

Plot 4 and 6 is allocated exclusion Clauses 2.2.3.2 and therefore does not have an effective slope allocation.

6.4. Method 1 BAL Calculation

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposed development in accordance with AS 3959-2018 methodology. The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL.

The assessed BAL ratings for the development are depicted as BAL contours. The following maps consist of a Works Program (Figure 5) which shows a proposed BAL-29 APZs surrounding all building envelopes and existing buildings and BAL Contour Map (Figure 6) which presents indicative BAL ratings for the Subject Site. The Indicative BAL Ratings are presented in Table 3 with BAL Contours for the Subject Site shown on Figure 6. All proposed buildings will be located in areas subject to a BAL rating of BAL-29 or lower once BAL-29 APZ's are implemented as indicated below in Table 3.

Table 3: BAL Allocation

Method 1 BAL Determination for the Proposed Building Envelopes					
Lot	**Vegetation Type (Table 2.3)**	**Slope (Table 2.4.3)**	**Distance to Vegetation (m)**	**Highest BAL Contour**	**Modified BAL Contour**
A	Plot 1 Forest Type A	Downslope >0-5 degrees	0m	BAL FZ	BAL-29 or lower can prevail
B	Plot 1 Forest Type A	Downslope >0-5 degrees	0m	BAL FZ	BAL-29 or lower can prevail
C	Plot 1 Forest Type A	Downslope >0-5 degrees	9m	BAL FZ	BAL-29 or lower can prevail
D	Plot 1 Forest Type A	Downslope >0-5 degrees	0m	BAL FZ	BAL-29 or lower can prevail
E	Plot 1 Forest Type A	Downslope >0-5 degrees	0m	BAL FZ	BAL-29 or lower can prevail

Note: Where multiple BAL allocations are shown on Table 3, the highest BAL is to apply to the building.

Assumptions made in BAL Contour Mapping:

- The Subject Site will be developed according to the Local Structure Plan (Ayton Baesjou Planning, 2018) (Appendix A).
- Low fuel areas associated with Asset Protection Zones (APZ) are already in existence across the north of the site, some trees may need to be removed depending on final placement of buildings (i.e. lots 1-6).
- BAL-29 (27m) APZ's have been placed around the proposed building envelopes on the works program mapping
- The vegetation within BAL-29 APZ's have been excluded from BAL Contouring as it is expected that the vegetation within these areas will removed/modified for proposed new buildings to achieve BAL-29 or lower. This will help to indicate the BAL-29 developable space available within the proposed building envelopes post implementation of the works program.
- The owner of the Subject Site will maintain grasslands internal to the site at all times in a low fuel state (i.e. slashed to <100mm) for a minimum distance of 100m from any dwellings or construction areas.
- Parkland cleared areas within the subject site are currently maintained in a low threat state, these areas will continue to be maintained in a low threat state.

