

Strategic Bushfire Study - Revised

Planning Proposal: Anna Bay, NSW 2316
Proposed Residential Rezoning

Prepared for
AB Rise Pty Ltd



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1. Glossary

This section defines those core terms and concepts which are adopted throughout the body of this report.

Term	Definition
Asset Protection Zone (APZ)	A fuel-reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and an asset. The APZ includes a defensible space within which firefighting operations can be carried out. The size of the required APZ varies with slope, vegetation and FFDI.
Bushfire	A general term used to describe fire in vegetation, includes grass fire.
Bushfire attack mechanisms	The various ways in which a bushfire can impact upon people and property and cause loss or damage. These mechanisms include flame contact, radiant heat exposure, ember attack, fire wind and smoke.
Bushfire Attack Level (BAL)	A means of measuring the severity of a building's potential exposure to ember attack, radiant heat, and direct flame contact. The BAL is used as the basis for establishing the requirements for construction to improve protection of building elements and to articulate bushfire risk.
Bushfire Design Requirements	A separate (Attachment 17) design document to assist the master planning with requirements and specifications to provide compliance with PBP 2019.
Bushfire prone land (BPL)	An area of land that can support a bushfire or is likely to be subject to bushfire attack, as designated on a bushfire prone land map.
Bushfire Hazard	Any vegetation that has the potential to threaten lives, property, or the environment.

Bushfire Strategic Study (SBS)	Provides the opportunity to assess whether new development is appropriate in the bushfire hazard context.
Bushfire Threat	Potential bushfire exposure of an asset due to the proximity and type of a hazard and the slope on which the hazard is situated.
Hazard	A hazard is any source of potential harm or a situation with a potential to cause loss. A hazard is therefore the source of risk.
Likelihood	The chance of an event occurring. Likelihood may be represented as a statistical probability (such as an annual exceedance probability), or whether this is not possible, it can be represented qualitatively using measures such as 'likely', 'possible' and 'rare'.
Managed land	Land that has vegetation removed or maintained to a level that limits the spread and impact of bushfire. This may include developed land (residential, commercial, or industrial), roads, golf course fairways, playgrounds, sports fields, vineyards, orchards, cultivated ornamental gardens and commercial nurseries. Most common will be gardens and lawns within curtilage of buildings. These areas are managed to meet the requirements of an APZ.
Mitigation	The lessening or minimizing of the adverse impacts of a bushfire event. The adverse impacts of bushfire cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures include engineering techniques, retrofitting and hazard-resistant construction as well as on ground works to manage fuel and separate assets from bushland.
Planning for Bushfire Protection 2019 (PBP)	NSW Rural Fire Service publication effective from 1 March 2020 which is applicable to all new development on bushfire prone land in NSW.

Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. UNDRR 2017
Risk	The degree of risk presented by that interaction will depend on the likelihood and consequence of the bushfire occurring. Risk may be defined as the chance of something happening, in a specified period of time that will have an impact on objectives. It is measured in terms of consequences and likelihood.
Risk assessment	A systematic process of evaluating the potential risks that may be involved in a projected activity or undertaking, having regard to factors of likelihood, consequence, vulnerability, and tolerability.
Risk-based land use planning	The strategic consideration of natural hazard risk and mitigation in informing strategic land use planning activities.

2. Overview

Blackash Bushfire Consulting (Blackash) has been engaged by AB Rise Pty Ltd (AB) to undertake a Strategic Bushfire Study (SBS) in support of a revised Planning Proposal (PP) to amend The Port Stephens Local Environmental Plan 2013 (LEP) at 196 Old Main Road, 263, 271, 293, 321 Gan Gan Road, 4494, 4500 Nelson Bay Road, Anna Bay, NSW 2316 (the site), which also includes Crown Roads. Lots are summarised in Table 1. The site is shown in context in Figures 1-3.

Table 1: Property description per Mecone Scoping Report

Legal description	Address	Area (approximate)
Lot 963 DP 731955	196 Old Main Road, Anna Bay	27.15 ha
Lot 21 DP 590387	263 Gan Gan Road, Anna Bay	28.58 ha
Lot 23 DP 590387	269 Gan Gan Road, Anna Bay	0.13 ha
Lot 1 DP 536752	271 Gan Gan Road, Anna Bay	19.20 ha
Lot 901 DP 634550	273 Gan Gan Road, Anna Bay	1.00 ha
Lot 902 DP 634550	293 Gan Gan Road, Anna Bay	31.38 ha
Lot 1 DP 503876	321 Gan Gan Road, Anna Bay	11.26 ha
Unformed Crown Road		6.28 ha
Total		125.28 ha

The site covers approximately 125ha across seven lots and has frontage and two access points to Gan Gan Road, with an additional access road proposed within a Crown Road reserve connecting the northern part of the site into Frost Road to the north-east. To the southwest of the site is the main urban area of Anna Bay and the northern end of Stockton Beach; to the south an area of rural residential development and Tomaree National Park; to the southeast the urban area of Boat Harbour, to the east are large areas of cleared vegetation used for grazing and large lot rural residential with a small urban area and caravan park associated with One Mile Beach; to the north is a mixture of bushland, cleared grazing land, large lot residential, and the Sea Winds Over 50's Manufactured Home Estate; to the west are large areas of cleared vegetation used for grazing and large lot rural residential and commercial purposes, and the Latitude One Over 55's Manufactured Homes Estate.

The site is within the Port Stephens Local Government Area (LGA) and is identified as Bushfire Prone Land (BPL) – see Figure 2. All new development on BPL must comply with the NSW Rural Fire Service (RFS) document *Planning for Bushfire Protection 2019* (PBP).

The PP seeks the rezoning of the site for the purpose of developing Torrens Title residential lots with up to 380 residential lots created across several distinct precincts. The majority of site has a current zoning of RU2 Rural Landscape, with a small section of C3 Environmental Management and an area of R2 Low Density Residential to the southeastern corner of site that has recently been approved for 34 Lots by the NSW Land & Environment Court. The PP seeks to adopt R2 Low Density Residential zoning within the areas highlighted for residential development within the Masterplan in Figure 3.

There are multiple water courses in varying capacities that traverse the site. These are highly disturbed and channelised with the Anna Bay main drainage channel bisecting the overall site travelling from Nelson Bay Road to the west towards One Mile Beach residential areas. The majority of the site is flat land. The topography changes to the south of the site where there is a substantial permanent dune.

The Planning Proposal will be considered by the RFS in accordance with PBP requirements for Strategic Planning proposals (particularly Chapters 4 & 5 of PBP). Subsequent development applications will be Integrated Development, under s.4.46 of the *NSW Environmental Planning & Assessment Act 1979* (EPA Act). Integrated development requires development consent from Council and General Terms of Approval from the RFS. Any development applications for such a purpose must obtain a Bush Fire Safety Authority (BFSA) from the Commissioner of the RFS in accordance with Section 100B of the RF Act.

As shown in Figure 2, the site is on designated Bushfire Prone Land (BPL) and a Strategic Bushfire Study (SBS) is required. The PP will need to be designed to meet the bushfire requirements within the EPA Act, specifically Direction under section 9.1 of the Act, and Direction 4.3 Planning for Bush Fire Protection which applies to PP that affect, or are in close proximity to, land mapped as BPL.

A Draft Local Planning Direction 4.3 - *Planning for Bushfire Protection* proposes updates to the original 4.3 Ministerial Direction including the consideration of bushfire risk out to 700m from the site. The RFS are also drafting changes to Chapter 4 of PBP for strategic planning proposals, but it is not expected that these changes will be on exhibition until Q4 of 2025.

This assessment has been prepared by David Lemcke (Senior Planner & Bushfire Specialist), and reviewed by Lew Short (Director) at Blackash Bushfire Consulting (Level 3 FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the NSW Rural Fire Service (RFS) as qualified in bushfire risk assessment and has been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.

A study area site inspection was undertaken by David Lemcke of Blackash on 18 February 2024.



Figure 1: Location

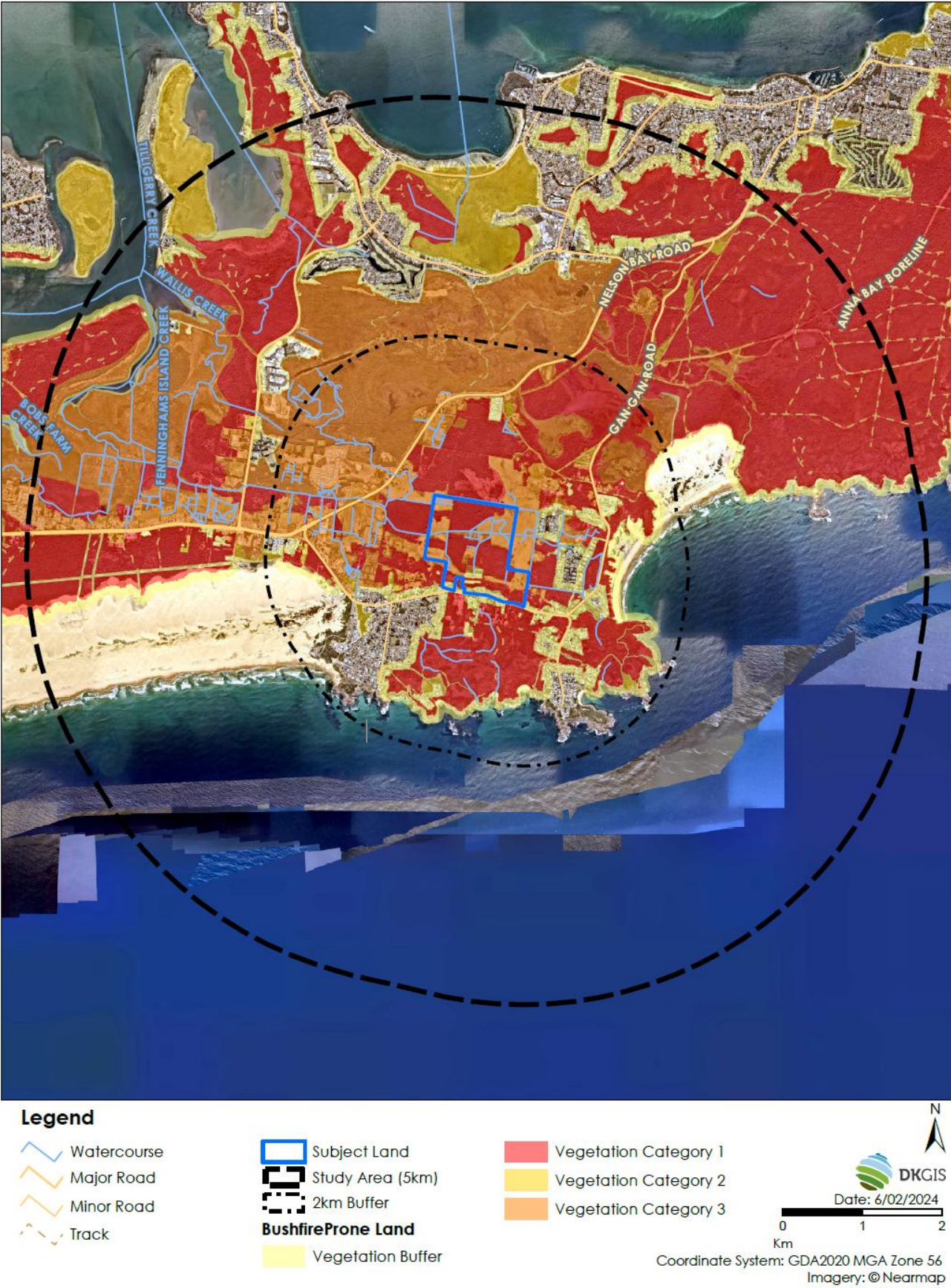
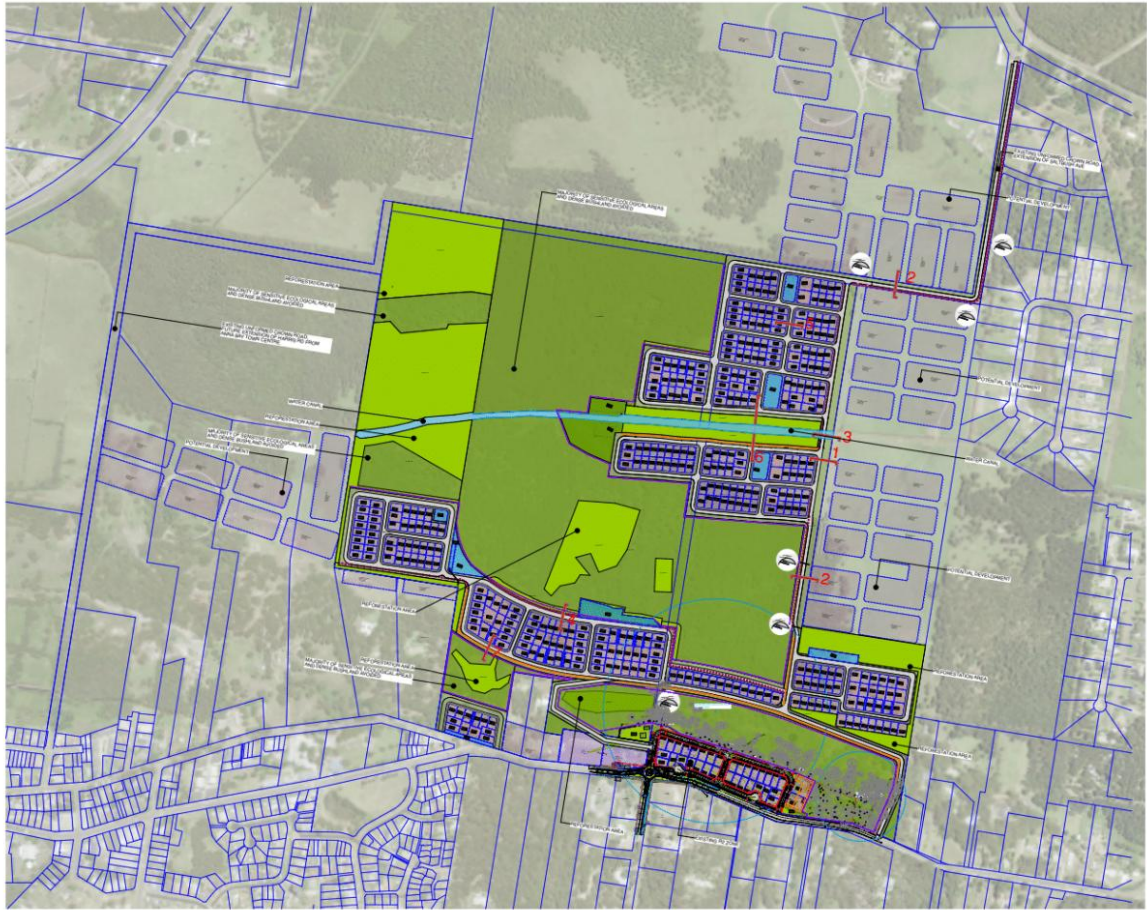


Figure 2: Bushfire Prone Land Map



1 Proposed Masterplan
1:5000

BAK Architecture
22011 Gan Gan Rd, Anna Bay

Calculations

Site Area Gan Gan Rd 1,186,830 m² approx

Stage	Section	Residential Area m2	Standard Blocks #		Dual Occupation #		Dwellings #
			500m2		600m2		
			16.7m x 30m R2	20m x 30m R2	20m x 30m R2	20m x 30m R2	
Stage 1	A	8,135	10			25	
	B	8,135	10			18	
	C	9,654	10			25	
Stage 2	EA	6,337	10			25	
	EB	4,328				25	
	FA	7,422	10	2	14		
Stage 3	GA	6,385	10	2	14		
	GB	7,944	12	3	18		
	GC	11,270	8	10	28		
Stage 4	HA	8,083	16				
	HB	5,724	10	1	12		
	HC	5,097	8	2	12		
	HD	5,743	10	1	12		
Stage 5	HE	9,766	18	1	20		
	IA	12,127	18	3	24		
	IB	7,957	14	1	16		
	IC	9,783	8	4	16		
	ID	5,728	10	1	12		
	IE	5,728	10	1	12		
	IF	7,728	8	2	12		
	IG	6,968	12				
Stage 6	IH	8,073	16			16	
	IJ	8,071	16			16	
	NA	7,212	12	1	14		
Stage 7	MA	11,622	12	7	26		
	MB	15,050	24	3	30		
	MC	15,858	16	11	38		
Stage 8	LA	8,071	16			16	
	LB	7,644	14	1	16		
	LC	7,712	14	1	16		
TOTAL		225,530.66	322		58	488	

TOTAL Dwellings 488
TOTAL Lots 380 plus 2 Multi Dwelling Housing Lots
(NOTE: Excludes current R2 zoning (DA))

General Notes DO NOT SCALE FROM DRAWING. USE DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION. All dimensions are in millimetres unless stated otherwise. All architectural drawings are to be read in conjunction with the relevant contract documents. All dimensions and levels are to be checked and verified on site prior to construction. All dimensions are to be checked and verified on site prior to construction. All dimensions are to be checked and verified on site prior to construction. This drawing is the property of BAK Architecture. No part of this drawing may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of BAK Architecture. BAK Architecture is not responsible for any errors or omissions in this drawing. BAK Architecture is not responsible for any errors or omissions in this drawing. BAK Architecture is not responsible for any errors or omissions in this drawing. Revised: 2024/03/12 - John Brierley, John Brierley, John Brierley	Rev A B C	Date 4/9/2024 22/3/2024 31/10/2024	Issue Preliminary Issue to Council Issue for Scoping Report Issue for Planning Report	Client AB Rise Pty Ltd	Architect BAK Architecture BRIERLEY Suite 1.04, 17/22 Manning Ave, Parramatta NSW 2150 T: +61 2 9259 5000 E: info@bak.com.au W: www.bak.com.au	Scale at A1 1:5000	North 	Project Address Gan Gan Road, Anna Bay	Drawing Proposed Masterplan and Yield	Project No. 22011	Revision C	Drawing No. A100
Date 3/12/2024	Drawn VK, JG	Checked JG	Status Not for Construction	Scale at A1 1:5000	North 	Project Address Gan Gan Road, Anna Bay	Drawing Proposed Masterplan and Yield	Project No. 22011	Revision C	Drawing No. A100	Scale at A1 1:5000	North 

Figure 3: Planning Proposal site in local context – Masterplan BAK Architecture

3. Credentials

This assessment has been prepared by David Lemcke and Lew Short from Blackash Bushfire Consulting. Current Curriculum Vitae are at Appendix 2.

David Lemcke is a Senior Planner & Bushfire Specialist and an active senior RFS volunteer, with over 20 years in the service, having been a field officer for 14 years, and with incident management experience at local level. Dave has been a representative on the Central Coast Bush Fire Management Committee for 15 years in both staff and community roles. Dave is an experienced planner with over 20 years' experience in local government, holding numerous qualifications including a Master of Environmental Planning, Graduate Diploma in Bushfire Protection, and Advanced Diploma of Public Safety (Emergency Management).

Lew Short is the Principal at Blackash Bushfire Consulting (FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the RFS as qualified in bushfire risk assessment and has been accredited by the Fire Protection Association of Australia as a Level 3 BPAD qualified consultant.

Lew established and led the Community Resilience Group for the RFS. His areas of responsibility included land use planning, community engagement, education, vulnerable communities, bunkers, Neighbourhood Safer Places, business systems and projects, social media, integrated risk management and environmental management. He was responsible for the establishment, management and leadership of the development assessment function for the RFS at a State level where he was responsible for the assessment of over 80,000 development applications in Bush Fire Prone Areas.

Lew holds several qualifications including undergraduate and post graduate level in environmental management and specialising in bushfire management. Lew is an active Crew Leader with Ku-ring-gai Rural Fire Brigade and has significant operational experience.

Both Lew and David are experts in the bushfire field and can interpret and apply legislation, policy and bushfire requirements while drawing on extensive professional expertise and operational experience.

4. Approach to the Bushfire Strategic Study

The PP and design of the site satisfies the requirements of PBP through a combination of acceptable solutions and performance based solutions.

The strategic planning process provides the opportunity to determine if the site complies with the legislative requirements pertaining to safety and potential risk to life and the capability of the site to comply with various bushfire objectives. This report uses a conservative approach that demonstrates the proposal can meet the legislative and planning requirements. The fundamental issue being tested in this PP application, is the determination of the suitability of the site for rezoning, considering bushfire safety and for the ability of future development to comply with PBP.

Pending rezoning approval, detailed information building on this PP will be provided in subsequent development applications. This PP provides opportunity for the plan-making authority and referral agencies to flag areas of concern and to determine the suitability of the proposal for rezoning.

In a bushfire context, strategic land use planning must ensure that future land uses are in appropriate locations to minimise the risk to life and property from bushfire attack. The broad principles which apply to the analysis, and which are demonstrated in this report are¹:

- *ensuring land is suitable for development in the context of bushfire risk and broader environmental impacts;*
- *ensuring new development on BPL will comply with the minimum requirements of PBP;*
- *minimising reliance on performance-based solutions;*
- *providing adequate infrastructure associated with emergency evacuation and firefighting operations; and*
- *facilitating appropriate ongoing land management practices.*

This report will demonstrate that the PP affords utilisation of the site for the proposed residential development and is able to meet the Ministerial Direction and PBP.

¹ Planning for Bushfire Protection 2019 p. 34

5. Strategic Planning for Bushfires

Land use planning is widely recognised as an important measure for limiting future vulnerabilities and losses in areas of new development and a critical element for building disaster resilient communities.

The physical design and layout of communities and settlements are central to the many functions that sustain the social, economic and environmental support systems for the community. Land use planning provides the opportunity to manage new growth and residual risk resulting from new development by complying with legislation and standards, limiting or modifying the location of new development and influencing its layout. This can limit both the impacts of new development on natural systems, ecosystem services and hazards and the flow on impacts on the existing community, as well as limiting the impacts that natural hazards can have on new development and its users.

The strategic planning system is particularly important in contributing to the creation of resilient, safe and sustainable communities that are in keeping with the policy and intent of government.

Comprehensive consideration of bushfires and risks in the NSW planning system needs sound understanding of the landscape context and risks, as well as clarity on risk management principles and on the approach to strategic planning and development controls that will adequately mitigate identified risks. Where there are competing policy objectives, such as biodiversity conservation and fuel reduction, an agreed methodology or guidance is critical. As such, planning decisions must be based on the best available evidence and rigorous merits-based assessment to ensure that new development - people, homes and businesses are not exposed to unacceptable risk from bushfire. The framework provided by the Ministerial Direction and within PBP provides the minimum requirements for new development within bushfire prone areas.

The importance of sound land use planning has been recognised in most significant bushfire inquiries, including Natural Disasters in Australia which noted that land use planning that considers natural hazard risks is the single most important mitigation measure in preventing future disaster losses in areas of new development, and that planning, and development controls must be effective, to ensure that inappropriate developments do not occur². The application of legislation, policy, and guidelines provides one of the most effective means of bushfire planning to ensure future developments are resilient and capable of protecting life.

² Ellis, S et al (2004) National Inquiry on Bushfire Mitigation and Management (p.92)

This report focuses on disaster resilience which means planners, hazard leaders, emergency managers and other built environment professionals can contribute to:

- understanding and anticipating bushfire risks before they happen and developing more resilient land use and built form tailored to address bushfire risks; and
- minimising the increase in risks to people and disruptions to social and economic functions when a disaster strikes by ensuring compliance with state requirements for new development in Bushfire Prone Areas.

This report uses the balanced approach provided within NSW for new development in Bushfire Prone Areas (BPA) that recognises the need to protect human life and provide safe operating environments for fire and emergency services, while having due regard to the environmental impacts, development potential of land and the need to cater for growing populations.

The *National Strategy for Disaster Resilience* (2011)³ recognises that strategic planning is essential in creating safer and sustainable communities. In keeping with the policy and intent of government at all levels. Priority outcomes of Section 3.6 include:

- *All levels of decision making in land use planning and building control systems take into account information on risks to the social, built, economic and natural environments.*

This SBS has been completed having regard to the following Commonwealth documents:

- *National Strategy for Disaster Resilience* (2011);
- *Land Use Planning for Disaster Resilient Communities* (2020); and
- *National Disaster Risk Reduction Framework* (2018).

³ NSDR <https://www.homeaffairs.gov.au/emergency/files/national-strategy-disaster-resilience.pdf>

6. Legislative Framework

The landuse planning framework as it relates to landuse planning and bushfire in NSW is embedded in the *Environmental Planning and Assessment Act, 1979* (EPA Act), the *Rural Fires Act 1997* (RF Act), and the *Rural Fires Regulation 2013* (RFR) which is articulated through PBP.

The site is on designated Bushfire Prone Land (Figure 2). Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (BFPL) is land that has been identified by council, which can support a bushfire or is subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

The site is identified as 'bushfire prone land' as mapped by Port Stephens Council (Port Stephens LGA) for the purposes of Section 10.3 of the EPA Act and the legislative requirements for building on bushfire prone lands are applicable.

Figure 2 shows that the hazard vegetation impacting on the site as Category 1 Bushfire Vegetation (Coastal Swamp Forest) and Category 3 Bushfire Vegetation (Grassland). As per PBP, the bushfire assessment will focus on the risk associated with the Forest and Grassland vegetation. This vegetation does not preclude development, it merely starts the process to consider bushfire in the design of any new development.

6.1. Ministerial Direction 4.3 Planning for Bushfire Protection

NSW Ministerial Direction 4.3, titled "Planning for Bushfire Protection," outlines guidelines and requirements for managing bushfire risk in land use planning and development in New South Wales, Australia. It aims to ensure that development decisions consider and mitigate potential bushfire hazards effectively. The direction includes provisions for assessing bushfire risk, establishing appropriate buffer zones around designated bushfire-prone areas, and implementing measures to enhance community safety and resilience against bushfires. The directive emphasizes collaboration between relevant authorities, landowners, and developers to prioritize bushfire protection in urban and rural planning processes. The Ministerial Direction is:

The EPA Act sets out the laws under which planning in NSW takes place. The main parts of the EPA Act that relate to development assessment and approval are Part 3 (Planning Instruments) and Part 4 (Development Assessment).

EPA Act Section 9.1 provides for the Planning Minister to direct councils to apply certain standards (detailed in the Direction) when preparing Planning Proposals for consideration. These Directions cover a range of practice areas and carry legislative weight.

Planning Direction 4.3 *Planning for Bush Fire Protection* (Appendix 3) states that:

This direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land.

Importantly, a Planning Proposal must:

- (a) *have regard to Planning for Bush Fire Protection 2019*
- (b) *introduce controls that avoid placing inappropriate developments in hazardous areas, and*
- (c) *ensure that bushfire hazard reduction is not prohibited within the APZ.*

The SBS must be considered by the Gateway authority (when triggered), before any PP to amend an LEP can be submitted to the Department of Planning and Environment (DPE). The SBS may be considered by DPE as part of the Gateway Determination. This determines whether the PP should proceed further, or not, towards becoming an Environmental Planning Instrument (EPI).

EPIs are statutory plans made under Part 3 of the EP&A Act that guide development and land use. These plans include State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs). LEPs zone land and provide controls for a suitable range of permissible uses to be considered in more detail at the development assessment stage.

7. Development Assessment

Bushfire Prone Land (BPL) is designated in accordance with s.10.3 of the EP&A Act. BPL is land which can support a bushfire or is subject to bushfire attack, that has been identified and mapped by the local council and certified by the Commissioner of the RFS. The entire site is designated Bushfire Prone Land.

Integrated development, under Division 4.8 of the EP&A Act, is development requiring consent and one or more additional approvals. Section 4.46 of the EP&A Act requires a Bushfire Safety Authority (BSA) from the RFS under Section 100B of the RFA for residential and rural residential subdivision, or development of land for a Special Fire Protection Purpose (SFPP) on BPL. The site is designated Bushfire

Prone Land and as such, is Integrated development. An application for a BSA must address the extent to which the development complies with PBP.

A BFSA authorises development to the extent that it complies with PBP including requirements for Asset Protection Zones (APZ), construction standards, landscaping, provision of water supply & utilities, access, and emergency management arrangements in combination considered by the Commissioner necessary to protect persons, property or the environment from danger that may arise from a bushfire.

On designated Bushfire Prone Land, new residential or rural residential subdivision development needs to justify that the PP results in development that can meet the requirements of PBP on a risk-based approach, inclusive of achieving a worst-case Bushfire Attack Level (BAL) of a maximum of BAL-29 at future potential building footprints.

Future building work on BPL must comply with the requirements of the *National Construction Code* (NCC). Under the Deemed to Satisfy provisions of the NCC, building work on BPL must comply with Australian Standard 3959:2018 *Construction of buildings in bushfire-prone areas* (AS 3959) or the National Association of Steel Framed Housing (2021) *Steel Framed Construction in Bushfire Areas* (NASH Standard).

7.1. General Obligations

All owners and land managers (both public and private) have a duty to prevent the occurrence and spread of bushfires on or from their land. This duty is legislated under Section 63 of the *RFA*.

Local risk mitigation is coordinated through Bushfire Risk Management Plans (BRMP). These guide programs to implement specific treatments. Treatments may include such things as hazard reduction burning, establishing and maintaining APZ, grazing, preparing pre-incident plans, establishing and maintaining fire trails and community engagement. These may be applied to public and private landowners and as notified steps carry the legislative weight of Section 63.

8. Planning for Bush Fire Protection 2019

The specific objective of this SBS is to assess the proposed development with the strategic assessment considerations in Chapter 4 of PBP. PBP provides the required considerations in addressing Ministerial Direction 4.3.

The PP outcome aligns with the strategic objective to deliver affordable housing supply, while demonstrating compliance with Ministerial Direction 4.3 and the requirements of PBP whilst also balancing other requirements such as access, amenity, ecology, and the like.

The SBS provides the opportunity to assess whether new development is appropriate in the bushfire hazard context at a strategic or landscape scale. It also provides the ability to assess the strategic implications of future development for bushfire mitigation and management. The SBS must first demonstrate the proposal complies with the overall Aim and Objectives of the document.

All new development on bushfire prone land must comply with PBP.

The **aim** of PBP (p. 10) is:

- *to provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to development potential, site characteristics and protection of the environment.*

The **objectives** (PBP p. 10) are to:

- *Afford buildings and their occupants protection from exposure to a bushfire*
- *Provide for a defensible space to be located around buildings*
- *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings*
- *Ensure that appropriate operational access and egress for emergency service personnel and occupants is available*
- *Provide for ongoing management and maintenance of Bushfire Protection Measures; and*
- *Ensure that utility services are adequate to meet the needs of firefighters*

Chapter 4 of PBP articulates the regulatory framework for Planning Proposals in NSW, along with a series of assessment considerations that are required before a determination can be made regarding a PP.

PBP Section 4.2 (in part, p. 34):

A Strategic Bush Fire Study must include, as a minimum, the components in Table 4.2.1.

Once these strategic issues have been addressed, an assessment of whether the proposal can comply with this document should be carried out. If the strategic issues cannot be resolved, then the proposal cannot comply with PBP and will not be supported by the NSW RFS.

Strategic planning will need to take account of the next level of detail required at Development Application (DA), but without needing to provide complete final project plans, or full assessments for each lot or the development proposed. This is designed to provide flexibility for later project stages while progressing the rezoning to permit the new uses.

To achieve compliance with PBP at DA stage, proposals must comply with either the acceptable solutions or the performance criteria, or a combination of both. While PBP is a performance-based document, the RFS have determined minimum standards for new development (PBP p. 26 and within each performance criteria – p. 43-48 for residential subdivision).

- *For new residential development, potential building footprints must not be exposed to radiant heat levels exceeding **29 kW/m²** on each proposed lot (calculated on a flame temperature of 1090 Kelvin).*

9. Strategic Planning Compliance

PBP requires that Planning Proposals in bushfire prone areas require the preparation of an SBS. For strategic level assessment, this requirement relies on the application demonstrating it is possible to provide complying asset protection zones (APZ) for the proposed development, and that roads and services (water, electricity and gas) will be able to be developed to meet PBP.

The SBS is a strategic level assessment, requiring a balance between providing sufficient information to determine the suitability of the site, without overly burdening proponents with detail to be managed / finalised at subsequent DA stage. PBP (p. 19) notes that:

The most important objective for strategic planning is to identify whether new development is appropriate subject to the identified bushfire risk on a landscape scale. An assessment of proposed land uses and potential for development to impact on existing infrastructure is also a key element of the strategic planning process in bushfire prone areas. Land use planning policies can be introduced to limit the number of people exposed to unacceptable risk.

Once development has been assessed as being appropriate in its bush fire prone context, it will need to be capable of complying with PBP. The ability of proposed land uses and associated

future developments to comply with PBP will be assessed at the strategic planning stage. The expectation will be that the development will be able to comply with PBP at the DA stage.

The design team has considered and responded to the bushfire requirements within PBP. In a bushfire context, the design team has provided a PP that ensures future development is in appropriate locations to minimise the risk to life and property from bushfire attack. Future development will be able to comply with PBP at the DA stage.

The design team has incorporated the broad principles PBP (p. 34) for strategic planning into the PP which apply to the risk assessment of an area which includes:

- *ensuring land is suitable for development in the context of bushfire risk;*
- *ensuring new development on BPL will comply with PBP;*
- *minimising reliance on performance-based solutions;*
- *providing adequate infrastructure associated with emergency evacuation and firefighting operations; and*
- *facilitating appropriate ongoing land management practices.*

PBP also outlines exclusion of inappropriate development in bushfire prone areas which includes:

- *the development area is exposed to a high bushfire risk and should be avoided;*
- *the development is likely to be difficult to evacuate during a bushfire due to its siting in the landscape, access limitations, fire history and/or size and scale;*
- *the development will adversely effect other bushfire protection strategies or place existing development at increased risk;*
- *the development is within an area of high bushfire risk where density of existing development may cause evacuation issues for both existing and new occupants; and*
- *the development has environmental constraints to the area which cannot be overcome.*

PBP requires that the SBS must include, as a minimum, the components identified in Table 4.2.1 of PBP – Bushfire Strategic Study (p.35) as shown in Figure 4.

ISSUE	DETAIL	ASSESSMENT CONSIDERATIONS
Bush fire landscape assessment	A bush fire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	➤ The bush fire hazard in the surrounding area, including: ➤ Vegetation ➤ Topography ➤ Weather ➤ The potential fire behaviour that might be generated based on the above; ➤ Any history of bush fire in the area; ➤ Potential fire runs into the site and the intensity of such fire runs; and ➤ The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.
Land use assessment	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses.	➤ The risk profile of different areas of the development layout based on the above landscape study; ➤ The proposed land use zones and permitted uses; ➤ The most appropriate siting of different land uses based on risk profiles within the site (i.e. not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and ➤ The impact of the siting of these uses on APZ provision.
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	➤ The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile; ➤ The location of key access routes and direction of travel; and ➤ The potential for development to be isolated in the event of a bush fire.
Emergency services	An assessment of the future impact of new development on emergency services.	➤ Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/brigades; and ➤ Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.
Infrastructure	An assessment of the issues associated with infrastructure and utilities.	➤ The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants; and ➤ Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	➤ Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.

Figure 4: Requirements of a Bush Fire Strategic Study (PBP p. 35)

10. Landscape Assessment – Scale Context

The likelihood of a bushfire, its severity and intensity, and the potential impact on life and property varies depending on where a site is located in the landscape. Two types of considerations are relevant in terms of assessing the bushfire hazard including:

- landscape scale hazard – where large expanses of vegetation over tens to hundreds of hectares are located in immediate proximity to, and may traverse, urban periphery suburbs/townships; and
- localised hazard – which is most commonly presented by fragmented areas of vegetation larger than 1 hectare in size.

These two types of hazard present different types of fire behaviour, fire intensity and potential rate of spread characteristics. The site is subject to a range of environmental and historical influences and features which provide the current urban form of the area, including bushfire, vegetation corridors, existing land uses, drainage and ecology/biodiversity values.

The site is affected by Category 1 Bushfire Vegetation (Coastal Swamp Forest) and Category 3 Bushfire Vegetation (Grassland). Landscape scale and local fires are possible both within and in the areas surrounding the site. Both scenarios are possible under strong winds and elevated fire danger. The bushfire protection measures have been designed in combination for the site and the acceptable solutions have been used to meet PBP. Separation from the unmanaged vegetation areas meets the APZ requirements for Residential development, providing passive protection to both buildings and people within the site.

10.1. Assessment against adopted Bushfire Risk Management Plan

The Lower Hunter Bush Fire Management Committee (BFMC) is made up of local representatives of emergency services, land managers and the Council. They are appointed to the BFMC as they are considered the most expert bushfire management practitioners in their agencies in their respective local areas (note some individuals may be members of more than one BFMC). Their role is to combine both expert knowledge of bushfire and emergency management, and local knowledge to develop plans and priorities for bushfire risk management actions for their respective local areas.

The Lower Hunter BFMC is responsible for producing *The Lower Hunter Bush Fire Risk Management Plan 2023*. The Bush Fire Risk Management Plan (BRMP) is legislatively required under the *Rural Fires Act 1997* (RFA) and is a strategic document that identifies community assets at risk, rates the relative risks and set out a five-year program of coordinated multi-agency treatments to reduce the risk of bush fire to the assets. Treatments may include such things as mechanical hazard reduction (e.g., slashing, mowing), hazard reduction burning, grazing, community education and fire trail maintenance. The BRMP uses a state-wide methodology to risk assess all assets across the state consistently.

10.2. The Port Stephens Bushfire Risk Management Plan Assessment

The BFMC area includes the Port Stephens LGA and specifically the Tomaree area that focuses on Nelsons Bay, Shoal Bay, Fingal Bay, Anna Bay, Soldiers Point, Boat Harbour, Fishermans Bay, Taylors Beach and Salamander Bay. Tomaree is identified as a Focus Area in the BRMP, it appears related primarily to the relative development density and amount of interface.

The BFRMP provides the following relevant information for context:

'The area has a history of deliberate and accidental bush fire ignition and significant potential for rapid fire development, particularly in the heath vegetation that is adjacent to the urban interface. There have been significant bush fires in the area in 2003, 2007, 2013, 2018 and 2019.

A number of residential homes and properties as well as economic assets (tourism, commercial, and telecommunications) have been identified in the moderate risk category.

There are also social and demographic factors (age, unoccupied dwellings and new residents) that may make the community more vulnerable to the impacts of bush fire.

There is also a risk that a bush fire could negatively impact five Threatened Ecological Communities, 59 species of threatened fauna, 18 species of threatened flora and the coastal wetland ecosystems.

A key BFMC objective in Tomaree is to improve community preparedness for bush fire. This will be achieved through the implementation of activities and the provision of resources that aim to increase risk awareness, planning and preparation for bush fire.'

BRMP: Planning Proposal site

The PP site and the local area are not an existing development, as such are not identified within the Lower Hunter BFMC Residential & Special Fire Protection Purpose (SFPP) Risk Current Map (refer Figure 5). It is important contextually to review the neighbouring developments Risk Current Map for comparative purposes.

The residential development to the immediate east of the site is nominated as a 'Moderate Risk' area and the residential development to the immediate west of the site is nominated as a 'Low Risk' area. The Sea Winds Over 50s Community to the north, which would be considered an SFPP development under PBP, is nominated as a 'Lowest Risk' area which is surrounded by vegetation on all sides of the development (refer Figure 5 & 6).

The Lower Hunter BFMC Residential & Special Fire Protection Purpose (SFPP) Risk Current Map states the following:

'The Residential Risk by Density & SFPP Risk Current map shows the modelled risk to homes or special fire protection purpose assets across the BFMC when risk modelling commenced for this plan. Assets considered as special fire protection purpose include: schools, child care centres, universities, hospitals, retirement villages, accommodation buildings, prisons, churches, halls and other public buildings where the public are likely to assemble. Each coloured square on the map represents the risk to a home or a group of homes or special fire protection purpose asset.'

'If a house or special fire protection purpose asset is located in the lowest risk category, this does not mean that the asset could not be damaged in a bush fire, it is just less likely to be damaged compared to assets in a higher level risk category.'

The site is not identified in Lower Hunter BFMC Fuel Management Register & Asset protection Zones Map, refer Figure 6. However, there are two small Planned Fuel management Treatments in the form of APZs applicable to the east and north of the site.

The Lower Hunter BFMC Fuel Management Register & Asset protection Zones Map states the following:

'This map shows the risk treatment strategies in the Lower Hunter area across a five year period. The purpose of risk treatment in the BFRMP is to reduce the likelihood and / or harmful consequences of bush fire to the community and environment, through a process of selecting and implementing risk treatment options that modify the characteristics of the hazard, the community or the environment.'

The Lower Hunter BFMC Residential & Special Fire Protection Purpose Risk Current Map is shown as Figure 5, with detail from the BRMP shown in Figures 6 & 7.

Context summary:

The site is one of the lowest risk areas identified. The development of the PP area will provide significant benefit to the existing residential development to the south and east of the PP site shown has Low & Moderate Risk. This existing development has not been built to contemporary standards. The development of the PP site will also facilitate mosaic pattern Hazard Reduction burning in future years. This broader outcome is due to the further fragmentation of the bushfire hazard vegetation, and the provision of improved access for firefighters overall.