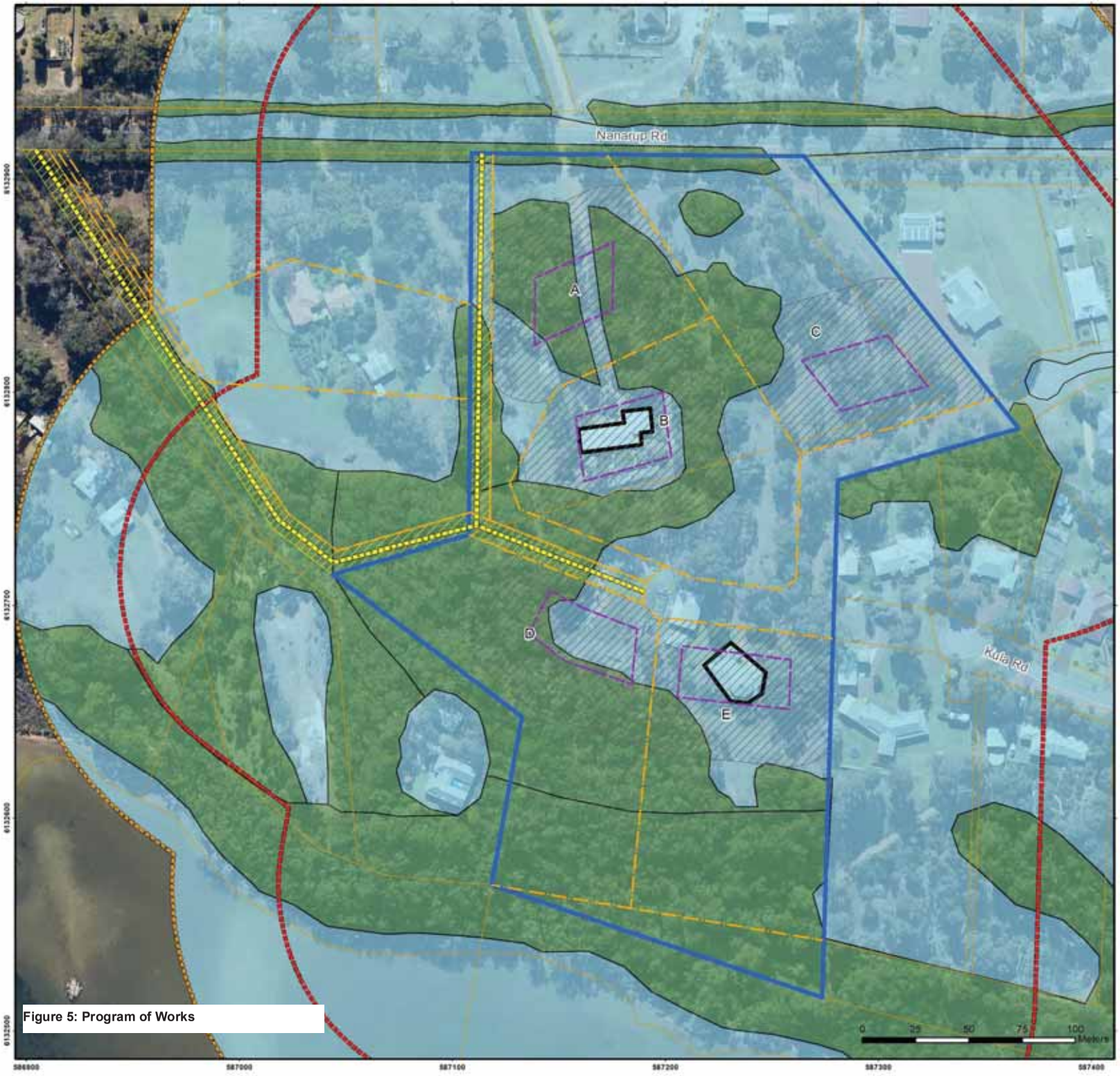

Figure 5: Program of Works

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Proposed Lots
- Building Envelope
- APZ - future low fuel (27m buffer from Building Envelope)
- Emergency Access Way (EAW)
- EAW - future low fuel

Vegetation

- Forest Type A
- Low fuel or non vegetated 2.2.3.2

Scale
1:1,750 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
GA Clark Nominees
Lots 105 and 106 Nanarup Road
Albany, WA 6333

Program of Works

BAL Assessor	QA Check	Drawn by
JB	KK	SA
STATUS	FILE	DATE
FINAL	AB009	6/11/2020

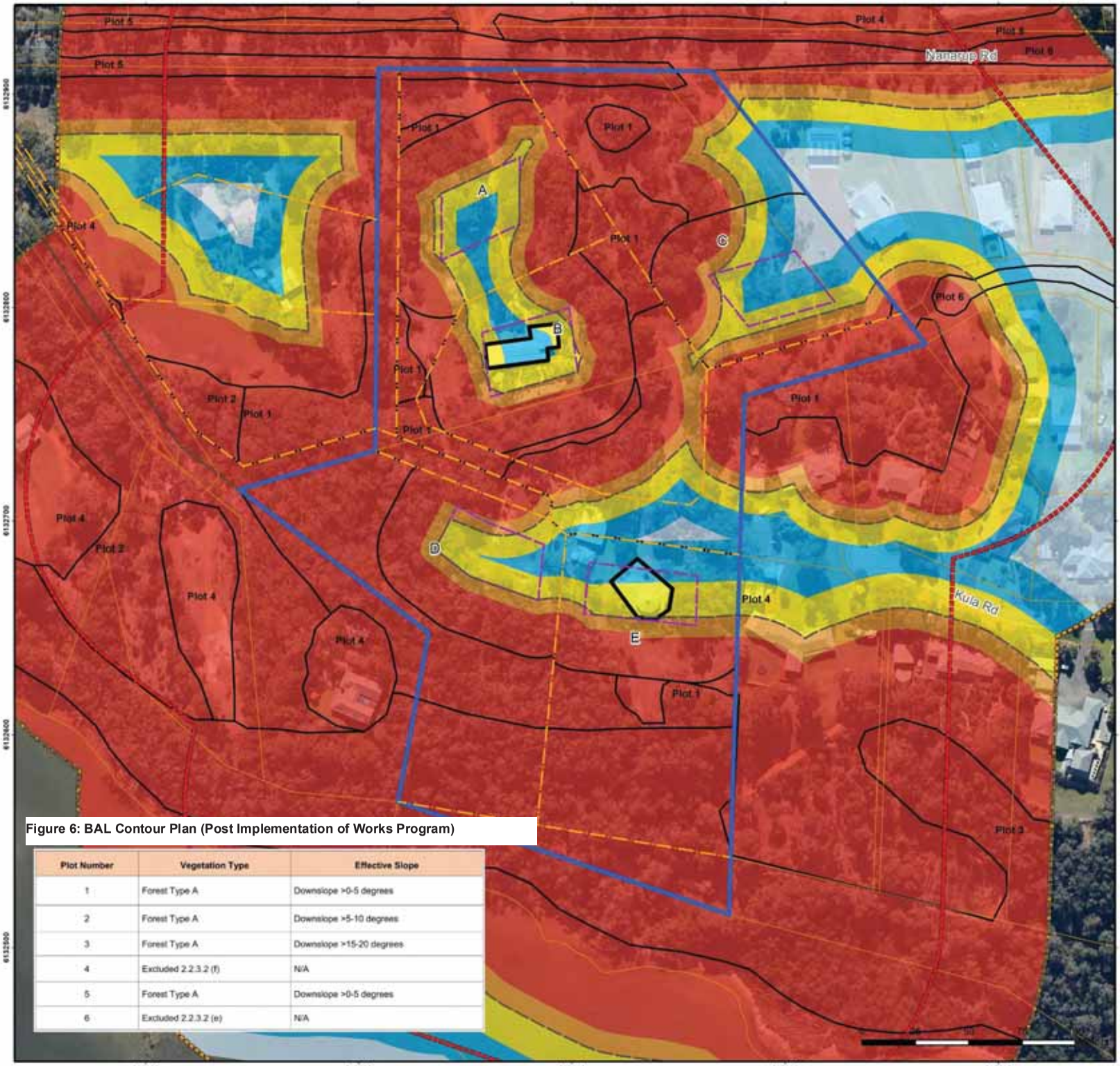

Figure 6: BAL Contour Plan (Post Implementation of Works Program)

Plot Number	Vegetation Type	Effective Slope
1	Forest Type A	Downslope >0-5 degrees
2	Forest Type A	Downslope >5-10 degrees
3	Forest Type A	Downslope >15-20 degrees
4	Excluded 2.2.3.2 (f)	N/A
5	Forest Type A	Downslope >0-5 degrees
6	Excluded 2.2.3.2 (e)	N/A

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Proposed Lot Boundary
- Existing Dwelling
- Proposed Building Envelope
- BAL 29 (or less)

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

Scale
1:1,750 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
GA Clark Nominees
Lots 105 and 106 Nanarup Road
Albany, WA 6333

BAL Contour Plan

BAL Assessor	QA Check	Drawn by
JB	KK	SA
STATUS	**FILE**	**DATE**
FINAL	AB009	6/11/2020

7. Assessment to the bushfire protection criteria

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) outlines bushfire protection criteria which subdivision and development proposals are assessed for compliance. The bushfire protection criteria (Appendix 4, WAPC, 2017) are performance-based criteria utilised to assess bushfire risk management measures and they outline four elements, being:

- Element 1: Location
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access; and
- Element 4: Water.