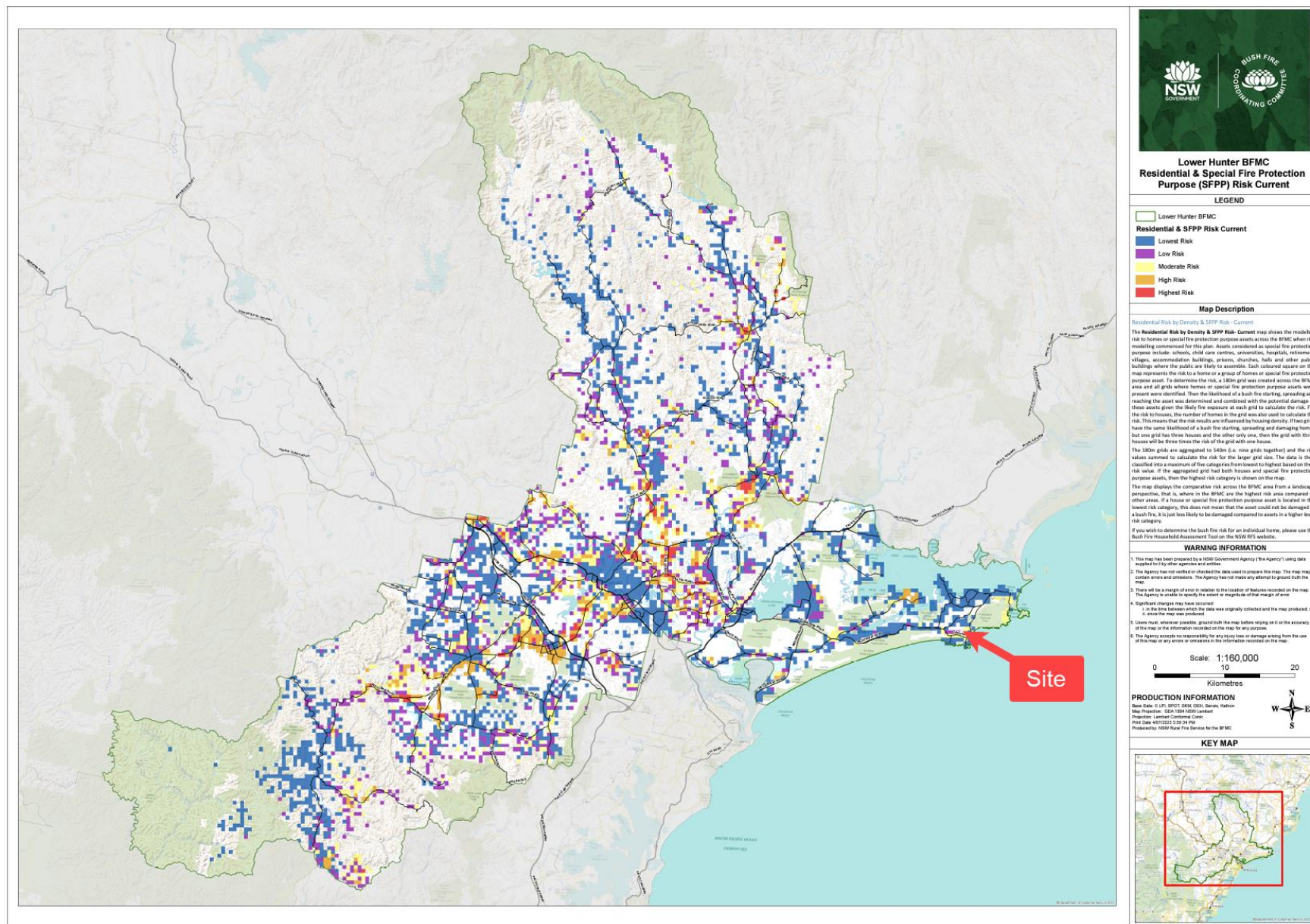


Figure 5: Lower Hunter BFMC Residential & Special Fire Protection Purpose Risk Current Map

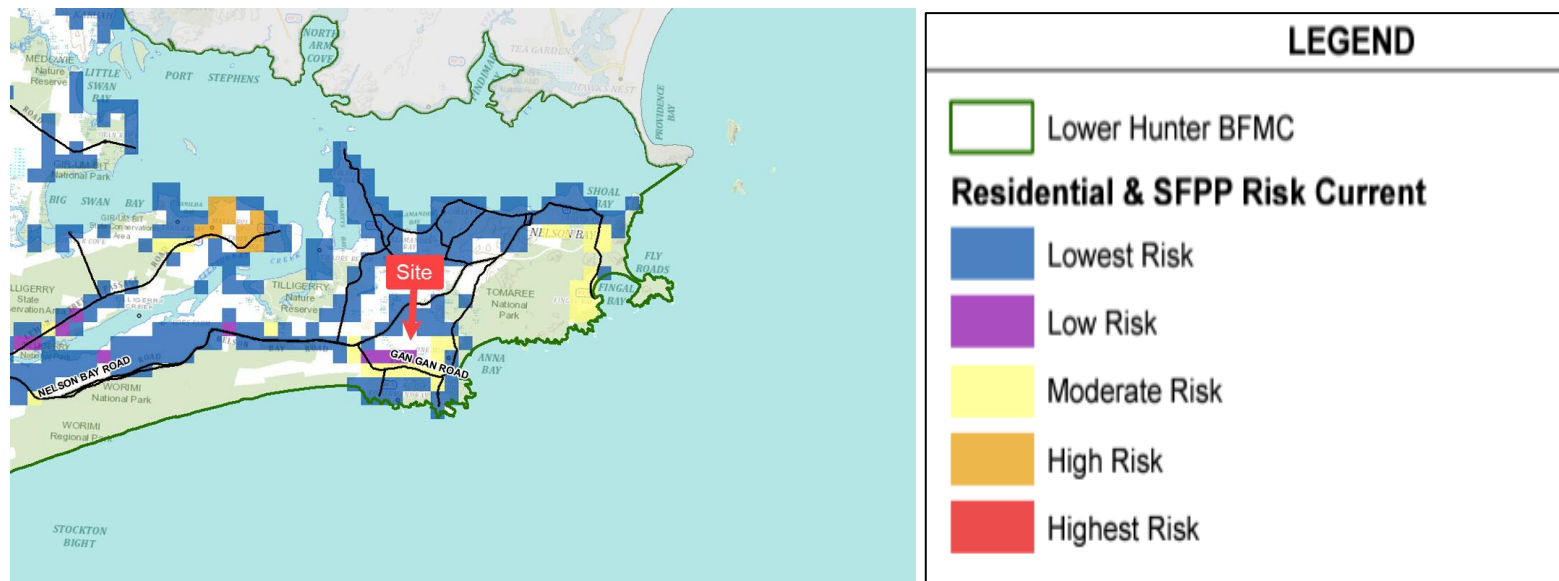


Figure 6: Residential & Special Fire Protection Purpose (SFPP) Risk Current Map

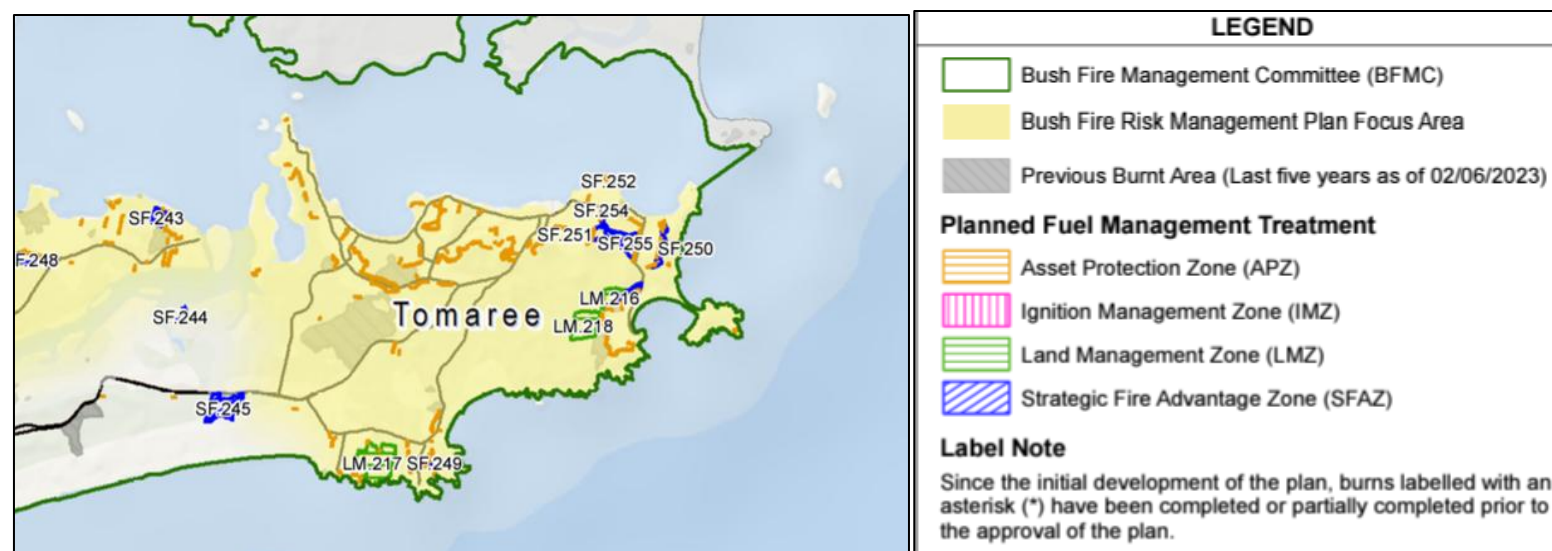


Figure 7: Fuel Management Register & Asset protection Zones Map

10.3. Landscape Scale Assessment Tool (LSAT)

The *Victorian Planning Permit Applications Bushfire Management Overlay – Landscape Scale Threat Assessment* has been used as the framework to assess the broader landscape scale potential of bushfire affecting the site. This document is the only Australian contemporary Landscape Scale methodology with legislative weight. Blackash has expanded and modified the criteria to emphasise the priority of life safety, and the criticality of bushfire Emergency Management and Evacuation Planning as part of the risk assessment process.

The Blackash Landscape Scale Assessment Tool (LSAT) combines quantitative and qualitative techniques which are scaffolded by the *Landscape Scale Threat Assessment* and associated documentation. The approach is shown in Table 2 and uses elements of the Bayesian decision making model and Expert Judgment techniques backed by data. Bayesian decision making has been used where there is both objective and subjective data to analyse, and decisions need to be made on the probability of successful outcomes where there are high levels of uncertainty. Expert Judgement has been used in the assessment and determination of the landscape scale risk.

Blackash Expert Judgement is applied consistent with the criteria used in the *National Construction Code (NCC)*⁴ Assessment Methods and NSW Land & Environment Court practice that calls up *Schedule 7 – Expert Witness Code of Conduct* in the *Uniform Civil Procedure Rules 2005*.⁵

The LSAT provides information on the bushfire hazard more than 150 metres away from the site at a landscape scale. The broader landscape and the potential size or scale of a bushfire has been an important design response in the development of the PP. The likelihood of a bushfire, its severity and intensity, and the potential impact on life and property varies depending on where a site is in the broader landscape. Landscape scale fires will place greater pressure on emergency response capability and will have a wider impact on roads and the length of time roads cannot be safely used. This will affect the likelihood of successful evacuations taking place across larger areas and may affect the ability of firefighting resources to be deployed. Multiple factors have been considered for the landscape scale assessment. Key considerations in our assessment have included:

4

https://www.abcb.gov.au/sites/default/files/resources/2021/UTNCC_Using_assessment_methods%20%281%29.pdf

⁵ <https://legislation.nsw.gov.au/view/html/inforce/current/sl-2005-0418#sch.7>

- extent and continuity of vegetation;
- topography;
- prevailing winds;
- the potential fire run and area that is likely to be impacted by the fire;
- the impact on evacuation routes to safer places considering road networks, distances, and landscape factors;
- the location and exposure of the development to bushfire;
- the ability to seek bushfire shelter on site or at alternative locations; and
- the extent of neighbourhood-scale damage the bushfire may produce.

PBP refers to the Port Stephens LGA being in the Greater Hunter Fire Weather District, and the appropriate maximum Forest Fire Danger Index (FFDI) to be applied in the LGA is FFDI **100**.

Landscape scale fires are those that can span many kilometres or tens of kilometres, and that burn for days or weeks at a time. Typically, these fires can be many thousands of hectares in size with fire fronts many kilometres in length. On the east coast of Australia this scale of fire is only possible where there are very large areas of generally uninterrupted vegetation, typically National Parks and State Forests on the scale of many thousands of hectares that also adjoin substantial areas of private bushland and/or interface directly with urban development.

The revised PP site is within a landscape setting that has a long history of vegetation modification for agriculture, resource extraction, large scale recreation development such as golf courses and urban development. This combines with the geography of the area being a peninsula surrounded by large bodies of water (e.g. Pacific Ocean, Port Stephens embayment and Tilligerry Creek) to limit the ability of bushfires to develop into landscape scale fires.

Remnant areas of vegetation retained within the Tomaree National Park to the south and east of the site are relatively small contiguous parcels (<150ha) and highly fragmented by roads, infrastructure and existing development. Larger bushland areas to the north, northwest and northeast are similarly ultimately limited in size by geography and existing development patterns. These areas also contain significant areas of vegetation with substantially lower fuel loads including saline wetlands and freshwater wetlands (Figure 8). The land use immediately adjacent the site boundaries would best be described as rural residential & agricultural, with varying degrees of vegetation management. The rural zoned grassland vegetation to the east and the west of the site have been used for grazing for decades, and the C4 Environmental Living and R5 Large Lot residential areas are largely cleared and maintained as managed land. As shown in Figures 9 & 10 the bushfire history in the area demonstrates that even substantial wildfires have been managed to keep ultimate fire sizes below 300ha.

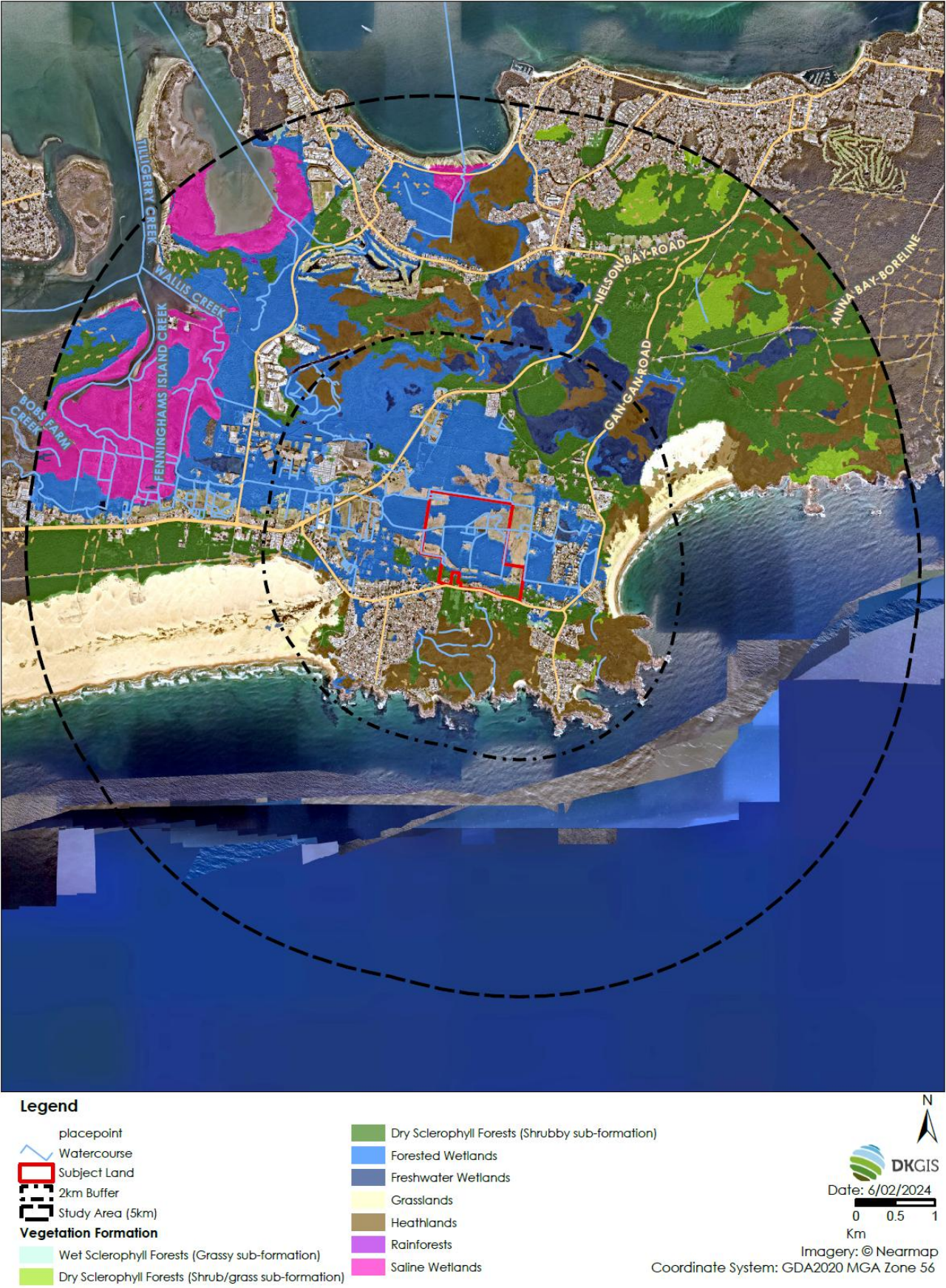


Figure 8: Keith Class vegetation formations in the wider area



Legend

- Watercourse
- Major Road
- Minor Road
- Track
- Subject Land
- Study Area (5km)
- 2km Buffer

- Wildfire**
- 2019-20 Wildfire
 - 2017-18 Wildfire
 - 2003-14 Wildfire
 - 1993-2003 Wildfire
 - 1983-33 Wildfire

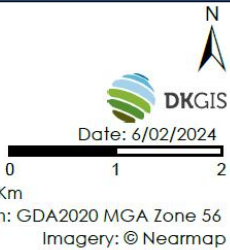


Figure 9: Mapped wildfires 1983-2020

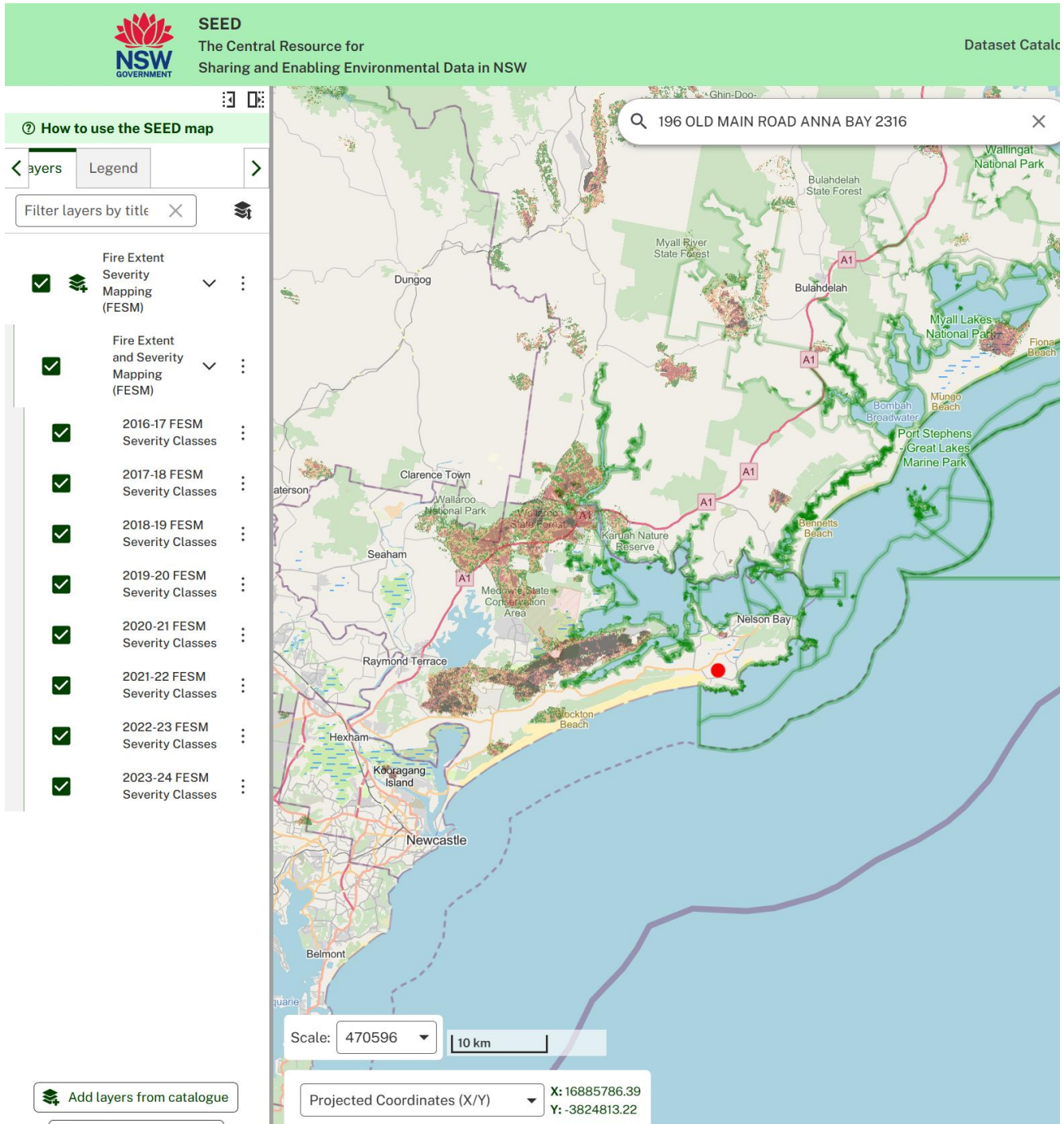


Figure 10: Fire Extent and Severity Mapping 2016/17 - 2023/24 (SEED Maps)

Generally, the formally developed areas surrounding the site have been considered managed land for the landscape assessment (refer Figure 11), consistent with the managed land definition within PBP and the significantly lower threat associated with managed grasslands.

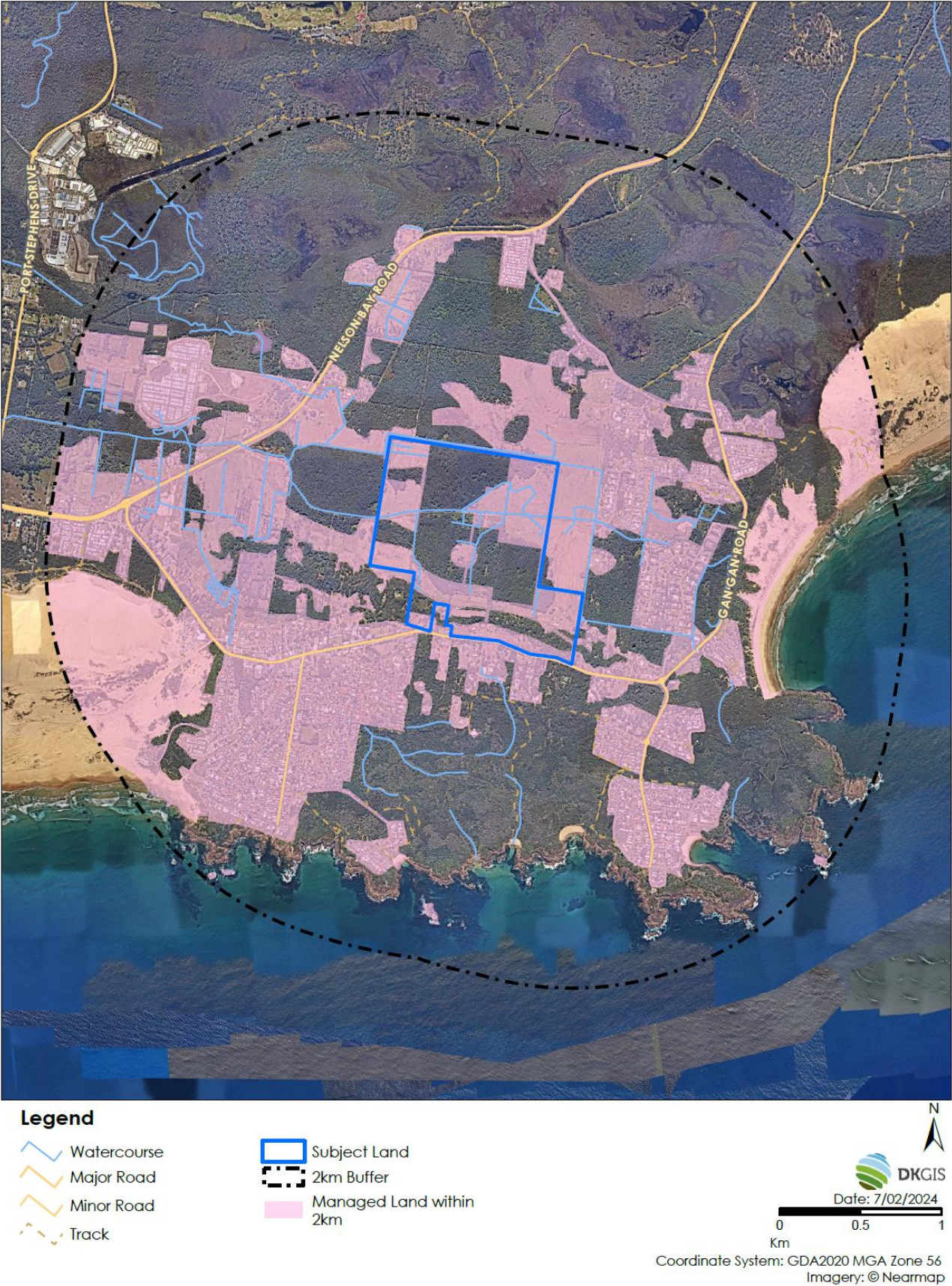


Figure 11: Areas of managed land and managed grassland within 2km of the revised PP site

Therefore, it can be concluded that there is no ability for landscape scale fires to develop that will impact the site. Local scale bushfire threat at the site is not able to develop the size and intensity of a landscape scale fire that is likely to cause neighbourhood scale destruction. The local scale fires may still be significant and can cause local damage, as wherever vegetation is retained there will always be some residual risk to manage, however they will not result in widespread property destruction. Local scale fires also tend to be noticed quickly by the public and called in to emergency services soon after ignition. Rapid initial attack is a further influence on limiting the scale of local fires.

As seen in Figure 12 there are 2 RFS brigades and 1 Fire & Rescue NSW station within approximately 10 minutes response time and therefore a very high likelihood that a timely response to the report of an ignition will be achieved, particularly on days when there is difficult fire weather. Weight of attack refers to the number of firefighting resources that are likely to be immediately available to respond to a bushfire and a proxy for this can be used by considering the number of fire stations (Fire & Rescue and RFS) that are within a 60 minute response. The Lower Hunter RFS Area Command has over 40 RFS brigades with 12 brigades in the Port Stephens LGA. Additionally, there are significant National Parks & Wildlife Service firefighting resources in both the local and wider areas that assist during coordinated firefighting operations.

Modern firefighting arrangements are also better coordinated than in previous decades and have the use of more resources including bulk water tankers, heavy plant (e.g. bulldozers and graders), helicopters and Large Air Tankers (LATS) that are much more readily available, and these enable a major addition to firefighting capabilities, especially on bad fire weather days. The substantial improvements to Operational Readiness systems on bad fire weather days means any fire at the site will have an efficient and effective response. It is notable that Williamstown airport (approximately 24km to the west) also hosts substantial aerial firefighting capability during high fire danger periods.

All these characteristics mean that when bushfires are ignited there is a relatively quick and effective response, meaning that the fire is unlikely to grow to a significant scale. This is not to say that very difficult fire weather days or resources being used elsewhere don't have an impact, simply that there is a reduced likelihood of any significant fire impacting the study area, and such local fires are likely to be managed with local resources as part of normal emergency operations.



Legend

- Watercourse
- Major Road
- Minor Road
- Track
- Subject Land

- Study Area (5km)
- 2km Buffer
- Fire and Rescue NSW
- NSW Rural Fire Service
- Neighbourhood Safer Place

DKGIS
Date: 6/02/2024
0 1 2
Km
Coordinate System: GDA2020 MGA Zone 56
Imagery: © Nearmap

Figure 12: Local fire agency resources

10.4. Overall Landscape Scale Assessment

The LSAT is heavily weighted to life safety and places significant emphasis on the ability for the future community to be able to shelter in place or evacuate safely, whilst emergency services can access the site at the same time. The safest methods of protection are not to be in a bushfire hazard area during a day of bad fire risk; have a clear evacuation to an urban area more than 100m from hazard vegetation; and to have a shelter in place strategy in a well-prepared property with the dwelling built to contemporary PBP standards. A combination of these methods is likely to maximise life safety whilst still allowing for normal life to continue during the bushfire season. The key methods of life safety on the site will be a combination of sheltering in place in a PBP compliant dwelling; early self-evacuation to a safer area due to weather forecasts; or evacuation from the site if directed by emergency services.

Taking the conservative approach required by PBP, all lots established will be capable of providing practical building envelopes so that future dwellings are built to withstand radiant heat levels of 29kW/m² or less (BAL-29). The planning proposal can accommodate such lots even where riparian and bushland vegetation is retained or improved on the site. Specific Bushfire Attack Levels (BAL) will inform the requirements for specific Asset Protection Zones (APZ) to be incorporated into the individual subdivision stages to ensure the RFS criteria is satisfied.

While there are relatively large remnant areas of vegetation around the site, these will not be able to develop or maintain landscape scale fires, as opposed to local scale bushfires. The rate of spread and the maximum intensity generated by bushfires in the immediate region of the site is reduced due to the generally flat topography of the land. The maximum fire run from the south approaching the site is approximately 1.2km and is downslope as it approaches Gan Gan Road. Fires from the north of the site approach across generally flat land that is again fragmented by existing development and roads.

Being located on a peninsula result in the winds impacting on the site typically being cooler and moist further reducing the intensity of bushfire behaviour.

This landscape pattern does not provide an opportunity for extreme bushfire behaviour associated with landscape scale fires to develop and combined with contemporary PBP standards, is highly unlikely to result in neighbourhood scale destruction.

The site has access into Gan Gan Road and Frost Road which are both arterial roads and which are well integrated into the local road network. The existing traffic network is likely to be impacted by heavy traffic during days where bushfires occur in the local area, however road closures due to bushfire impacting on the roads will be reduced somewhat due to the large areas of grassland in the Tomaree area. Grassland fires burn quickly and can be dangerous; however they also have short 'residence times'. The residence time relates to the fact that grass fires will burn most or all of the available fuel in a short space of time, in comparison with forest and woodland fires which due to the heavier fuels and

timber can burn for extended periods of time. The revised PP is based on providing access routes that are developed to provide perimeter standard roads within a corridor of managed vegetation including establishment of fuel reduced areas adjoining forests of 1.5 times the height of the trees. This will substantially reduce the impact of fire impacting roads, reduce the fire residence time, and reduce the chance of roads being closed by fallen trees.

The key evacuation route is to the Anna Bay urban area which is less than 500m from the main proposed roundabout onto Gan Gan Road, and there is also another entry point to Gan Gan Road on the south side of the development. Should this route to the south be blocked for a period of time the northern route to Frost Road and then Gan Gan Road is likely to be available as an alternative. This route provides access to the east and south and the existing urban areas and beaches.

The development will be subject to a formal bushfire assessment and specific building standards as required by PBP and AS 3959:2018 (or contemporary documents as time passes) and will therefore offer suitable shelter from bushfire for individual buildings ultimately approved within the revised PP site. This shelter in place approach, combined with quick and intuitive self-evacuation away from bushland to the Anna Bay town center and suitable buildings will provide options for immediate life safety for occupants and will reduce the need or desire for evacuations from the site.

When the individual factors are scored, after consideration of the landscape context, the site design complying with PBP, and surrounding urban areas, the overall Landscape Scale Threat for the site is assessed as **Moderate Risk**. The summary and weighted scores are presented in Table 2 below.

Table 2: Blackash Landscape Scale Assessment Tool

Landscape Scale Assessment Tool					
Parameter	Low landscape scale threat	Moderate landscape scale threat	High landscape scale threat	Extreme landscape scale threat	Rating
1. Surrounding Vegetation	Bushfire cannot directly approach the site as it is surrounded by urban development and non-mapped vegetation or managed land.	Bushfire can only approach from one aspect and the site is within a suburban, township or urban area considered managed land. Typically an island of bushfire vegetation within a wider urban development area or interface site impacted only by linear vegetation corridors of 100m width or less.	Bushfire can approach from more than one aspect and site is on the bushland-urban interface with the developed area considered as managed land. Typically contiguous bushfire vegetation with a typical fire run in any direction of 0.1-2.0 km distance.	Bushfire can approach from more than one aspect and/or fires have many hours or days to grow and develop before impacting and/or site is surrounded by significant unmanaged vegetation. Typically large areas of contiguous bushland with fire runs of more than 2 km possible.	High
2. Bushfire Behaviour	Extreme bushfire behaviour at the site is not possible given the broader landscape.	Extreme bushfire behaviour at the site is unlikely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Extreme bushfire behaviour at the site is likely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Extreme bushfire behaviour is very likely in this broader landscape due to combination of factors of vegetation type, vegetation fragmentation, aspect and topography.	Low
3. Impact of severe fire behaviour (FFDI 80 or 100 as relevant) coming onto site from wider fire catchment	There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation) and will not result in neighbourhood scale destruction of the site.	The type and extent of vegetation beyond 150m from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	The type and extent of vegetation beyond 150m is likely to result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	The type and extent of vegetation beyond 150m will result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to the site.	Moderate
4. Vegetation Corridors	Vegetation within the site cannot enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation within the site is unlikely to enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation within the site may enable fire to enter and move through the site by a continuous fire path from the primary fire source.	Vegetation corridors on site provide for passage of fire to enter and move through the site from the primary fire source.	Moderate
5. Separation	Hazard separation between extreme bushfire hazard and buildings of greater than 100m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of 50-100m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of 20-50m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	Hazard separation between extreme bushfire hazard and buildings of <20m. Extreme bushfire hazard does not include vegetated corridors of less than 100m width or grasslands.	High
6. Shelter	Immediate access is available to a place that provides shelter from bushfire. This includes existing or proposed buildings on site constructed in accordance with PBP.	Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area. In the case of an eco-tourist facility it will be the designated bushfire refuge built in accordance with PBP requirements.	Access to a place that provides shelter from bushfire is not certain during a wildfire and existing buildings are not built to PBP standards.	Access to a place that provides shelter from bushfire is not possible during a wildfire.	Low
7. Evacuation	Multiple evacuation routes are available and unlikely to be impacted by fire.	Evacuation to alternate location that provides life safety refuge is <1km and can be completed by foot or vehicle.	Evacuation to alternate location that provides life safety refuge is 1km-10km.	Evacuation to alternate location that provides life safety refuge is > 10km.	High
8. Isolation and emergency services	Seamless integration with existing settlement - no impact on evacuation or access for emergency services.	Short bushland pinch points that may carry fire across roads and restrict access briefly during passage of fire. Unlikely impact on evacuation or access for emergency services.	Short bushland pinch points that are likely to carry fire across roads and restrict access temporarily. Likely impact on evacuation or access for emergency services.	Large areas of bushland or multiple pinch points that are likely to carry fire across roads in forest areas and will block evacuation or emergency service access routes for extended time.	Moderate
9. Firefighting water supplies	Site is within urban area and has access to reticulated water supply OR site has dedicated firefighting water supply in accordance with PBP requirements.	Site is on the periphery of urban area and has access to reticulated water supply that may be more susceptible to interruption.	Site is outside urban area and relies on an on site water supply not in accordance with PBP.	Site is in an isolated area and relies on an on site water supply not in accordance with PBP.	Low
Overall Threat Rating			Moderate Risk	Total	180
Assessed at Forest Fire Danger Index of 100 as the design fire, using Method 1 in accordance with PBP 2019					
The scoring system uses a multiplier for each Threat level based on a conservative life safety approach.					
The scaled scores for each Threat assessment are totalled and final scores are placed within a range to produce the final Risk Rating					

10.5. Conclusion regarding compliance with PBP 4.1 Strategic Principles

Consideration of the strategic bushfire context including an assessment of the local landscape characteristics and likely bushfire behaviour demonstrates the site is suitable for development in accordance with PBP.

The Port Stephens BRMP Does not raise significant bushfire risk issues for the study area and identifies the existing local residential properties and retirement village (SFPP) as 'Low' and 'Moderate' risk only. The Blackash Landscape Scale Assessment Tool (LSAT) uses a conservative risk assessment methodology based on life safety and rates the Planning Proposal as Moderate Risk.

Both assessment methodologies conclude that the revised PP site (developed in accordance with PBP standards) demonstrates a reasonable balance between risk management and realisation of development potential and **does not meet the criteria for excluding the site** as inappropriate development.

As a new development, the ultimate residential component can be conditioned to meet the PBP and presents a low risk of high consequence bushfire impacting the site. Every future building provides for radiant heat levels no greater than 29 kW/m² within an APZ that can be established and reasonably maintained within the site or which is managed land in accordance with PBP.

This revised Planning Proposal further reduces the risk of bushfire impacting future residents by removing the outlying residential areas to the northwest and decreasing the ultimate number of lots created. The revised PP demonstrates it is consistent with Section 2.3 Strategic Planning (p. 19):

Strategic bush fire planning and studies are needed to avoid high risk areas, ensure that zoning is appropriate to allow for adequate emergency access, egress, and water supplies, and to ensure that future compliance with this document is achievable.

The revised Planning Proposal is next assessed against the Aim and Objectives of PBP and will address in detail below the requirements of Chapter 4 – Strategic Planning and will consider relevant sections within Chapters 5-8 of PBP.

The following sections address the requirements of Chapter 4 Strategic Planning Table 4.2.1 of PBP (p. 35) as shown in Figure 4.

11. Bushfire Risk Assessment

PBP provides a methodology to determine the bushfire threat and commensurate size of any Asset Protection Zone (APZ) that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation. For new residential subdivision development, APZ requirements are based on providing practical building envelopes on lots that keep radiant heat levels at future buildings below 29kW/m² (BAL-29).

The following assessment is prepared in accordance with Section 100B of the RFA, Section 44 of the *Rural Fires Regulation 2021* (RFR) and PBP. This assessment is based on the following resources:

- Planning for Bush Fire Protection (RFS, 2019);
- Port Stephens Council Bush Fire Prone Land Maps;
- Site inspection;
- Aerial mapping; and
- Detailed GIS and site analysis.

The methodology used in this assessment is in accordance with PBP (p.80) and is outlined in the following sections. Figure 13 is a schematic summary of the site components to simplify understanding of the interaction between different areas of development, infrastructure, parkland and bushland on the site.

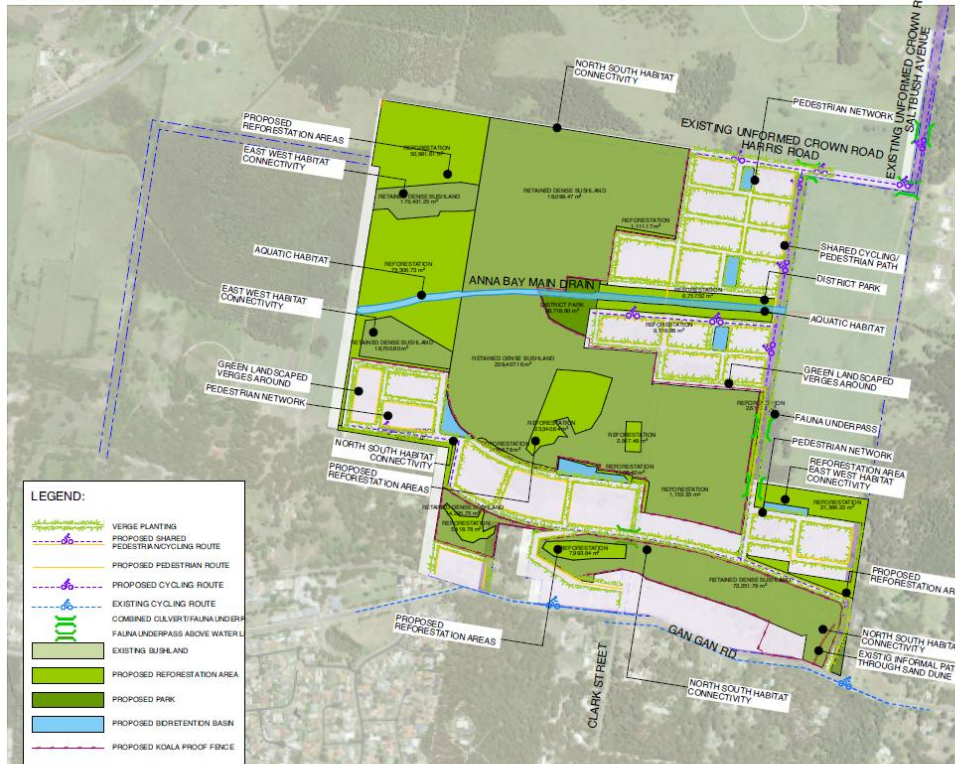
BLACKASH



**RIPARIAN CORRIDOR - WIDENED WATER CANAL FOR FLOOD MITIGATION
WATERFRONT PARKS AND WATER HABITAT**

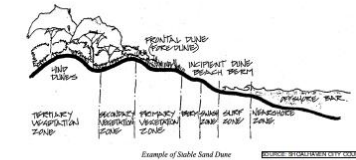


SHARED CYCLE / PEDESTRIAN PATH ALONG RIPARIAN CORRIDOR



3. THE IMPORTANCE AND RISKS OF SAND DUNE SYSTEMS:

Sand dune systems are nature's buffer strip between the sea and land and they are vital as a defence mechanism against the erosional actions of the sea and the inland drifting of sand caused by wind erosion.