(WAPC, 2017)

The Local Structure Plan is required to meet the "Acceptable Solutions" of each Element of the bushfire mitigation measures (WAPC, 2017). The proposal will be assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4. A summary of the assessment is provided below in Table 4. The following sections of this report outlines how the proposal complies with the bushfire protection criteria Acceptable Solutions as per the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017).

The Subject Site was assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4. Please refer to the summary table below and the detailed assessment in Sections 6.1-6.4.

Table 4: Bushfire protection criteria applicable to the site

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant BAL 29 or less applied to lots and existing buildings
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	Compliant, APZ in BAL 29 or less
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	Compliant two access to 2 destinations
	A3.2 Public Road	Yes	Compliant
	A3.3 Cul-de-sacs	Yes	Compliant
	A3.4 Battle axes	NA	NA >10m in width
	A3.5 Private driveways	Yes	Compliant
	A3.6 Emergency Access Ways	Yes	Compliant
	A3.7 Fire Service Access Ways	No	N/A
	A3.8 Firebreaks	Yes	Compliant on parent lot, APZ applicable to future lots
Element 4 – Water	A4.1 Reticulated areas	Yes	Compliant
	A4.2 Non-reticulated areas	NA	N/A
	A4.3 Individual lots in non-reticulated areas	N/A	N/A

7.1. Element 1: Location

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.

Acceptable Solutions

A1.1 Development Location: *the strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low Bushfire hazard level or BAL-29 or below (WAPC, 2017).*

Assessment to Acceptable Solutions

A1.1 Development Location: The publicly released Bushfire Prone Mapping (OBRM 2019) indicates this area as bushfire prone. BAL Contour Plan (Figure 6) demonstrates the dwellings could be subject to BAL 29, BAL 19 or BAL 12.5 on the lots depending on final placement of buildings. No higher than BAL 29 should apply to any proposed dwellings on the lots. The existing dwellings on proposed lots B and E can meet BAL 29.

It is assumed that proposed lots can be fuel reduced to meet setbacks associated with BAL 29 or less through clearing of Forest Type A, significant trees (>500mm in diameter) are to remain and should be flagged prior to any clearing operations. The developer will be responsible for parkland clearing lots prior to release of lots and maintain these areas until the lots are sold to new owners. The southern boundary of the BAL setbacks will be demarcated by APZ areas.

It is noted that at the time of writing staged development is unknown. Staged development is to ensure the developer maintains vegetation in accordance with the BAL Contour Plan and APZ standards at all times (See section 6.2).

Recommendations

The recommendations arising from the assessment of the Local Structure Plan to Element 1: Location:

- Development is deemed compliant to A1.1 due to:
    - No higher BAL allocation than BAL 29 will apply to buildings upon completion of subdivision; and
    - The existing houses can maintain BAL 29 or less on the buildings.
- The developer will be responsible for the implementation of a notification on title pursuant to Section 70A of the Transfer of Land Act 1893 for all lots affected by an increase in construction standards consistent with a BAL rating/AS3959-2018 allocation to the lot, and alerting the prospective owner(s) of the lots and successors in title of the Bushfire Management Plan.
- Individual BAL assessments may be considered on the lots by the new owners when dwelling design/placement is known and can be undertaken at building approval stages with the engagement of an Accredited Level 1 BAL Assessor.

7.2. Element 2: Siting and Design

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

Acceptable Solutions

A2.1 Asset Protection Zone (APZ): *every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:*

- ***Width:*** *Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances.*
- ***Location:*** *the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).*
- ***Management:*** *the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones'.*

(WAPC, 2017)

An Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level (WAPC, 2017). This is also defined as a "defendable zone". Any buildings will have an APZ utilising Low threat or non-vegetated areas as defined by WAPC standards. Any replanting, revegetation and landscaping across the lots is to be to an APZ standard as per WAPC Guidelines V 1.3 (WAPC, 2017) as outlined below.

WAPC Guidelines for an APZ (WAPC, 2017)

Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.

Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.

Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.

Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy. See Figure 8 (WAPC Figure 16, Appendix 4) below.

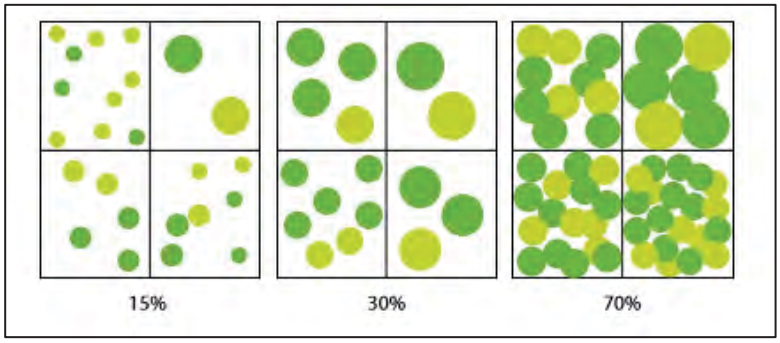

Figure 7: Tree Canopy Coverage – ranging from 15 to 70% at maturity (WAPC, 2017)

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

Ground covers (<0.5 metres in height): can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.

Grass: should be managed to maintain a height of 100 millimetres or less.

(WAPC, 2017).