Sand dunes occur between the beachfront and the stable land behind the beach area and in a number of situations occur on private property.

Human interference with sand dunes by the removal of vegetation and the construction of roads and houses can have a substantial effect on dunal stability.

Two major risks exist:

a. **Stability risk** – is a result of the mobile nature of sand which makes up the sand dune

The removal of vegetation coupled with exposure to the wind can lead to the erosion of the sand dunes and undermining of the foundations under buildings. Once this action commences, immediate engineering works are required to stabilise the situation to prevent possible collapse of a building.

INTEGRITY OF THE SAND DUNE AND ITS TREE CANOPY RETAINED AS IMPORTANT NATURAL AND CULTURAL LANDSCAPE FEATURE



FAUNA UNDERPASS TO ALLOW NATIVE ANIMALS UNRESTRICTED ACCESS TO HABITAT. RAISED MELALEUCA LOG ATTACHED TO WALL FOR COMBINED CULVERT/CROSSING



LOW IMPACT BOARDWALK TO WATER CANAL



ARCHITECTURALLY DESIGNED BRIDGES OVER WATER CANAL WITH INTEGRATED PEDESTRIAN FOOTPATH AND CYCLEWAY

General Notes

DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION.

All dimensions are in millimetres unless stated otherwise.
All architectural drawings are to be read in conjunction with the relevant contract documents. All dimensions and levels are to be checked and verified on site prior to the commencement of work, shop drawings or fabrication of any components. Note all discrepancies to the Architect for determination. Drawings are not to be scaled, except as indicated dimensions. This drawing is copyright and must not be reprinted, copied or used without the permission of BSA Architects. This document has been prepared for and on behalf of the client and is not to be used by any third party who may rely on these documents.
Northstar Architects (NTW) - John Baker 2020, John Kavanagh 2006

Rev	Date	Issue
A	4/3/2024	Preliminary Issue to Council
B	3/12/2024	Issue for Planning Proposal
C	19/6/2025	Issue for Rezoning Panel

Client
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North



Status
Not for
Construction

Date
3 9/6/2025

Project Address
Gan Gan Road, Anna Bay

Drawing

Proposed Green Network

Project No.	Revision	Drawing No.
22011	C	A012

Figure 13: Key project elements for bushfire analysis – BKA Architecture

11.1. Fire Danger Weather District

PBP requires a credible worst case bushfire weather scenario at a 1:50 year bushfire weather event. PBP refers to the Port Stephens LGA being in the Greater Hunter Fire Weather District, and the appropriate maximum Forest Fire Danger Index (FFDI) to be applied in each LGA is FFDI 100.

11.2. Vegetation Assessment

Vegetation is the fundamental physical component of determining the bushfire behaviour. Vegetation, in broad terms provides the available fuel to be consumed by a bushfire. Fuel load and arrangement represents a considerable component in dictating to a large degree the behaviour of fire in terms of intensity, rate of spread and flame height, and typically relates to dead plant material less than 6mm thick, and live plant material thinner than 3mm.

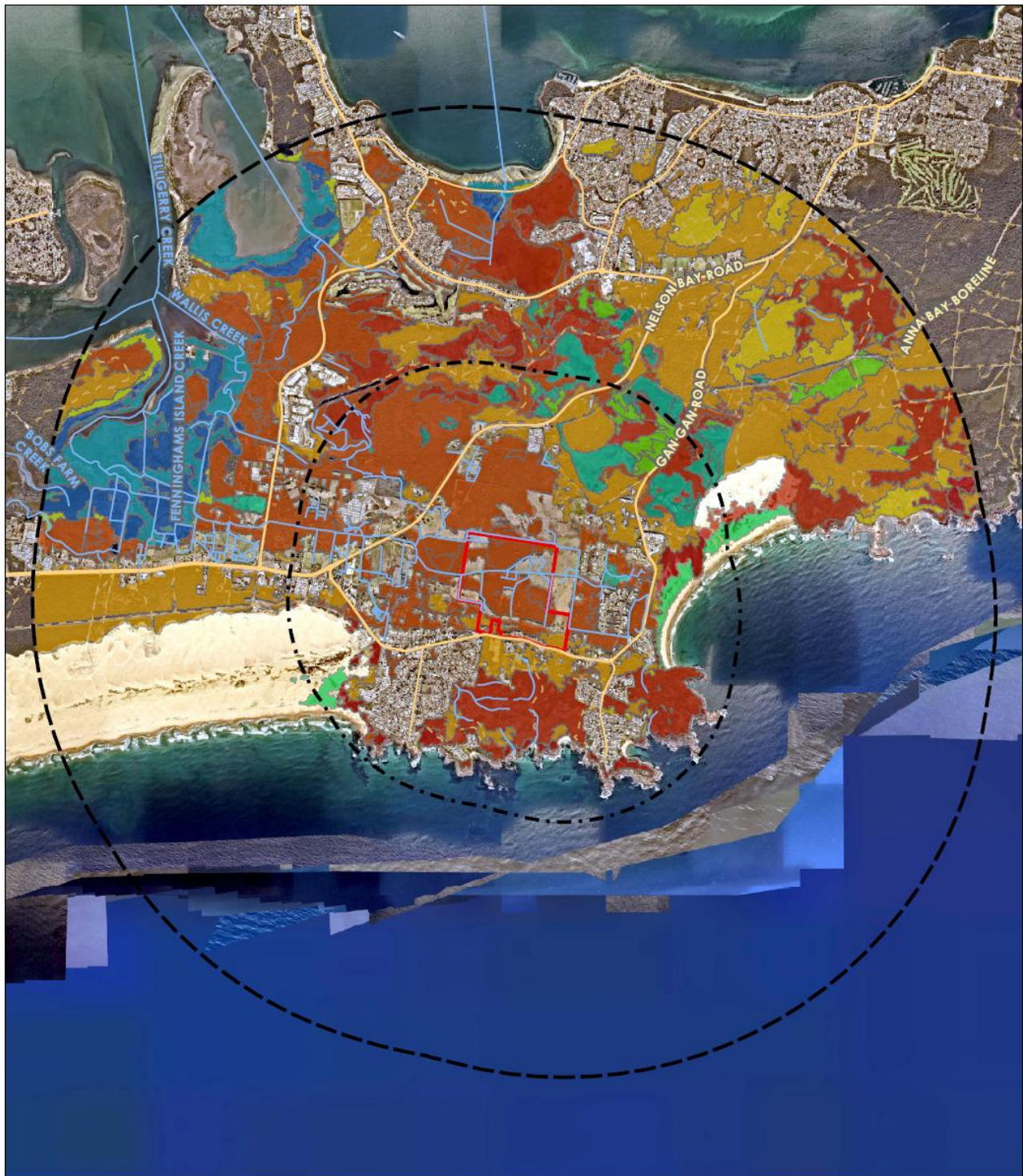
Vegetation type, density and arrangement can further influence fire behaviour and intensity. Vertical and horizontal continuity is also a significant element. Thus, vegetation forms a key consideration within this report.

The vegetation assessment has been completed in accordance with PBP. The predominant Vegetation is classified by structure or formation using the system adopted by David Keith (2004) and by the general description using PBP.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation has been determined for the site over a distance of at least 140 metres in all directions from the proposed site boundary or key assets on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The vegetation formation in the broader area is shown above in Figure 6. The vegetation Class with standard class fuel loads is shown in Figure 14. The vegetation directly surrounding the site is shown in Figure 15.

For assessment purposes, the predominant vegetation affecting the site is 'Forest' and 'Grassland', with Freshwater Wetlands used for the stormwater detention basins in accordance with PBP.



Legend

- placepoint
- Watercourse
- Subject Land
- 2km Buffer
- Study Area (5km)

Vegetation Class and Overall Fuel Load

- Coastal Headland Heaths (36.9 t/Ha)
- Wallum Sand Heaths (36.9 t/Ha)

- Coastal Swamp Forests (34.1 t/Ha)
- Northern Hinterland Wet Sclerophyll Forests (33.1 t/Ha)
- Coastal Dune Dry Sclerophyll Forests (31.1 t/Ha)
- Hunter-Macleay Dry Sclerophyll Forests (24.6 t/Ha)
- Coastal Floodplain Wetlands (15.1 t/Ha)

- Coastal Heath Swamps (15 t/Ha)
- Littoral Rainforests (13.2 t/Ha)
- Maritime Grasslands (6 t/Ha)
- Coastal Freshwater Lagoons (4.4 t/Ha)
- Mangrove Swamps (0 t/Ha)
- Saltmarshes (0 t/Ha)



DKGIS

Date: 6/02/2024

0 0.5 1
Km

Imagery: © Nearmap

Coordinate System: GDA2020 MGA Zone 56

Figure 14: Vegetation Class

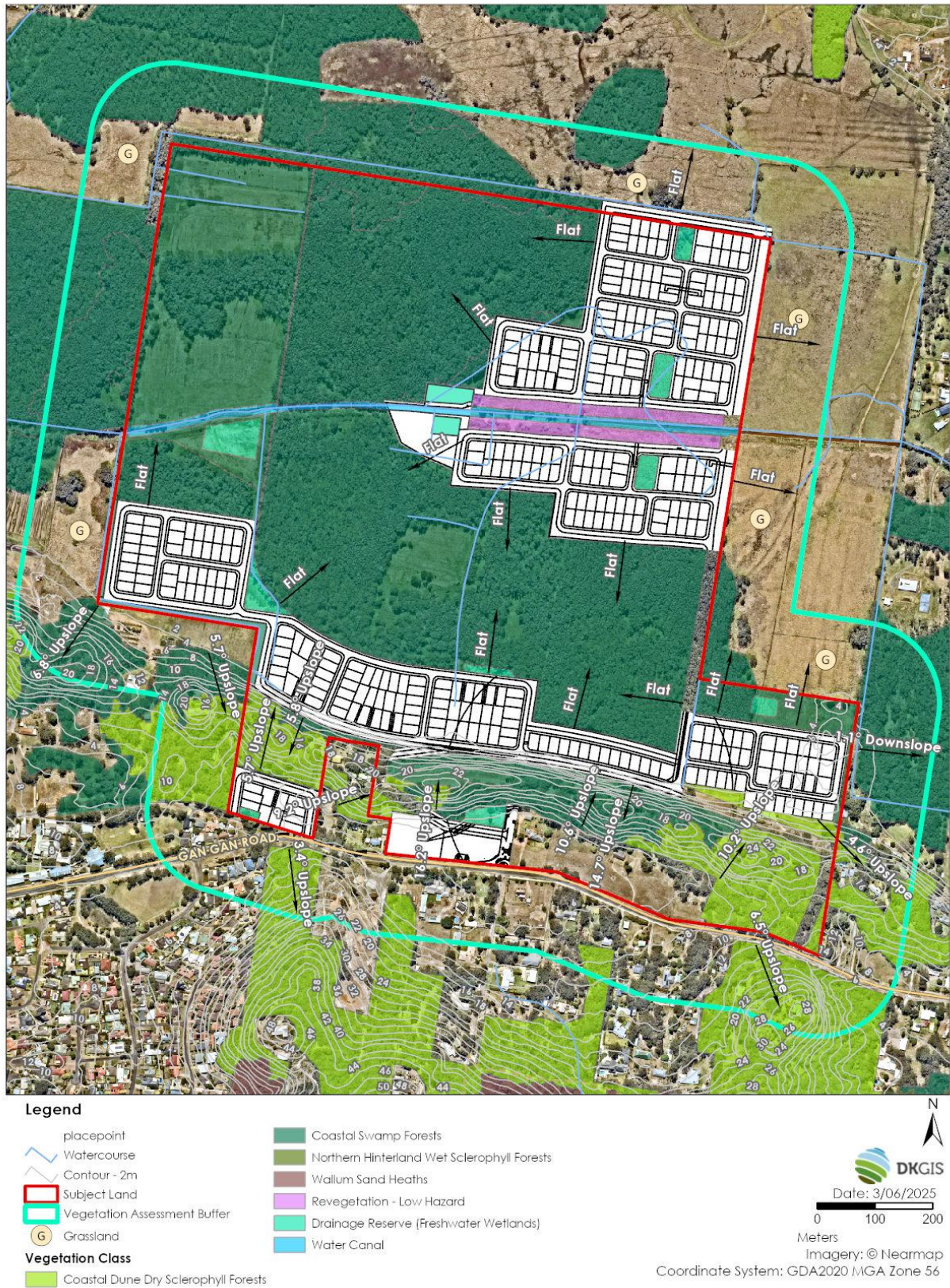


Figure 15: Vegetation Assessment and development footprint

11.3. Slopes Influencing Bushfire Behavior

PBP requires assessment of slope. The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux. The effective slope is the slope of the ground under the hazard (vegetation). In identifying the effective slope, it may be found that there are a variety of slopes covering different distances within the vegetation. The effective slope is considered to be the slope under the vegetation which will most significantly influence the bushfire behaviour for each transect. This is usually the steepest slope.

The broader slopes affecting the site are shown in Figure 16. The wider area out to 5km is characterised as having very mild slopes and essentially flat to the north and west. Slopes to the south of the site are highest near the coastline and are upslope from the site.

Detailed site-specific slopes are shown in Figure 17. The site is largely flat, with upslopes identified to the southern portion of the site.

For assessment purposes, the effective slopes for the site are "All Up Slope and Flat Land" in accordance with PBP.

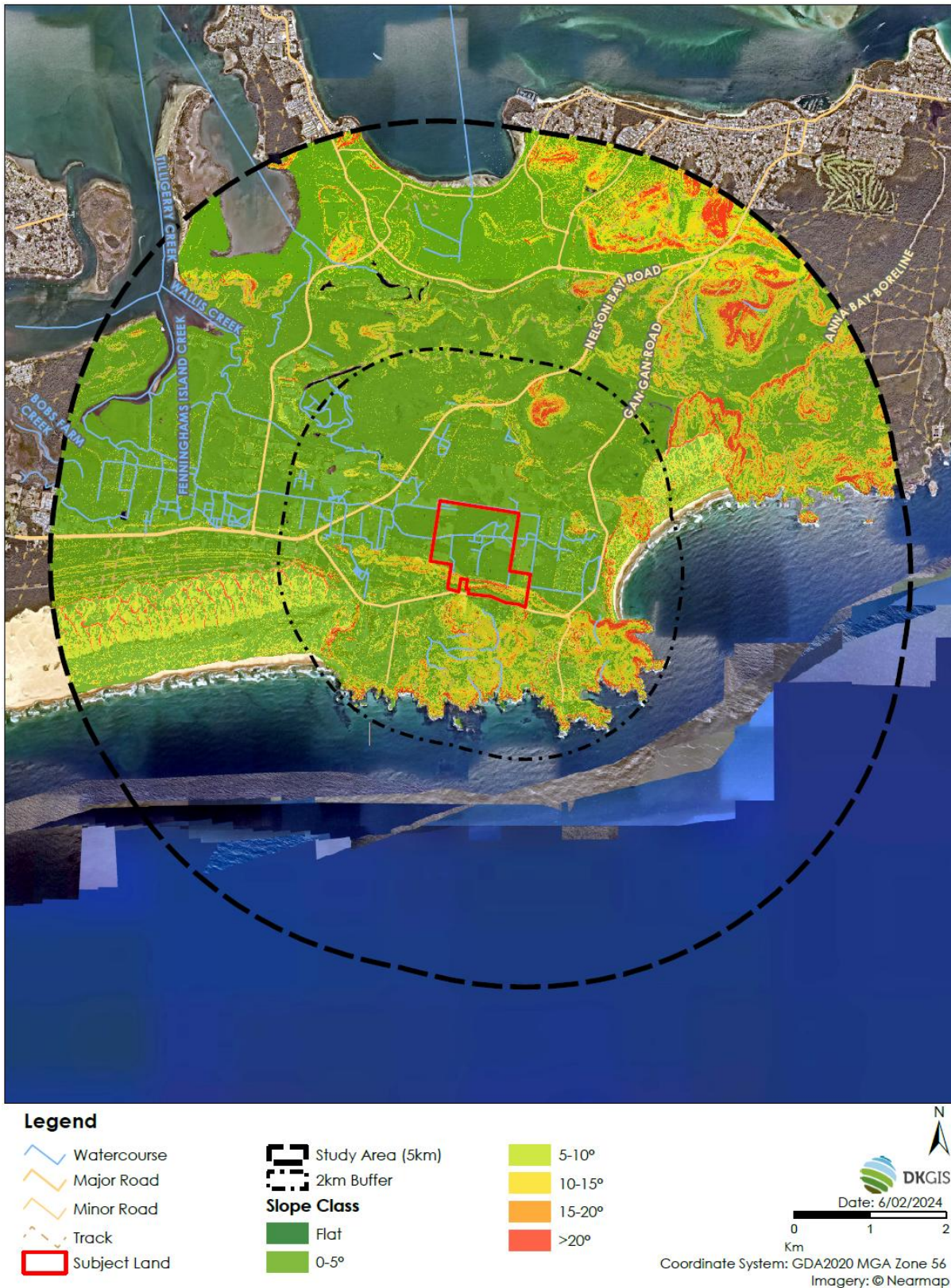


Figure 16: Broader Slope Assessment



Figure 17: Slope Assessment at Development Footprint

11.4. The potential fire behaviour that might be generated based on vegetation and slope

The maximum potential fire behaviour is determined by the location, topography and vegetation surrounding the revised PP site. The most severe fire weather is associated with hot, drier winds from the north to northwest of the site. The prevailing bad fire weather from north-west through to the north-east winds have the possibility of generating significant local scale fires, however these fire runs will be limited by the fragmented landscape to the north, and depending on particular conditions at the time there will be many areas that experience flank fires rather than head fires.

A critical factor to consider when considering potential fire behaviour is that any ignition of a wildfire will be seen and reported to firefighting authorities within a very short time as the area on the northern side of the peninsula has significant urban development which is located approximately 3km to the west of the site.

The standard APZ output Table A1.12.2 reproduced as Figure 18 uses the most conservative interpretation of vegetation fuel loads and broad slope classes to provide a standard set of 'acceptable solution' APZ distances to achieve radiant heat levels of 29kW/m². Detailed discussion on APZs is covered in Section 12.

Table A1.12.2

Minimum distances for APZs – residential development, FFDI 100 areas ($\leq 29\text{kW/m}^2$, 1090K)

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
Distance (m) from the asset to the predominant vegetation formation					
Rainforest	11	14	18	23	30
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	24	29	36	45	56
Grassy and Semi-Arid Woodland (including Mallee)	12	16	20	25	32
Forested Wetland (excluding Coastal Swamp Forest)	10	12	16	20	26
Tall Heath	16	18	20	22	25
Short Heath	9	10	12	13	15
Arid-Shrublands (acacia and chenopod)	6	7	8	9	10
Freshwater Wetlands	5	6	6	7	8
Grassland	10	12	13	15	17

Figure 18: APZs for Residential Development (FFDI 100) (Source PBP Table A1.12.2)

Figure 19 shows a more detailed calculation of the most significant worst case scenario fire likely generated at the revised PP site. This recognises the actual slopes at the site are significantly less than the 5 degree slope range used in the standard solution. Figure 20 provides an example from the southern end of the site adjacent to the dune where slopes are upslope. These are calculated using a standard calculator accepted by the RFS for development assessment. These demonstrate the ability of the site to achieve the performance standard of $<29\text{kW/m}^2$ radiant heat flux at the building façade. No short fire run modelling is required to achieve the standard.

Forest/Woodland - FDF & SFR Calculation page:

Assessment prepared by:

Date:

Fire run specifics

Common and bushfire behaviour contributor inputs:

Predominant vegetation

Surface & Elevated Fuel Load tph

Overall fuel load tph

Average Canopy Height Metres

Fire weather district FDI

Average elevated fuel height Metres

Flame temperature Kelvin

Distance to vegetation Metres

Target elevation of receiver Metres

Effective slope Degrees

Ambient temperature Kelvin

Site slope Degrees

SFR fire run length Metres

FDF nominal head width Metres

Outputs - Fully Developed Fire (FDF)

Outputs - Developing Fire Run (DFR)

Wind Speed kph

Wind speed kph

Default elevation of receiver Metres

Default elevation of receiver Metres

FDF Flame Angle Degrees

SFR Flame Angle Degrees

FDF Flame Length Metres

SFR Flame Height Metres

FDF Intensity kW/m

SFR Intensity kW/m

FDF FROS kph

SFR FROS kph

FDF Flame transmissivity kW/m

SFR Flame transmissivity kW/m

FDF View Factor

SFR View Factor

Calculated SFR Head Width Metres

SFR fire run length Metres

Approx. SFR travel time min/sec

FDF Radiant Heat kW/m²

SFR Radiant Heat kW/m²

Glossary of abbreviations/terms:

tph = tonnes per hectare
kW/m = Kilowatts per metre
kW/m² = Kilowatts per metre squared
HFD = Horizontal Flame Depth
LRV - Low Risk Vegetation

m/h = metres per hour
FROS = Forward rate of Spread
kph = kilometres an hour
FF = Flank Fire
SFR = Short Fire Run

K = Kelvin
min = minutes
sec = seconds
min/sec = minutes and seconds

Figure 19: Worst case bushfire scenario (calculator Delany 2019)

Forest/Woodland - FDF & SFR Calculation page:

Assessment prepared by: D. Lemcke

Date: 3/12/2024

Fire run specifics Upslope fire adjacent to dune - 20m perimeter road and 4.5m setback

Common and bushfire behaviour contributor inputs:

Predominant vegetation Coastal Dune Dry Sclerophyll Forests - 20.5 & 31.10 - Tall > 1.4m - < 2.0

Surface & Elevated Fuel Load 20.5 tph

Overall fuel load 31.10 tph

Average Canopy Height 20 Metres

Fire weather district 100 FDI

Average elevated fuel height 1.4 Metres

Flame temperature 1090 Kelvin

Distance to vegetation 24.5 Metres

Target elevation of receiver 2 Metres

Effective slope -5 Degrees

Ambient temperature 308 Kelvin

Site slope 1 Degrees

SFR fire run length 0 Metres

FDF nominal head width 100 Metres

Outputs - Fully Developed Fire (FDF)

Outputs - Developing Fire Run (DFR)

Wind Speed 45 kph

Wind speed 30 kph

Default elevation of receiver 7.528 Metres

Default elevation of receiver 5.212 Metres

FDF Flame Angle 70 Degrees

SFR Flame Angle 1 Degrees

FDF Flame Length 15.06 Metres

SFR Flame Height 10.423 Metres

FDF Intensity 27995 kW/m

SFR Intensity 18453 kW/m

FDF FROS 1.7422 kph

SFR FROS 1.7422 kph

FDF Flame transmissivity 0.8255 kW/m

SFR Flame transmissivity 0.8331 kW/m

FDF View Factor 0.2799

SFR View Factor 0.0000

Calculated SFR Head Width 0.000 Metres

SFR fire run length 0 Metres

Approx. SFR travel time 0:00 min/sec

FDF Radiant Heat 17.57 kW/m²

SFR Radiant Heat 0.00 kW/m²

Glossary of abbreviations/terms:

tph = tonnes per hectare

m/h = metres per hour

K = Kelvin

kW/m = Kilowatts per metre

FROS = Forward rate of Spread

min = minutes

kW/m² = Kilowatts per metre squared

kph = kilometres an hour

sec = seconds

HFD = Horizontal Flame Depth

FF = Flank Fire

min/sec = minutes and seconds

LRV - Low Risk Vegetation

SFR = Short Fire Run

Figure 20: Upslope modelling for south side of the site

11.5. Any history of bushfire in the area

The Port Stephens BRMP 2019 provides no fire history mapping. However, state-based data provides the wildfire history 1983-2020 (Figure 9) and the wildfire history via the FESM portal for 2016/17 – 2023/24 (Figure 10). The prescribed burning history is provided as Figure 21, wildfire frequency at Figure 22 and time since fire at Figure 23.

There is no history of prescribed burning within the site. There is a single mapped wildfire within the site (2014) and infrequent fires within the surrounding landscape. The fires that have been recorded surrounding the site are typically local scale fires, with the larger and more frequent wildfires identified to the north-east of the site within the unmanaged bushland associated with the Tomaree National Park, with these being controlled using Gan Gan Road.

The wildfires within the immediate vicinity of the site occurred more than 10 years ago, with further development since those fires creating an increase in the fragmentation of the vegetation in those same areas.

The most recent wildfire is identified to the north-west of the site, which occurred in the 2019/2020 fires, which was limited to the northern side of Nelson Bay Road. It is important contextually to note that Nelson Bay Road is where significant fragmentation commences from outside the Tomaree National Park, these breaks in the landscape more than likely played a significant role in providing containment lines and slowing the advance of the bushfire.

Bushfires can occur at any time of the year. The Australasian Fire and Emergency Services Council (AFAC) Bushfires and Community Safety Position Paper (p. 3) outlines nationally agreed positions for the fire services which states that:

Bushfire loss can be reduced or avoided in some cases but cannot be entirely prevented. A balance needs to be struck between measures taken to reduce or avoid harm and loss due to bushfire, and the protection of other values.

The position paper (p. 3) recognises that:

Bushfire is a normal part of Australia's natural environment, particularly in eucalypt forests and grasslands. However, the frequency and intensity of bushfires varies throughout the landscape and the seasons. Bushfires are a common occurrence during the drier periods of the year in most places.

And that

Bushfires of low or moderate intensity often pose little threat to life, property and community assets, but the potential for changes in wind direction can be a significant hazard. However,

bushfires that burn in heavy fuels, steep terrain or on hot, dry and windy days often spread rapidly, crown in forests, produce powerful convection columns and create extensive spot fires ahead of the fire front, often making their control impossible until weather conditions moderate.

As the Fire Danger Rating reaches 'Extreme', bushfires are often described as 'firestorms' and become impossible to control. When the Fire Danger Rating approaches 'Catastrophic', the risk of serious injury or death to people in the path of a bushfire increases significantly, and many properties and other community infrastructure can become difficult or impossible to defend.

The NSW planning framework accepts this fundamental premise and PBP is based on credible worst-case fires (1:50 year event) affecting the site. The responses to potential fires affecting the site are mitigated by the Bushfire Protection Measures contained within PBP. PBP does not seek to stop fires, rather, it recognises the fundamental risk of bushfire affecting new development and puts in place minimum requirements to provide a tolerable approach to risk management. The approach within PBP does not consider fire history and assumes a credible worst case fire weather event and maximum vegetation regardless of management intervention. As such, the provision of meeting the acceptable and performance-based criteria within PBP reflects a tolerable level of risk by the State.



Figure 21: Prescribed Burns

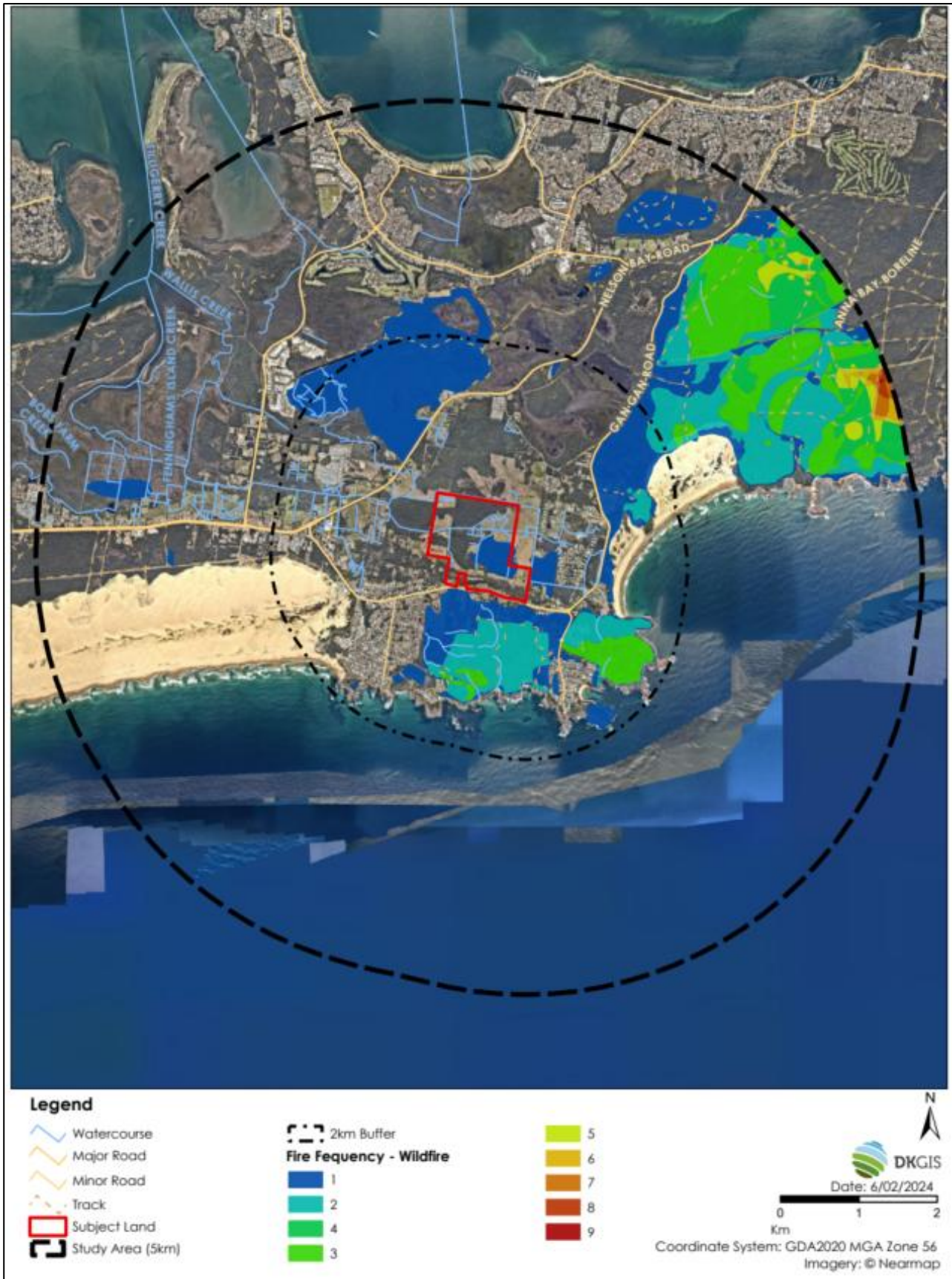


Figure 22: Wildfire Frequency



Figure 23: Time since fire - Wildfire & Prescribed Burns

11.6. Potential fire runs into the site and the intensity of such fire runs

Potential fire runs impacting the site are shown in Figure 24. For the purposes of PBP, the worst-case design fire has been adopted (FFDI 100) for this assessment. This was discussed above with modelling examples at Figures 19 & 20.

As discussed above, potential fire runs into the site from the north and northwest of the site, are predominantly through Coastal Swamp Forest vegetation and a flat topography / landscape. The fire runs impacting on the site are fragmented and broken up by roads, development and areas of generally managed grassland vegetation.

The flat topography of the site, moist/cooler winds and surrounding landscape creates an environmental that reduces the rate of spread of any approaching bushfires.

As discussed above, the site cannot be impacted by landscape scale fires. The revised PP includes PBP compliant APZ and other measures that will allow fires to be managed onsite using the suite of Bushfire Protection Measures that will be established through future subdivision applications. All residential areas and critical access points will have perimeter roads and PBP compliant APZ for the PBP design fire.

The combination of bushland fragmentation, significant grassland vegetation, moist/cooler winds, flat topography and surrounding development will reduce the scale and intensity of fire runs into the site.

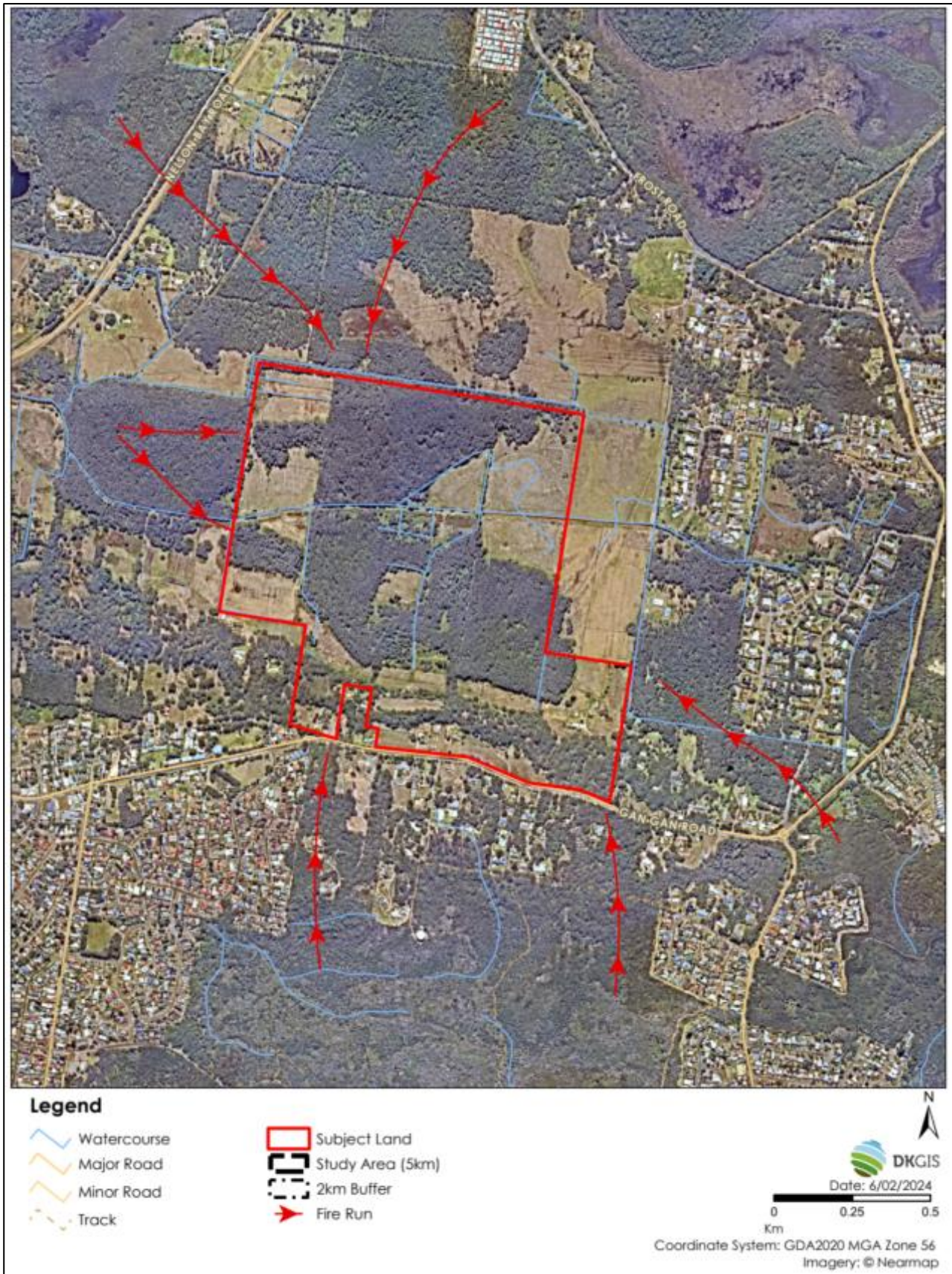


Figure 24: Potential Fire Runs

11.7. The difficulty in accessing and suppressing a fire, the continuity of bushfire hazards or the fragmentation of landscape fuels and the complexity of associated terrain

The main roads of Gan Gan Road and Nelson Bay Road have been used multiple times in the past as control lines to manage larger local bushfires. Property access trails were used to manage the 2014 wildfire onsite.

Access within the site will be available to Medium Rigid (MR) fire appliances and internal access is provided in accordance with PBP. All proposed lots will have the benefit of perimeter roads and therefore firefighting access to retained vegetation. There are multiple route options for site entry for firefighting vehicles from Gan Gan Road and Frost Road (via new road construction and the extension of Saltbush Avenue). The small internal stormwater management facilities in some areas will be provided with 5m wide maintenance access trails (also forming the APZ) and these provide continuous access around these facilities.

Therefore, there are no identified difficulties in accessing and suppressing the fires that could occur around or within the site.

As discussed above, landscape scale fires are unlikely to directly impact the site, and any large fires originating from outside the site have to progress through highly fragmented fire paths with fire spread into retained bushland corridors limited through the reduced ember attack associated with grassland fires.

The topography for the site is essentially flat and the vegetation types are largely consistent and result in bushfire behaviour that is well understood by local crews.

12. Land Use Assessment

12.1. The risk profile of different areas of the development layout

The risk profile of the development is within tolerable limits as defined within PBP. The revised PP provides a concept which utilises the existing road network and perimeter roads around each parcel of lots. The APZs meet the Residential requirements within PBP, and all future construction can be completed in accordance with the *Australian Standard AS 3959:2018 Construction of Buildings in Bushfire Prone Areas (AS3959)*. Construction will be addressed in detail with the subsequent development applications. Services are able to comply with PBP. Landscaping for the revised PP will be developed having regard to the APZ requirements.

The combination of suitable access, APZ, onsite water supplies and compliance with contemporary building standards will significantly reduce the need for late-stage evacuations. Compliance with PBP will result in suitable areas on the site that are of greater safety.

Appropriately designed lots (in accordance with PBP), and buildings constructed (in accordance with AS3959) and prepared properties may offer people options for sheltering during most bushfires, reducing the likelihood of bushfire-related injury and death. The nationally agreed position is that the safest option is to leave a bushfire prone area early on days with a Fire Danger Rating of Extreme or higher. There are multiple access and egress routes available across the site, and road pinch points will be managed through detailed design at later stages of development. The risk profile is best represented by compliance with PBP and the ability of the planning proposal to provide complying APZ.

12.1.1. Asset Protection Zones

For proposed new subdivision development, PBP requires that a minimum separation between hazard vegetation and buildings is provided in the form of APZ. The APZ is a fuel-reduced, physical separation between buildings and bushfire hazards. For residential developments, APZ requirements are based on keeping radiant heat levels at potential building footprints below 29kW/m² (BAL-29) as the maximum exposure on all sides of the building.

A conservative approach has been taken and the site has sufficient room to provide compliant APZs and practical building envelopes for the entire site. The revised PP has been designed to incorporate 20m wide perimeter road reserves to be managed ongoing and combined with minimum setbacks of 4.5m on private property the design meets and exceeds the PBP performance criteria.

Significant stormwater management facilities are part of the revised PP and these will take the form of bioretention ponds and swales. For APZ calculation purposes these are treated as Freshwater Wetlands in accordance with standard assessment doctrine, and the APZ will include the constructed trails required to provide maintenance access. The main Anna Bay canal will be 15-18m wide open water with maximum 20m revegetation (pink in Figures 15, 25 & 26) each side.

The application is not seeking to extend or burden any adjoining land with any APZ. Crown Road reserves to be developed as part of the revised PP will be built to Council standards and managed as public assets after the construction handover.

It is a fundamentally accepted position within PBP that roads provide managed areas and are part of an APZ. Figure 25 outlines the likely ultimate APZ layouts required for PBP compliance on the revised PP site. Minor amendments due to basin changes may be required in future stages.



Figure 25: Acceptable Solution APZ

12.1.2. Bushfire Attack Levels

The Bushfire Attack Level (BAL) is a means of measuring the ability of a building to withstand attack from bushfire. The form of bushfire attack and the severity will vary according to the conditions (FFDI, vegetation, slope and setback) on the site.

The BAL assesses the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per square metre. This forms the basis for establishing the requirements for construction to improve protection of a building from potential attack by a bushfire, as defined in AS3959. The BAL ratings are used as the basis for establishing the requirements for construction standard for future buildings to improve protection from bushfire attack.

The BAL ratings across the site are shown as Figure 26. These are provided to demonstrate that appropriate construction levels can be provided for all proposed lots within the subsequent development applications. The majority of lots across the site are BAL-19 or lower.