Assessment to Acceptable Solutions

A2.1 Asset Protection Zone (APZ): All future buildings can achieve an APZ area associated with a BAL allocation of BAL 29, BAL 19 or BAL 12.5. APZ setbacks associated with BAL allocation is to apply to individual buildings and is dependent on final placement of the dwelling on the lot. The existing house (s) are to maintain low fuel areas to APZ standards at all times.

The proposed lots will require parkland clearing within the BAL 29 APZ's to meet Schedule 1: APZ standards. It is recommended that the developer undertakes this prior to release of lots for sale to ensure APZ areas are clearly defined. Parkland clearing is to incorporate APZ standards, specifically the following will be employed:

- Flagging and survey of significant trees (>500mm Diameter Breast Height (DBH)) by an appropriately qualified environmental officer/fauna expert prior to clearing operations;
- Site machine operators clearly briefed on trees to remain;
- Mulching of cleared vegetation – fine mulch to meet <2 t/ha of fuels;
- Trimming of trees of dead material or limbs to 2m around the bole or base of the tree from ground height;
- Canopy cover to meet <15% as per APZ standards; and
- Construction of the southern Fire Service Access (See Section 6.3) to clearly define the southern edge of APZ areas.

The APZ's are demonstrated on the Works Program Map (Figure 5) for each lot and is contained within each individual lot meeting WAPC APZ requirements. Staged development of the subject site is to incorporate maintenance of internal areas to APZ requirements to 100m from any from any dwellings or construction areas. The developer will be responsible for maintenance of the site until ownership is relinquished to new lot owners.

Any future plantings as shown in revegetation and landscaping areas are to be to a APZ standard as outlined in this report. New lot owners are to conform to any planting on their lot for revegetation, screening or windbreaks to APZ standards.

The Local Structure Plan is deemed to be compliant with A2.1.

Recommendations

The recommendations arising from assessment of the Development Guide Plan to Element 2: Siting and design:

- Site assessment and flagging of significant trees prior to clearing and briefing of machine operators;
- APZ areas to be maintained by the developer until lots are relinquished to new owners;
- Staged construction is to ensure that internal grassland areas are maintained as per APZ areas to a minimum of 100m from any future dwellings or dwelling construction sites; and
- Any future landscaping, revegetation or replanting is to conform to APZ standards.

7.3. Element 3: Vehicle Access

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

Acceptable Solutions

A3.1 Two access routes: *Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.*

A3.2 Public road: *A public road is to meet the requirements in Table 5, Column 1.*

A3.3 Cul-de-sac (including a dead-end road): *A cul-de-sac and/or a dead-end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved: Requirements in Table 5, Column 2; Maximum length: 200 metres; and Turn-around area requirements, including a minimum 17.5 metre diameter head.*

A3.4 Battle-axe: *Battle-axe access leg should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) all of the following requirements are to be achieved: Requirements in Table 5, Column 3; Maximum length: 600 metres; and Minimum width: 6 metres.*

A3.5 Private driveway: *longer than 50 metres A private driveway is to meet all of the following requirements: Requirements in Table 5, Column 3; Required where a house site is more than 50 metres from a public road; Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. All-weather surface (i.e. compacted gravel, limestone or sealed).*

A3.6 Emergency access way: *An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements: – Requirements in Table 4, Column 4; – 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; and – Must be signposted.*

A3.7 Fire service access routes (perimeter roads): *Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for firefighting purposes. Fire service access routes are to meet the following requirements: Requirements Table 5, Column 5; Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; Surface: all-weather (i.e. compacted gravel, limestone or sealed) Dead end roads are not permitted; Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); No further than 600 metres from a public road; Allow for two-way traffic and Must be signposted.*

A3.8 Firebreak width: *Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.*

Table 5: Vehicular Access Technical Requirements (WAPC, 2017)

Technical requirements	Public Road	Cul-de-sacs	Private Driveways & Battle Axes	Emergency Access Ways (EAW)	Fire Service Access Ways
Minimum trafficable surface (m)	*6	6	4	6	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	4.5	4.5	4.5	4.5
Maximum grades	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5
Maximum Length	N/A	200m	50m	600m	N/A

*Denotes the width can include a 4m wide paving with one metre wide constructed road shoulders

Assessment to Acceptable Solutions

A3.1 Two access routes: The Local Structure Plan meets the Acceptable Solution, with the design allowing for two-way traffic and safe egress from the subdivision via newly established road networks. The existing Cul-de-sacs of Kula Road and Nambucca Rise will be linked. Access to and from the Local Structure Plan (entry/exit points) will be from the extension of Kula Road and Nambucca Rise to the east of the Local Structure Plan. Kula Road connects east to Nanarup Road a major connecting road to the east and west. A secondary access along an existing Public Access Way (PAW) to the west linking to Nanarup Road will be converted to an Emergency Access Way (EAW) to Nanarup Road (west) and another Emergency Access way will link the site with Nanarup Road to the north which will run along the western boundary of the site. The proposed EAWs to the west cannot be converted to a public linking road due to the arrangement of existing lots. Previous precinct planning provided for this lot layout and ensured an 8m wide dual use Pedestrian Access Way/Emergency Access Way is a legacy requirement of previous planning and previous lot arrangements and thus cannot be changed, refer to evidence attached in Appendix 2. The 8m wide dual use Pedestrian Access Way/Emergency Access Way is provided to allow for full and unfettered emergency access through to Nanarup Road, refer to Figure 8. The Subject Site is therefore deemed compliant with A3.1

Figure 8: Access Plan

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30754
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Overview Map Scale 1:100,000

Legend

- Subject Site
- Cadastre
- Proposed Lots
- Building Envelope
- Access Points
- Emergency Access Way (EAW)
- FSA (6m stabalised)

Scale
1:2,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
RIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
GA Clark Nominees
Lots 105 and 106 Nanarup Road
Albany, WA 6333

Access Plan

BAL Assessor	QA Check	Drawn by
JB	KK	SA
STATUS	**FILE**	**DATE**
FINAL	AB009	6/11/2020

A3.2 Public roads: All internal public roads shall be constructed with a minimum of 20m road reserves (measured) narrowing to 16m at the last lots, meeting the minimum construction requirements. The Vehicular Access Standards (Refer to Table 5 – Column 1) and relevant technical information shall be detailed in civil engineering designs at subdivision stage. The Local Structure Plan is deemed compliant to Acceptable Solution A3.2.