The APZ and BAL mapping demonstrate the revised PP is compliant with PBP.

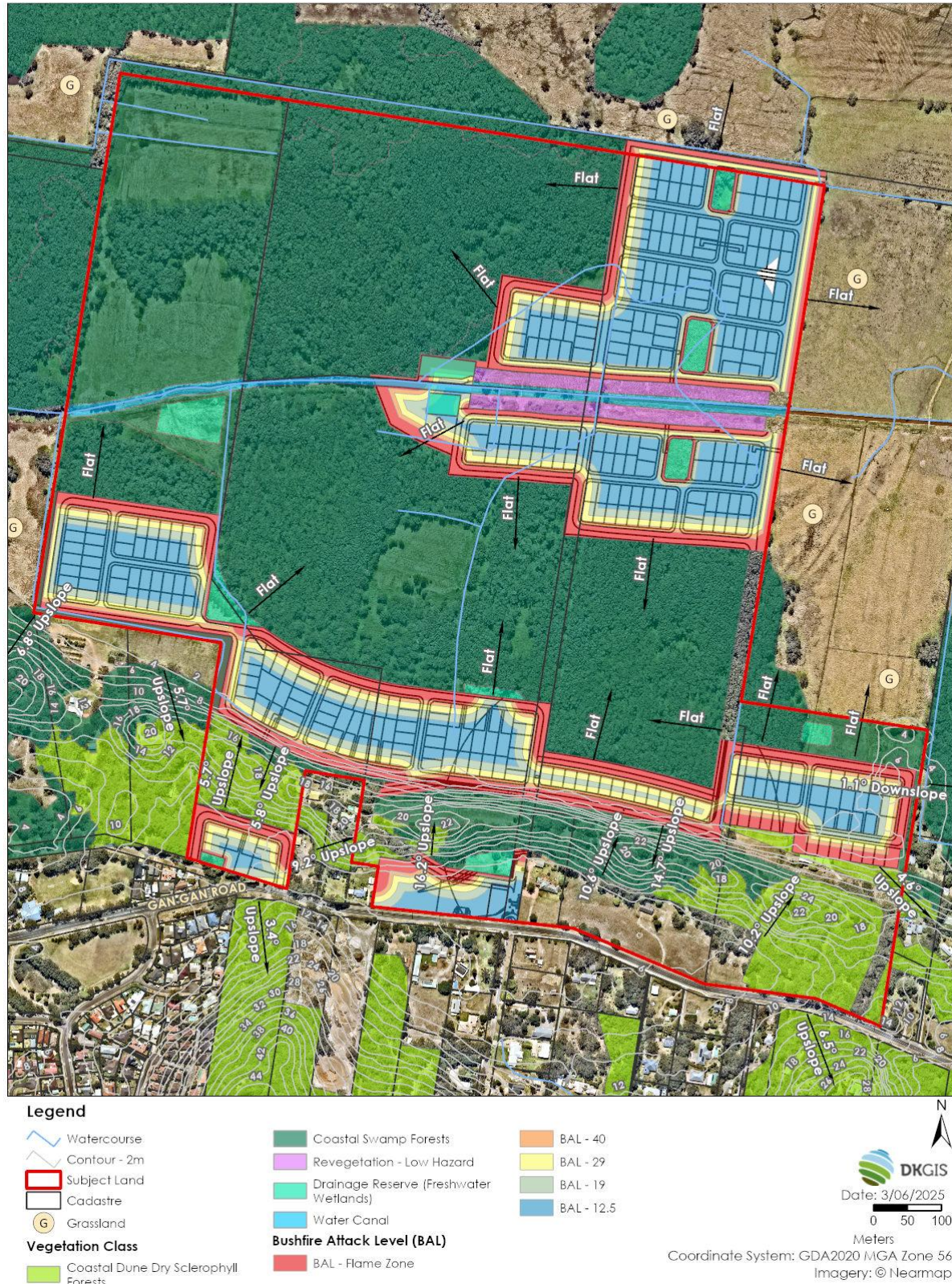


Figure 26: Bushfire Attack Level (BAL) Assessment

12.2. The proposed land use zones and permitted uses

The planning proposal responds to the site and considers bushfire constraints in relation to the proposed likely uses for permanent conservation land and residential development.

This complies with PBP.

12.3. The most appropriate siting of different land uses based on risk profiles within the site

It has been demonstrated that the proposed development is capable of meeting PBP requirements. More isolated precincts in the northwest of the site have been removed in the revision of the proposal to further reduce bushfire risk.

This complies with PBP.

12.4. The impact of the siting of these uses on APZ provision.

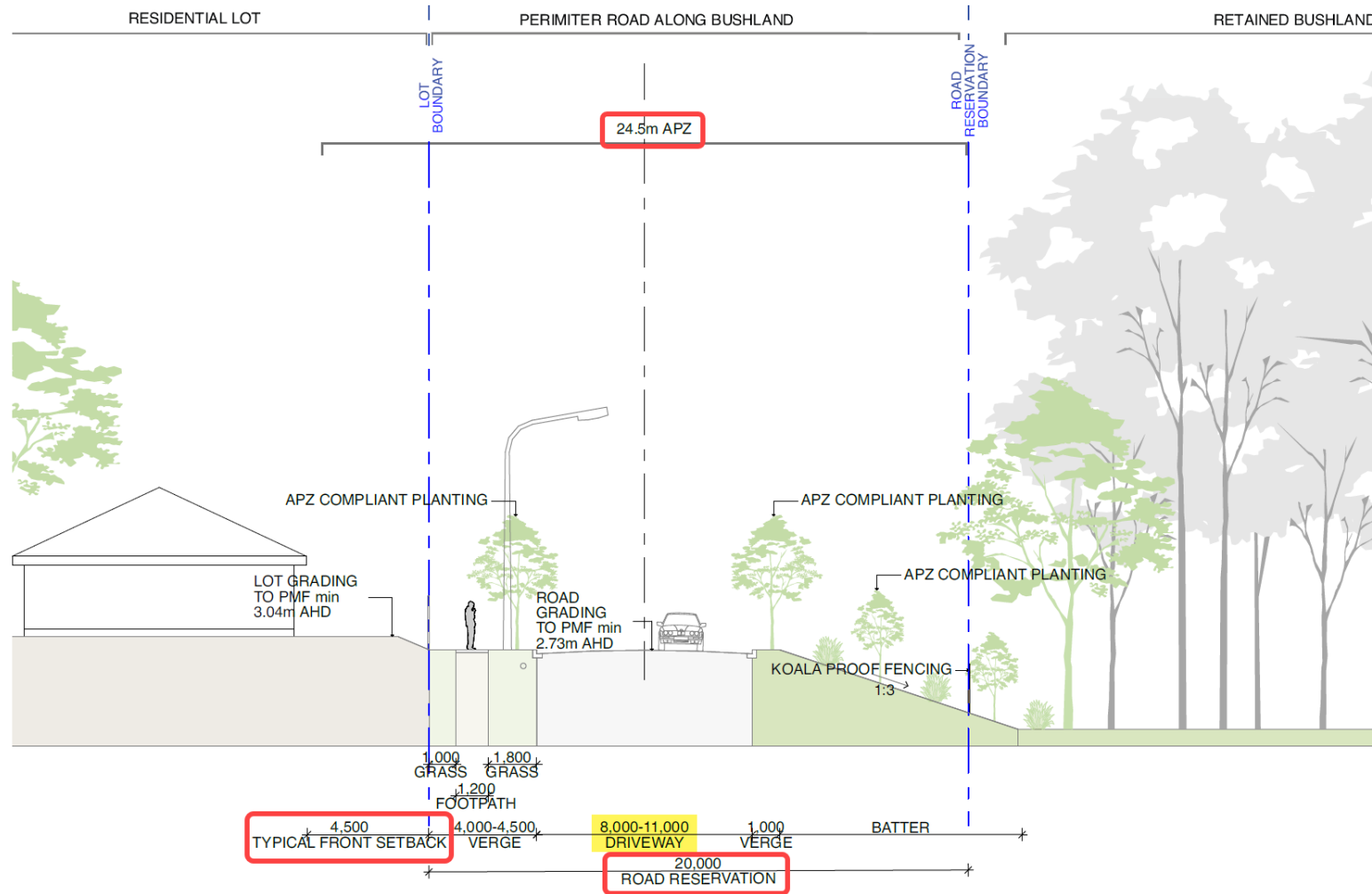
For proposed new residential development, PBP requires that a minimum separation is provided in the form of Asset Protection Zones (APZ). The APZ is a fuel-reduced, physical separation between buildings and bushfire hazards. The development layout will have perimeter roads, stormwater management facilities, recreation space such as shared pathways and managed parklands forming the APZ, in concert with the front setbacks on private land lots.

The site is effectively fenced off for koala protection purposes and this provides a benefit by clearly and permanently defining where the APZ starts and finishes. More isolated precincts in the northwest of the site have been removed in the revision of the proposal to further reduce bushfire risk.

All future lots will be compliant with PBP standards. Figure 27 provides the typical perimeter road and APZ layout.

This complies with PBP.

BLACKASH



4 Typical Perimeter Road abutting Bushland - Section
1:200

Figure 27: Typical APZ layout including permanent delineation by koala fencing

13. Access and egress

13.1. The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile

The proposed road network will be PBP compliant having multiple access points (3) to the wider road network. There are two along the southern side of the development which provides a less than 500m route to the Anna Bay urban development area. Should late-stage evacuation be required this adjoining urban area immediately to the south-east of the site is well separated from any possible bushfire due to the lack of hazard vegetation.

Compliance with PBP and construction standards via the National Construction Code (NCC) will allow for a shelter in place strategy to be the primary method for protection of life safety.

Access within the site will be available to Medium Rigid (MR) fire appliances and internal access is provided in accordance with PBP. All proposed lots will have the benefit of perimeter roads and therefore firefighting access to retained vegetation.

There are multiple route options for site entry for firefighting vehicles from Gan Gan Road and Frost Road (via new road construction and the extension of Saltbush Avenue). The small internal stormwater management facilities in some areas will be provided with 5m wide maintenance access trails (also forming the APZ) and these provide continuous access around these facilities.

Typical road access layouts are shown in Figures 28-30. The new northern boundary road (Harris Road) will be an asset for both firefighting and access/egress. The road is set within a 25m wide corridor that will facilitate vegetation management, and there is a permanent canal on the north side in adjoining land. It is unlikely this road will be cut for more than a short period of time during a bushfire.

Gan Gan Road and Nelson Bay Road provide the major access roads for emergency management as shown in Figure 31, with multiple access and internal linkage points provided to and within the site as shown in Figure 32.

Suitable consent conditions at development stage can manage the details of the access arrangements, suitable landscaping, roll top kerbs, hydrant locations etc. The internal road network will be able to be conditioned to meet all PBP standards.

All perimeter roads will be built to PBP standards with minimum 8m kerb to kerb construction as shown in Figure 28. It is understood that as development on adjoining sites occurs and transport planning proceeds, some of these roads may need to be wider to accommodate collector road traffic and the overall APZ composition surrounding the carriageway will be amended as required.

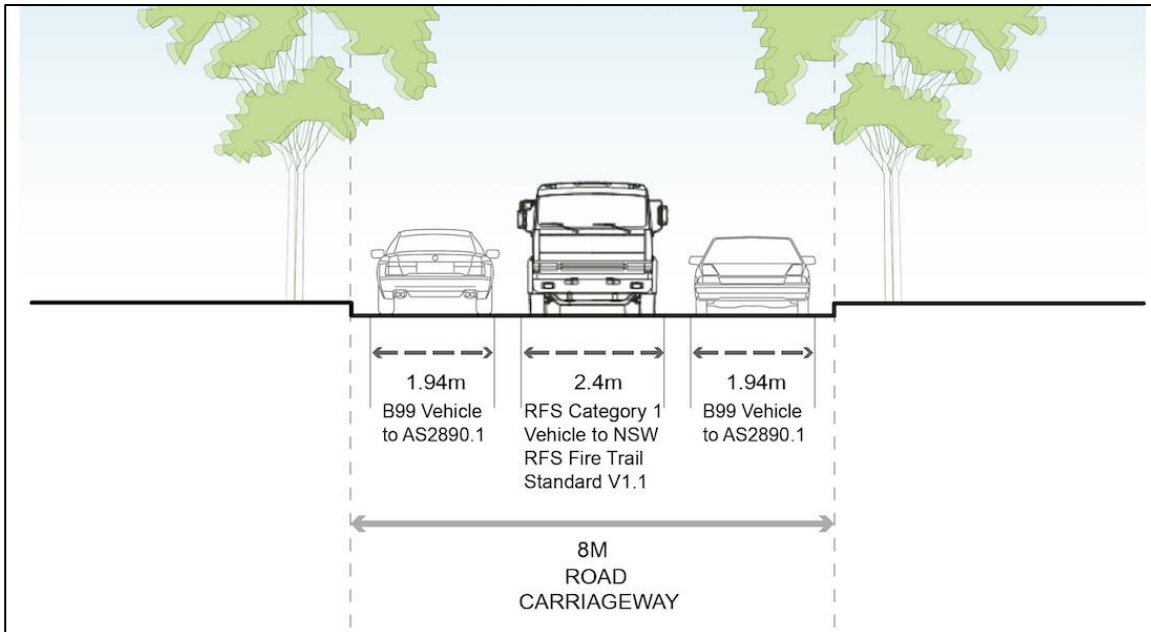


Figure 28: Typical 8m wide perimeter road carriageway with vehicles shown for context

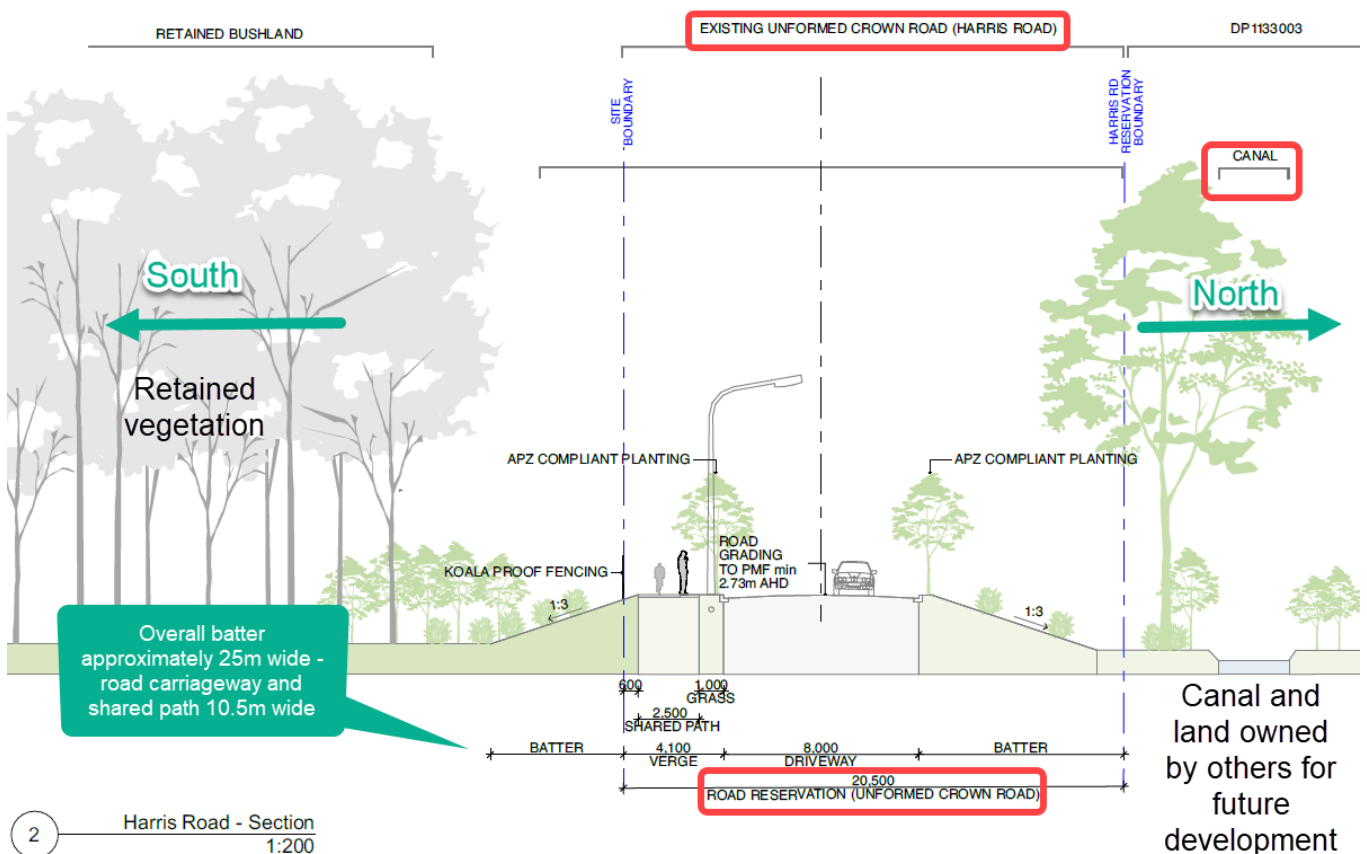
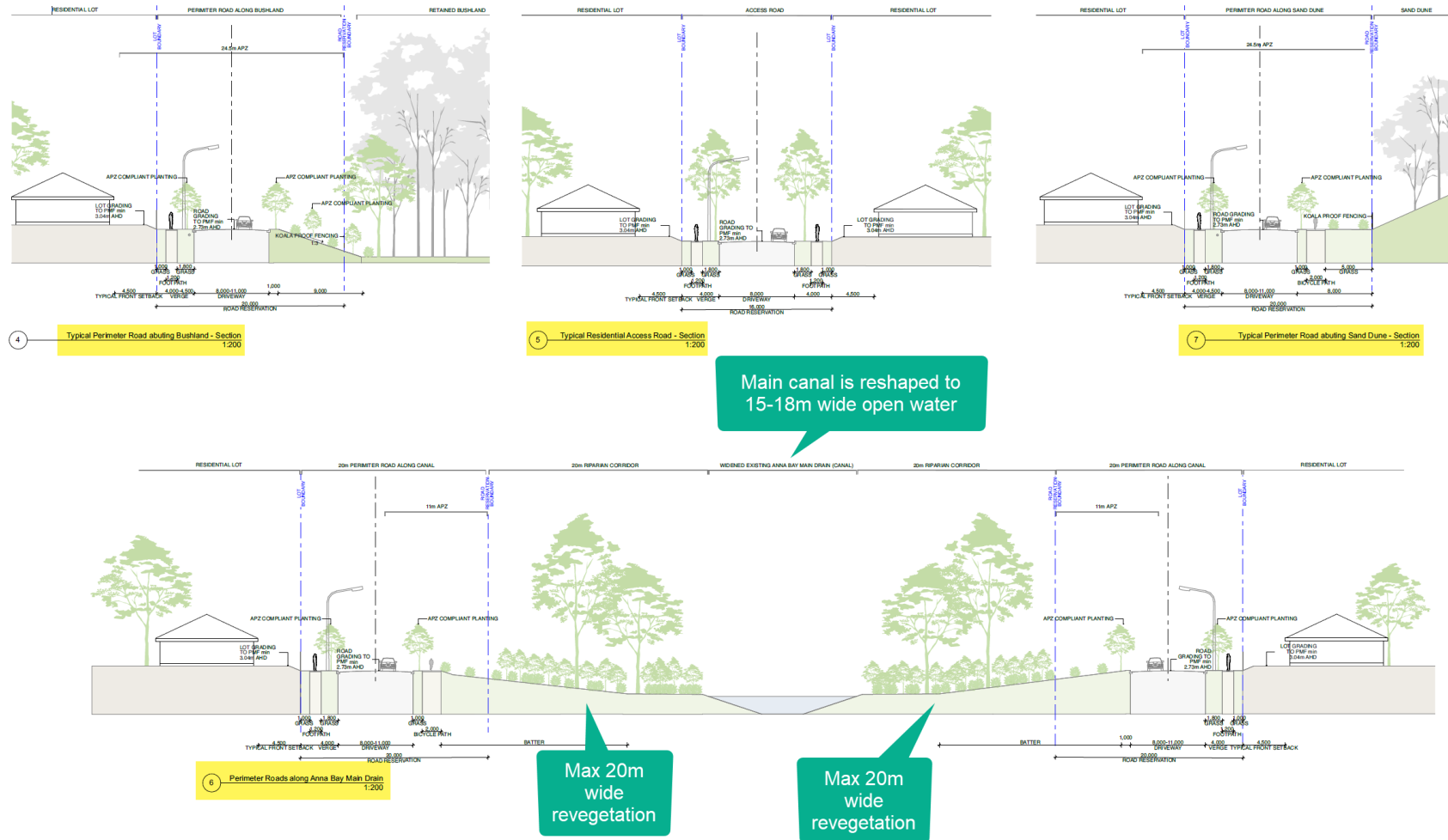


Figure 29: New road along northern boundary - minimum 10.5m pavement within 25m corridor

BLACKASH



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Figure 31: Existing Access and Egress



Figure 32: Proposed road network for revised PP site

The national position of fire agencies is that *the safest action to protect life is for people to be away from the bushfire or threat of bushfire*⁶. This is underpinned by comprehensive emergency management arrangements and operational fire management systems that focus on the provision of information, advice, and warnings to assist communities to make informed decisions prior to the impact of bushfire and if necessary be out of Bushfire Prone Areas well before the impact of fire.