A3.3 Cul-de-sac: Cul-de-sacs are to be avoided in bushfire prone areas. The use of a cul-de-sac is unavoidable within the subject site due to the existing lot layout reflects the original precinct planning (i.e. therefore a legacy issue). Refer to correspondence relating to the SP Appendix 2. A road extension could not be used in this area at the time of original planning (and the issue remains) due to constrained sightlines and road safety issues on this section of Nanarup Road. In addition, the older sections of Kula Road were never designed to accommodate the increase in traffic that would result from Kalgan Heights residents when travelling to/from town opening this road up to Nanarup Road as would occur if a secondary public access route was created. It is proposed that Kula Rise will now be linked with Nambucca Rise, this will mean that instead of two long cul-de-sacs there will only be one cul-de-sac of approximately 60m long. This cul-de-sac will be linked by the addition of two Emergency Access Ways, on heading north and one heading north west towards Nanarup Road.

Acceptable Solution A3.3 specifically notes that existing planning and existing lot layouts (as in this situation) is a noted and acceptable exception to the general disposition against the use of cul-de-sacs. The cul-de-sac cannot be avoided in this instance. The cul-de-sac meets the minimum technical requirements as per Table 5, column 2 by being <200m in length and is connected by Emergency Access Ways and therefore the

Local Structure Plan is deemed compliant to Acceptable Solution A3.3.

A3.4 Battle-axe: Proposed Lot A has a battle-axe leg of >10m in width and has direct frontage onto Kula Road which will also be linked onto Nambucca Rise. The driveway access also parallels the proposed EAW and will create a single access way of approximately 20m in width and will meet the construction technical requirements stated in the guidelines, see Table 5.

The Local Structure Plan is deemed compliant to Acceptable Solution AS A3.4.

A3.5 Private driveways: Private driveways will conform to the minimum technical standards as outlined in Table 4 – Column 3. Where driveways exceed 50m a turnaround area will be required at the house to accommodate heavy duty vehicles, driveway's will not exceed 200m and therefore passing bays will be not required.

The Local Structure Plan is deemed compliant to Acceptable Solution A3.5.

A3.6 Emergency access ways: Two Emergency Access Ways (EAW) will apply to connect the cul-d-e-sac head of Kula Road to Nanarup Road. Refer to Figure 8. The EAW measures between 6-10m wide, meeting requirements shown in Table 5, column 4. One EAW will head north west from Kula Road and is approximately 380m long and will be a Public ROW. The second will be approximately 250m long and head north along the western boundary of the subject site, this will be as an Easement in Gross. These will create a secondary access from the area which is not presently available to all residents. The EAW ceded as a PAW and can be gated but not locked. Signage is to be approved by the CoA. Gates are to be a minimum 3.6m to accommodate heavy vehicles. An easement in gross is to be provided for unimpeded access in an emergency bushfire event.

It was never planned and was never possible to extend Kula Road or other local roads through to Nanarup Road in this area due to constrained sight lines for public road design. Refer to additional information Appendix 2. Planning for and provision of this EAW link as the secondary access for the greater Kalgan Heights area was a contingent part of the original zoning and layout planning of surrounding land. Indeed, the greater Kalgan Heights area relies on this development as the next step to completing the link. This existing planning has already provided the western end of the EAW within an 8m wide reserve and the eastern end of this link as a 20m wide Public ROW (to be converted to Road Reserve as the extension of Kula Road).

The EAW to Nanarup Road is deemed compliant to Acceptable Solution A3.6.

A3.7 Fire Service Access Routes: Fire Service Access (FSA) Routes will be applied to this development along the southern areas the proposed lots. This will be a trafficable 6m wide track enabling fire appliances access to the foreshore area for fire suppression activities or prescribed burning operations. The FSA will provide direct access to bushfire prone areas for fire fighters and links between public road networks for firefighting purposes. An easement in favour of fire service access on lots D and E shall be designated on the title. Long term maintenance of the FSA will be the responsibility of the individual lot owners.

The Local Structure Plan is deemed compliant to Acceptable Solution A3.7.

A3.8 Firebreaks: Firebreaks are in existence on the subject site in the north west and east and maintained regularly by the current owners. The southern FSA will form a variation to the firebreak requirement and designated through the approval of this BMP. Internal firebreaks will not be required over the balance of lots due to all the internal areas of the lots being maintained as APZ requirements at all times.

Recommendations

The recommendations from assessment of the SP to Element 3: Vehicular Access:

- Is deemed compliant with Element 3 as it meets the Acceptable Solutions as outlined A3.1 to A3.8;
- The developer implements the vehicular construction standards as outlined in Table 5;
- Engineering construction details on the road network particularly to meet maximum allowable grades is provided to the CoA prior to construction of each development stages; and
- FSA and EAW's constructed and maintained by the developer until to release of lots to the new owners or to the CoA.

7.4. Element 4: Water

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

Acceptable Solutions

A4.1 Reticulated areas: *The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.*

A4.2 Non-reticulated areas: *Water tanks for firefighting purposes with a hydrant or standpipe are provided and meet the following requirements: Volume: minimum 50,000 litres per tank; Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof); Tank location: no more than two kilometres to the further most house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and Water tanks and associated facilities are vested in the relevant local government.*

A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively): *Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres.*

Assessment to Acceptable Solutions

A4.1 Reticulated areas: The development will be provided with reticulated scheme water in accordance with the specifications of the relevant water supply authority (Water Corporation WA (WCWA)) and DFES requirements. This will be detailed in the detailed engineering drawings and be subject to approval from WCWA and CoA at subdivision condition stages, meeting the Acceptable Solution. Fire hydrant (street) outlets are required, these must be installed to WCWA standards installed in accordance with the *Water Corporation's No 63 Water Reticulation Standard* and are to be identified by standard pole and/or road markings and installed by the Developer.

Local Structure Plan upon construction is deemed compliant to this Acceptable Solution 4.1.

A4.2 Non-reticulated areas: The Local Structure Plan will be connected to reticulated water, therefore water tanks will not be required, assessment to A4.2 not required.

A4.3 Individual lots within non-reticulated areas: The Structure Plan will be connected to reticulated water, therefore water tanks will not be required and assessment to A4.3 not required.

Recommendations

The recommendations from assessment of the SP to Element 4: Water:

- Is deemed compliant with Element 4 through the provision of reticulated water to the development which will be detailed in the engineering drawings at development stages; and
- Fire hydrant (street) outlets are required, these must be installed to WCWA standards installed in accordance with the *Water Corporation's No 63 Water Reticulation Standard* and are to be identified by standard pole and/or road markings and installed by the Developer.

8. Other Fire Mitigation Measures

8.1. Evaporative air conditioners

Evaporative air conditioning units can catch fire as a result of embers from bushfires entering the unit. These embers can then spread quickly through the home causing rapid destruction. It can be difficult for fire-fighters to put out a fire in the roof spaces of homes.

It is also recommended that the developer:

- Ensure that suitable external ember screens are placed on roof top mounted evaporative air conditioners compliant with AS3959-2018 (current and endorsed standards) and that the screens are checked annually; and
- Maintain evaporative air conditioners regularly as per DFES recommendations, refer to the DFES website for further details:
  http://www.dfes.wa.gov.au

8.2. Barrier Fencing

In November 2010 the Australian Bushfire CRC issued a “Fire Note” (Bushfire CRC, 2010) which outlined the potential for residential fencing systems to act as a barrier against radiant heat, burning debris and flame impingement during bushfire. The research aimed to observe, record, measure and compare the performance of commercial fencing of Colourbond steel and timber (treated softwood and hardwood).

The findings of the research found that:

“.. *Colourbond steel fencing panels do not ignite and contribute significant heat release during cone calorimeter exposure”* (exposure to heat)

..”Colourbond steel (fencing) had the best performance as a non-combustible material. It maintained structural; integrity as a heat barrier under all experimental exposure conditions, and it did not spread flame laterally and contribute to fire intensity during exposure”

It is also noted that non-combustible fences are recommended by WAPC (APZ standards: Fences and sheds within the APZ are constructed using non-combustible materials e.g. colourbond iron, brick, limestone, metal post and wire). The developer will be encouraged to build Colourbond or non-combustible fences where applicable.

9. Conclusions and Recommendations

9.1. Overall fire threat

GA Clarke Nominees Pty Ltd commissioned Bio Diverse Solutions (Bushfire Consultants) on behalf of their client to prepare a Bushfire Management Plan to guide all future bushfire management for the proposed subdivision of Lots 105 and 106 Nanarup Road, Lower King WA.

This BMP report provides details of the fire management strategies proposed to be implemented across the site as it is developed to ensure adequate protection of life, property and biodiversity assets. To ensure the mitigation measures are implemented responsibilities are outlined in the following sections for the future lot owners and the developer.

9.2. Future Lot owner's Responsibility

It is recommended the Future Property Owners shall be responsible for the following:

- To take measures to protect their own assets on their property;
- Implement this document, Bushfire Management Plan of Lots 105 and 106 Nanarup Road as it applies to their individual property;
- Where a lot has been identified as requiring an increased construction standard (i.e. BAL/AS3959-2018) ensure that the design and construction of any building is compliant with the requirements of AS3959-2018 (current and endorsed standards);
- Maintain APZ areas across the lots as per Schedule 1: WAPC APZ standards at all times;
- Any future landscaping, revegetation (excepting central creek area) or replanting is to conform to Schedule 1: WAPC APZ standards;
- Ensuring that suitable external ember screens are placed on roof top mounted evaporative air conditioners compliant with AS3959-2018 (current and endorsed standards) and that the screens are checked annually;
- Future modifications other than requirements as set out in this Bushfire Management Plan can only be done with written agreement from the CoA; and
- Individual BAL assessments may be considered on the lots by the new owners when dwelling design/placement is known and can be undertaken at building approval stages with the engagement of an Accredited Level 1 BAL Assessor.

9.3. Developer's responsibility

It is recommended the developer be responsible for the following:

- Implementation of the approved Bushfire Management Plan;
- Comply with standards as outlined by the CoA and WAPC conditions of subdivision;
- The developer will be responsible for the implementation of a notification on title pursuant to Section 70A of the Transfer of Land Act 1893 for all lots affected by an increase in construction standards consistent with a BAL rating/AS3959-2018 allocation to the lot, and alerting the prospective owner(s) of the lots and successors in title of the Bushfire Management Plan;
- Maintain any APZ as per Guidelines for Planning in Bushfire Prone Areas Schedule 1: APZ standards (WAPC, 2017) (as outlined in this plan);
- Ensure BAL-29 APZ's are implemented surrounding the building envelopes;
- Ensure prior to clearing operations - site assessment and flagging of significant trees is undertaken prior to clearing and briefing of machine operators of trees to be retained;
- APZ areas to be maintained at all times by the developer until lots are relinquished to new owners;
- Staged construction is to ensure that internal APZ areas are maintained as per WAPC APZ standards to a minimum of 100m from any future dwellings or dwelling construction sites;
- Any future landscaping, revegetation or replanting is to conform to APZ standards;
- Maintain fire protection measures across the site at all times (EAW, FSA, landscaped areas etc.);
- The developer implements the vehicular construction standards as outlined in Table 5;
- Engineering construction details on the road network particularly to meet maximum allowable grades is provided to the CoA prior to construction of each development stages;
- Reticulated scheme water supplied to lots as per WCWA standards;
- Fire hydrant (street) outlets are required, these must be installed to WCWA standards installed in accordance with the *Water Corporation's No 63 Water Reticulation Standard* and are to be identified by standard pole and/or road markings and installed by the Developer;
- Each lot owner is aware of:
    - The endorsed and approved Bushfire Management Plan;
    - A hard copy of the A4 book "Prepare. Act. Survive";
    - Annual Fire Management Notice supplied by the City of Albany (annual updated advice brochure).
- Modify this Bushfire Management Plan and/or BAL Contour Plan in accordance with any changes to the Local Structure Plan; and
- Ensure the City of Albany monitors compliance with the Fire Management Notice and this BMP.

Prior to development being given final approval by the City of Albany, the developer shall be required to carry out works that include the following but in respect to individual stages of development. Subsequent to the issue of final approval, the Developer shall have no further responsibilities to the provision of firefighting facilities and fire management on individual lots that pass from their ownership.

10. References

AS 3959-2018 Australian Standard, *Construction of buildings in bushfire-prone areas*, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

Bushfire CRC (2010) *Managing Forest in South West Western Australia*, Research project undertaken by Dr Lachlan McCaw and Dr Roy Wittkuhn, retrieved from: http://www.bushfirecrc.com/projects/b11/managing-forest-fires-south-western-australia

City of Albany Fire Management Notice, yearly advise brochure, accessed July 2020 from: http://www.albany.wa.gov.au

Department of Fire and Emergency Services Website accessed July 2017: http://www.dfes.wa.gov.au

Hearn, R., Williams, K. and Comer, S. (2002) Jarrah Forest (JF2 Southern Jarrah Forest Sub-region), A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002, Department of Conservation and Land Management.

Sandiford, E.M. and Barrett, S. (2010). *Albany Regional Vegetation Survey, Extent Type and Status, A project funded by the Western Australian Planning Commission (EnviroPlanning "Integrating NRM into Land Use Planning" and State NRM Program), South Coast Natural Resource Management Inc. and City of Albany for the Department of Environment and Conservation.* Unpublished report. Department of Environment and Conservation, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2002) Native *Vegetation in Western Australia, extent Type and Status, Technical Report 249*, Department of Agriculture WA.

Western Australian Planning Commission (WAPC) (2017) Guidelines for Planning in Bushfire Prone Areas. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC, 2015) State Planning Policy 3.2 Planning in Bushfire Prone Areas. Department of Planning WA and Western Australian Planning Commission.

State Land Information Portal (SLIP) (2015 & 2016) Map of Bushfire Prone Areas. Office of Bushfire Risk Management (OBRM) data retrieved from:
https://maps.slip.wa.gov.au/landgate/bushfireprone/

Appendices

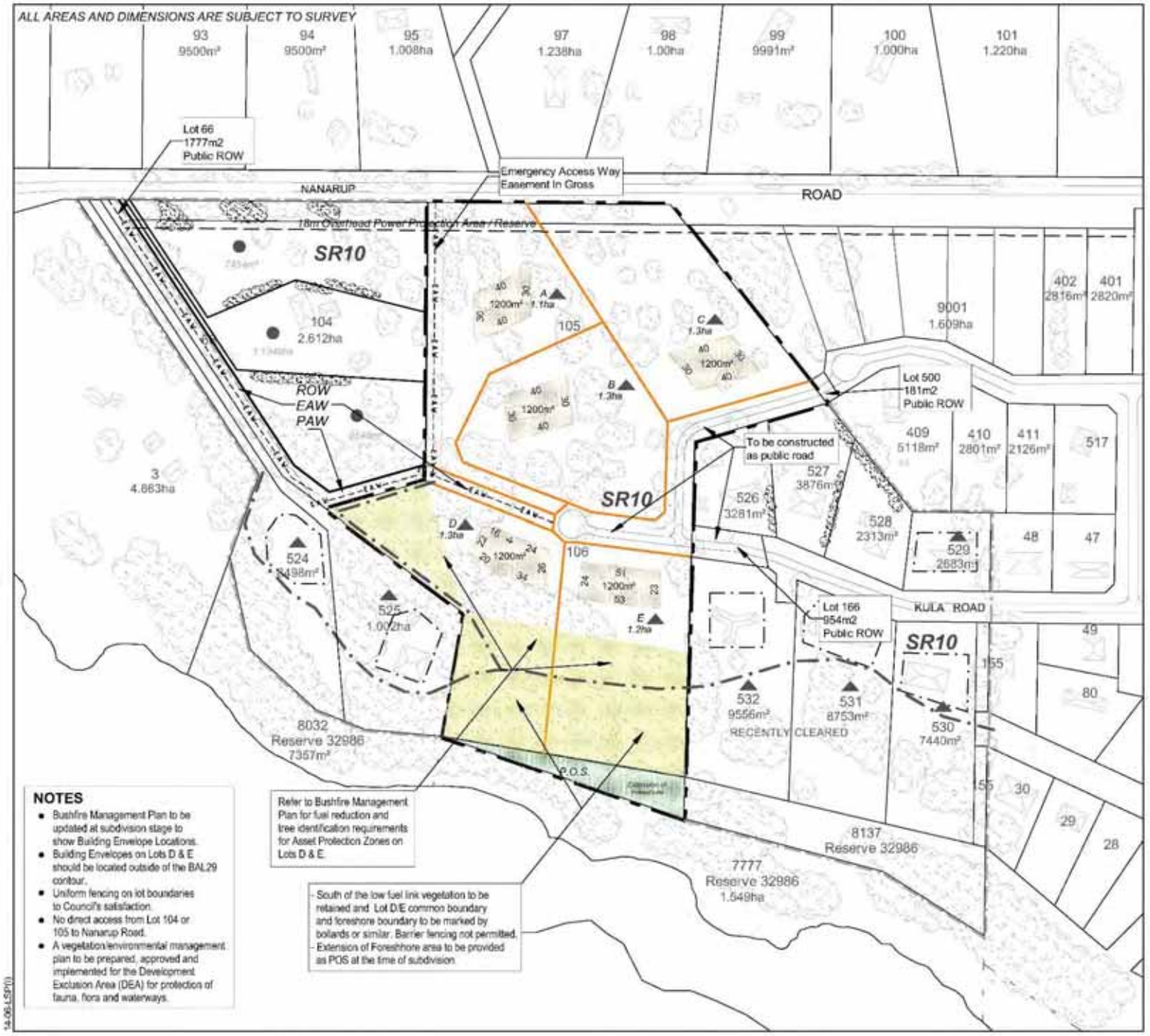
Appendix A – Local Structure Plan

Appendix B – Correspondence Regarding Access to Nanarup Road

Appendix A – Local Structure Plan

LOCAL STRUCTURE PLAN No. 13

City of Albany
Local Planning Scheme No. 1
Special Residential Area 10
Lower King, City of Albany



LEGEND

- Subject Land
- Existing Lot Boundaries
- Proposed Lot Boundaries
- Existing Buildings
- Indicative Building Envelope
- Existing Vegetation
- Tree/Shrub Planting
- Low Fuel Link/FSA
- Emergency Access Way
- POS- Addition to Foreshore Area
- Development Exclusion Area (excludes buildings, effluent disposal & clearing of vegetation)
- Lots where the keeping of stock may be considered
- Lots where building envelopes are not to exceed 1200m².

ORIG A3
SCALE 1:2500
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Appendix B – Correspondence Regarding Access to Nanarup Road

Precinct Structure Plan adopted by Council and endorsed by the Hon. Minister on 26-9-1997.

This text covers Roads and Access and summarises discounting of new or through road connection, use of PAW/EAW to limit everyday access but allow for emergency access and explains consequential use of culs de sacs.

Attached is the adopted Precinct Structure Plan. Note that access to Lots 105 & 106 to be via ROW in the east. No road access through to Nanarup Road in the west but PAW/EAW shown.

The access in the west is limited to the joint battle axe and PAW/EAW.

ROADS AND ACCESS

The development of a link road from Kalgan Heights to Nanarup Road, was considered.

This option was quickly discounted due to the fact that a westerly access point is considered overly dangerous. In addition, the level of use of a western access point would be quite high given the fact that most traffic movements from Kalgan Heights are toward the west (toward town and Lower King).

The provision of a single loop providing all access to the precinct was also explored. Differing development timetables and the fact that the owner of Lot 106 is unlikely to develop in the short term, would mean that any road that crosses Lot 106 would not be developed and thus could stall the coordinated development of the precinct.

Access to the central and eastern portions of the precinct will be provided by roads off Kula and Kimmuli Roads and by the upgrading to public road standards of a 20m wide access leg.

The western access road will only serve 5 lots and as a result is considered appropriate.

Reserves widths are shown as 20m and 18m. Narrower road reserves and alternative carriageway treatment may be used for the extension of Kula Road so as to minimise effects on the good quality vegetation at the current termination of this road and to ensure the bulk of the area's traffic uses the proposed main entry road. The roads will incorporate paved carriageways and drainage. In some instances, battleaxe legs and reciprocal rights of access are proposed for areas where:

i) public vehicle access is not required;
ii) fully constructed public vehicle access would compromise significant vegetation/landform; and/or
iii) better access arrangements can be made by a joint use crossover to Nanarup Road.

Internal roads are to act as pedestrian/cycle access whilst, to facilitate access across the site, 8m Pedestrian Access Ways may be used. With the exception of the foreshore access way, these Pedestrian Access Ways are to be constructed to a standard suitable for use as a dual use path and emergency access. Removable bollards are proposed so as to preclude use by everyday private vehicles. In addition, signage is proposed for these PAW's stating no through access exists and that the PAW's are only for use by pedestrians and cyclists and as emergency access. All lots will be serviced by bitumenised and drained roads.

FIRE SAFETY

Fire risks and hazards will require management so as to be reduced to levels acceptable to Council and Bush Fires Board. Risks and hazards can be managed by providing both fire prevention mechanisms and fire fighting mechanisms. These will reduce the likelihood of fire outbreak and increase the effectiveness of fire fighting in the event of outbreak.

Fire prevention mechanisms will revolve around:

i) the provisions of on-lot low fuel areas that will surround buildings;
ii) the provision of a continuous low fuel link between Koonwarra Close and the western cul-de-sac head; and,
iii) no proposals for active use of the Oyster Harbour Foreshore.

Fire protection mechanisms shall include the above prevention mechanisms (low fuel area and links), the provision of fire hydrants (to current fire authority standards) and the provisions of the Public Access Ways (including construction to a standard that allows the PAW's to act as emergency access incorporating removable bollards/barriers so as to preclude every day vehicle access).

Also attached is correspondence from 31-10-1996 as the record of a CoA council meeting wherein the access requirements for Nanarup Road were set.

Access to Nanarup Road

There was general agreement with Council at the landowner meeting that promoting access to Nanarup Road was not ideal. In response to this, it is proposed that access for any potential subdivision for Lots 105, 106 and 107 comes from extensions of Kula Road and the internal access road proposed in Amendment 128.

The only direct access to Nanarup Road would be for the eventual subdivision of Lots 4 and 104 via the existing access point for Lot 4 utilising a single accessway covered by reciprocal rights arrangements.

In comparison with the option that was advertised, the access points to Nanarup Road have been reduced from three to one, lots accessing Nanarup Road have been reduced from ten to five and the proposed single access point has access to adequate sight distances.