Within the NSW Bushfire planning system and PBP, there is a hierarchy of controls in place, from planning schemes to design and construction etc, to mitigate bushfire risk to communities. The BPM work in unison to enhance resilience by the provision of minimum standards for new development while reducing the vulnerability of negative impacts on occupants (including fire fighters) of these areas.

Given the size of the site and the ability to achieve the required APZ and access requirements, a shelter-in-place approach is likely to be the primary method of responding to local scale fires that start quickly.

There are significant firefighting resources located within a less than 10 minute response time of the site and multiple routes to access the site. It is unlikely that travel routes will be isolated for an extended period of time in any but the most extreme circumstances.

Therefore, there are no identified difficulties in accessing and suppressing the fires that could occur around or within the site whilst residents who choose to evacuate are doing so.

This complies with PBP.

13.2. The potential for development to be isolated in the event of a bushfire

The site is not isolated development as defined by PBP (p111):

Development which is located predominantly in native bushland or is considered to be within a remote area. Access and evacuation may be challenging due to distances that are required to be travelled through bush fire prone areas.

⁶ Australasian Fire and Emergency Services Authorities Council. (2019) *Bushfires and Community Safety Position* (AFAC Publication No. 2028)

The development is not in a remote area as discussed at length above, and the wider area is suitable for development in compliance with PBP. The revised PP removes the northwest precincts further reducing potential bushfire isolation risk.

There are multiple routes for firefighting resources to access the site and all routes are unlikely to be impassable by firefighting vehicles at once except in the most extreme circumstances.

This complies with PBP.

14. Emergency services

14.1. Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/brigades

As discussed above, there are substantial existing firefighting resources including 2 RFS brigades and a Fire & Rescue brigade within close proximity to the revised PP area. The development on its own is unlikely to be of a scale requiring additional emergency services, and there are ongoing reviews of fire service that will be completed in accordance with the RFS and Fire and Rescue NSW *Standards of Fire Cover*. There is sufficient development area to locate a new fire station should the review require this.

The revised PP complies with the requirements of PBP.

14.2. Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency

Bushfires have occurred in Australia for thousands of years and will continue to occur. Climate change modelling predicts increasing frequency and severity of fire events correlating with altered rainfall and drought patterns and increasing numbers of severe and intense heat events. As the dryness of more areas increases beyond levels historically considered 'normal', the footprint of areas with a propensity to burn are likely to increase, which increases the importance of new development complying with the minimum bushfire safety standards set out by the NSW Government and RFS in PBP.

Not all bushfires lead to loss of life or assets. Bushfires of low to moderate intensity often pose little threat to life, property and community assets. Fire agencies are very successful at extinguishing low to moderate intensity fires before they lead to injury or death.

The risk is greatest when fire occurs on hot, dry windy days, and where ignition occurs in heavy fuels, and in steep terrain. These conditions present fire that can spread rapidly, crown in forests, produce powerful convection columns and create extensive spot fires ahead of the fire front. This often makes their control impossible until weather conditions moderate. PBP is predicated on a probable worst case fire scenario of FFDI 100. Similarly, the NCC and AS3959/NASH provide deemed to satisfy solutions for fires up to and including FFDI 100. Fires above FFDI 100 are possible in this Fire Weather District and fire services have significant notice periods (at least 4 days) from the Bureau of Metrology (BoM) of these catastrophic conditions.

However, the national and NSW framework provides a robust policy setting for new development in Bushfire Prone Areas. The AFAC Community Safety Position Paper⁷ notes that:

Prevention measures are the most cost-effective and efficacious means of reducing bushfire risk to life and property. Land-use planning as a prevention intervention can significantly impact risk, by directing settlement growth and development to areas of lowest bushfire risk and avoiding settlement and development in areas of highest bushfire risk.

Planning policy frameworks can strengthen the resilience of settlements and communities and prioritise the protection of human life by putting in place requirements for Planning Proposals and decision making.

Land-use planning underpins and sets preconditions for all other emergency management interventions in future developments.

Firefighting will be facilitated by the PBP compliant APZ, additional water supplies and site access. All future development within the site will be built in accordance with PBP, the National Construction Code (NCC) and AS3959/NASH which increase the resilience of buildings to the impacts of bushfires. Onsite water and underground services will further assist firefighting.

The revised PP will have no negative impact on emergency services to undertake fire suppression and is likely to assist through additional access, water supplies and vegetation fragmentation. The revised PP will also provide a significant improvement in bushfire safety for adjacent and adjoining properties, which include dwellings that have been approved and constructed prior to 2002 and the development of any bushfire protection standards consistent with contemporary practice.

⁷ P. 4 Australasian Fire and Emergency Services Authorities Council. (2019) *Bushfires and Community Safety Position* (AFAC Publication No. 2028)

The size of the remaining remnant vegetation surrounding the development and its fragmented nature reduce the risk of large or intense fires. The future detailed layout of the individual subdivision stages will ensure every lot is capable of providing a BAL-29 practical building footprint, and that perimeter roads will be provided in all stages, forming part of the permanent APZ. Reticulated water and underground services will further assist firefighting.

Firefighting will be facilitated by the PBP compliant APZs. All future development within the site will be built in accordance with the National Construction Code (NCC) and AS3959 which increase the resilience of buildings to the impacts of bushfires.

The revised PP removes the relatively isolated northwest precincts in the previous design further simplifying firefighting and provides a well-considered design that has responded to the aim and objectives of PBP to provide for the protection of life and the minimisation of impact on property while having due regard to the development potential, site characteristics and protection of the environment.

15. Infrastructure

15.1. The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants

The subsequent development applications will detail provisions for services. The PP area will be serviced by reticulated water.

Electricity supply for the new development will comply with PBP. Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008). This complies with PBP.

This complies with PBP.

15.2. Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.

There are no issues identified with high voltage power lines and gas supply mains. Specific details will be managed during subdivision development stage; however it is expected that all local services will be provided underground. Electricity supply for the new development will comply with PBP. Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008).

This complies with PBP.

16. Adjoining land

16.1. Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans

The future development will have no implications for the management of the retained vegetation on the adjoining land as the site (including Crown Road reserves as required) is capable of providing all perimeter roads, stormwater infrastructure, and APZ to be PBP compliant. There will be a Bushfire Emergency Management Plan produced to assist ecological and land management activities during future stages, however this will be focused on the subject site and not require any additional efforts by adjoining neighbours. The development of the site will provide significant bushfire risk mitigation benefits to the surrounding properties.

Environmental Conservation land to be retained and rezoned to C2 Conservation will be maintained and improved. APZ and perimeter roads will be established within the development footprint from the retained bushland. There will be no negative bushfire risk impact on adjoining land or need for adjoining landowners to undertake any additional bushfire mitigation works other than what they are required too currently. The final ownership of the conservation lands will be determined during later stages of the overall development process.

The additional population will bring new investment and people into the area who may wish to assist in the maintenance of conservation areas in their new neighbourhood, join the local fire brigades and otherwise potentially contribute to the maintenance and upkeep of the community.

All new development within the site will be designed to meet the minimum standards of PBP which achieve an appropriate level of bushfire resilience. The PP does not seek or rely on the provision of off-site APZs or other off-site BPM. The future development will not burden or change the existing obligations or management actions of neighbours.

This complies with PBP.

17. Summary Tables

This Section evaluates the Planning Proposal against the bushfire strategic planning requirements of PBP and is shown in Table 3.

Table 3: Strategic bushfire study - compliance with PBP Table 4.2.1

Issue	Detail	Assessment considerations	Evidence	Suitable site
Bush fire landscape assessment	A bushfire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	The bushfire hazard in the surrounding area including: Vegetation Topography Weather	SBS, Landscape Scale Assessment Tool, Bush Fire Risk Management Plan review, Asset Protection Zone modelling and consideration of BPMs.	YES
		The potential fire behaviour that might be generated based on the above	Potential is limited to local scale fires only and access and water supplies will improve, future dwellings will build to PBP standards and AS3959.	YES
		Any history of bush fire in the area.	Significant recent history suggest site is suitable and fires managed locally.	YES
		Potential fire runs into the site and the intensity of such fire runs; and	Potential is limited to local scale fires which can be managed on site.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
		The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.	No identified difficulties for accessing and suppressing the type of fires that may occur here. Acceptable terrain and consistent vegetation generally, good local road network, close to major urban development etc.	YES
Land use assessment	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses.	The risk profile of different areas of the development layout based on the above landscape study	The combination of BPMs is varied to manage this onsite. The urban development mix proposed is a suitable and practical use of the land with respect to bushfire.	YES
		The proposed land use zones and permitted uses	Urban development is a suitable and practical use of the land.	YES
		The most appropriate siting of different land uses based on risk profiles within the site (i.e. not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and	The proposed layout responds to the site suitably.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile;	The road network provides multiple additional connections into the local road network and the design of the roads meets or exceeds the requirements of PBP.	YES
		The location of key access routes and direction of travel; and	The road network provides multiple additional connections into the local road network and the design of the roads meets or exceeds the requirements of PBP.	YES
		The potential for development to be isolated in the event of a bush fire.	The road network provides multiple additional connections into the local road network and the design of the roads exceeds the requirements of PBP. There is little chance of isolation due to multiple routes in and out.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
Emergency services	An assessment of the future impact of new development on emergency services.	Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/brigades; and	Positive impact overall. Not likely new emergency services generated by this development alone.	YES
		Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.	Limited negative impact as compliant with PBP. May have positive impact with more water supplies, access, and active land management. Will substantially improve bushfire safety of development to the south and east of site.	YES
Infrastructure	An assessment of the issues associated with infrastructure and utilities.	The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants; and	To be considered at DA stage	YES
		Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.	No life safety issues identified.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.	No significant negative impact identified. Positive impact related to additional people, active land management and investment locally. Will substantially improve bushfire safety of development to the south and east of site.	YES

17.1. Suitability of the Planning Proposal

This SBS has demonstrated that the revised PP has considered and responded to the requirements of PBP. In a bushfire context, PBP (p. 34) requires that *strategic planning must ensure that future land uses are in appropriate locations to minimise the risk to life and property from bush fire attack. Services and infrastructure that facilitate effective suppression of bushfires also need to be provided for at the earliest stages of planning.*

The bushfire risk has been considered at the macro-scale, looking at fire runs, slopes, fire behaviour, bushfire attack into the site and it has addressed the access and evacuation requirements of PBP.

This section assesses the broad principles outlined within PBP (p. 34) which are at Table 4 and the consideration of exclusion of development as required within PBP (p. 34) at Table 5.

Table 4: Strategic Principles

Principle within PBP	Comment	Compliance
Ensuring land is suitable for development in the context of bushfire risk	The Planning Proposal provides compliance with the deemed to satisfy requirements of PBP in all BPM. The bushfire risk has been considered at FFDI 100 as required by PBP and the risk to future occupants and emergency services can be managed by meeting the requirements of PBP.	Yes
Ensuring new development on BPL will comply with PBP	The Planning Proposal meets all deemed to satisfy requirements of PBP. Future development is able to meet the standard of <29kW/m2 radiant heat at building exposures. Roads and APZs can comply with PBP.	Yes
Minimising reliance on performance-based solutions	There is minimal reliance on performance solutions.	Yes
Providing adequate infrastructure associated with emergency	The proposed road network meets or exceeds the minimum requirements of PBP. All services can be provided in accordance with Table 5.3c of PBP.	Yes

Principle within PBP	Comment	Compliance
evacuation and firefighting operations	Multiple short distance evacuation routes are available.	
Facilitating appropriate ongoing land management practices	The future development will not burden or change the existing obligations or management actions of neighbours. Suitable legal methods, ownership transfers and/or biobanking stewardship agreements will be used to ensure APZ and other requirements will be maintained. These can be developed at development application stage.	Yes

Table 5: Exclusion of Development

Principle within PBP	Comment	Compliance
The development area is exposed to a high bush fire risk and should be avoided	The landscape bushfire risk is Moderate (Table 2) as it is adequately separated from landscape scale bushfires. The new development lots can comply with the minimum requirements of PBP, and the risk has been managed to the appropriate level required by PBP.	Yes
The development is likely to be difficult to evacuate during a bush fire due to its siting in the landscape, access limitations, fire history and/or size and scale	There are 3 compliant evacuation routes that are considered sufficient to manage likely bushfire impact, particularly in conjunction with 4 day fire weather forecast availability. Shelter in place within PBP compliant dwellings will be primary defence against very local ignitions.	Yes
The development will adversely effect other bush fire protection	All new development within the site will be designed to meet the minimum standards of PBP which achieve an appropriate level of bushfire resilience. The Planning Proposal does not seek or rely on the	Yes

Principle within PBP	Comment	Compliance
strategies or place existing development at increased risk	provision of off-site APZs or other BPM. The development will not burden or change the existing obligations or management actions of neighbours. The development will provide a positive impact to adjoining neighbours to the east and south by providing an urban development buffer and improved access.	
The development is within an area of high bushfire risk where density of existing development may cause evacuation issues for both existing and new occupants	The landscape bushfire risk is Moderate (Table 2) as it is adequately separated from landscape scale bushfire and will only be exposed to local scale fires due to the limited vegetation and fragmented bushland patterns. The proposal will provide practical building envelopes and PBP compliant APZ on site, and all future lots will have direct access to the existing public road network.	Yes
The development has environmental constraints to the area which cannot be overcome	Assessed by others.	N/A

18. Conclusion

This Strategic Bushfire Study considers the suitability of the revised PP with respect to bushfire risk within and affecting the site, having removed the previous northwest precincts further reducing potential bushfire risk.

The PP can satisfy the Aim, Objectives and requirements within PBP to provide for the protection of life and the minimisation of impact on property; while having due regard to the development potential, site characteristics and protection of the environment.

This SBS has provided a conservative assessment of bushfire risk and followed the Aim and Objectives of PBP, Section 2.3 Strategic Planning, and specifically addressed the requirements of Chapter 4 – Strategic Planning. In meeting the requirements of PBP, the PP also satisfies the requirements of the *Ministerial Direction 4.3 Planning for Bushfire Protection*. The suitability of the Planning Proposal has considered the broad land scape scale risk and the site-specific requirements of PBP.

The PP can satisfy the detailed criteria to be assessed at the next stage of the process. All future development will be supported by APZ to meet the minimum standard of $<29\text{kW/m}^2$ at building exposures and will be further assessed at development application stage. The Planning Proposal meets the Acceptable Solution requirements of PBP and should be supported with respect to bushfire risk management.

In the authors' professional opinion, the revised PP is a suitable use of the land, and the bushfire protection measures demonstrated in this report comply with the Aim and Objectives of Planning for Bush Fire Protection 2019, the Ministerial Direction 4.3 Planning for Bush Fire Protection, and allow for the site to be rezoned with respect to bushfire matters.



David Lemcke | Senior Planner & Bushfire Specialist

Blackash Bushfire Consulting

B.A., Grad. Dip. Urban & Regional Planning; Master of Environmental Planning; Grad. Dip. Bushfire Protection; Adv. Dip. Of Public Safety (Emergency Management);

Dip. Management



Lew Short | Principal

Blackash Bushfire Consulting

B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management). Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373



19. Appendix 1 References

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NSW Rural Fire Service (2015) *Guide for Bush Fire Prone Land Mapping*

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20. Appendix 2 Curriculum Vitae



Curriculum Vitae

Lew Short

Director BlackAsh Bushfire Consulting

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Summary

Lew is an experienced leader in the government and emergency sector. He has an intimate knowledge of the workings of government and how emergency service organisations operate. He is not only a technical expert but a practitioner who has deep industry knowledge.

Lew has extensive experience providing national leadership in building community resilience representing AFAC and the FPAA. Lew's technical expertise is in bushfire consequence management, risk assessment and mitigation, specifically the planning and design of new developments in high bushfire risk areas to comply with legislative and planning requirements.

Lew has worked with some of Australia's leading organisations including NSW Rural Fire Service, Country Fire Authority, Emergency Management Victoria, Lend Lease, Mirvac, Victorian State and Local Governments, Sydney Water Corporation, Great Lakes and Warringah Councils. Lew has a deep operational understanding of how fire works in the Australian landscape. He has multifaceted insight into how governments respond to this threat. Lew provides unique strategies to comply with regulatory requirements and safety outcomes.

Lew established and led the Community Resilience Group for the New South Wales Rural Fire Service (RFS). His areas of responsibility included land use planning, community engagement, education, vulnerable communities, bunkers, Neighbourhood Safer Places, business systems and projects, social media, integrated risk management and environmental management. He was responsible for the establishment, management and leadership of the development assessment function for the RFS at a State level where he was responsible for the assessment of over 80,000 development applications in Bush Fire Prone Areas.

Areas of Expertise

- Landuse planning & consequence management
- Legal strategy, Land & Environment Court and Expert Witness
- Bushfire planning, design & construction requirements in accordance with National Standards
- Insurance threat, vulnerability and constraints assessments
- Bushfire Prone Mapping, hazard mapping and risk assessments
- Australian Standard AS3959 Construction of Buildings in Bushfire Prone Areas
- Bushfire Management Plans
- Alternative & performance based solutions
- Evacuation planning and implementation
- Technical and Strategic advice



Qualifications / Accreditation

BPAD Level 3 Accredited Practitioner
Fire Protection Association of Australia

Graduate Diploma of Bush Fire Design
University of Western Sydney, 2006

Graduate Certificate of Applied Management
Australian Institute of Police Management, 2005

Graduate Certificate of Management Macquarie
Graduate School of Management Macquarie University, 2001

Bachelor of Arts, Resource and Environmental Management
Macquarie University, 1994



Curriculum Vitae

David Lemcke

Senior Planner & Bushfire Specialist

BlackAsh Bushfire Consulting

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Summary

David is an experienced bushfire, planning and land management professional with over 20 years in local government and 4 years as a private sector bushfire consultant. He has undertaken a wide range of development assessments and strategic planning projects in both regulatory and proponent roles. He was Central Coast Council's bushfire subject matter expert for over 15 years, including representation in the Land & Environment Court and numerous working groups. He has a deep understanding of contemporary, practical bushfire management from a range of perspectives due to decades of experience as a public land manager and a Rural Fire Service (RFS) volunteer, and now applies this expertise with a range of clients across the private and public sectors.

David has served as Council's staff representative on the Wyong and Central Coast Bushfire Management Committees since 2007 and was instrumental in developing and contributing to emergency management planning including preparation of Bush Fire Risk Management Plans, Fire Access & Fire Trail Plan, developing local policy and pre-incident planning, and delivering community engagement.

From 2010 he was the program manager for the Wyong Shire Council and then Central Coast Council (CCC) bushfire program. These programs won several awards, sponsored research and were renowned for innovation and improvement of local government bushfire management. The CCC program included management of over 220 fire trails, management of 275 mechanical Asset Protection Zones, Hazard Reduction burning, access management, environmental protection and community engagement using both contractors and internal staff teams.

David has been active in policy development at State level, being the Local Government NSW representative on numerous RFS policy committees including the Review of the Bushfire Environmental Assessment Code and delivering numerous conference presentations.

David is an active senior RFS volunteer, with over 21 years in the service, having been a field officer for 15 years.

Areas of Expertise

- Rezoning and strategic bushfire studies
- Residential, commercial and industrial development assessment
- Infrastructure vulnerability and consequence management
- Bushfire planning, design & construction requirements in accordance with National Standards
- Bushfire Management Plans for large and small scale holdings
- Evacuation planning and implementation
- Technical and strategic advice
- Innovative policy development

Qualifications

Graduate Diploma of Bushfire Protection
Western Sydney University, 2024.

Advanced Diploma of Public Safety (Emergency Management)
Australian Emergency Management Institute, 2015

Diploma of Management
Management Consultancy International, 2012

Master of Environmental Planning
Macquarie University, 2005

Graduate Diploma Urban & Regional Planning
University of New England, 2000

Certificate 2 Bush Regeneration
Blue Mountains TAFE, 2000

Bachelor of Arts (Geography)
University of New England, 1998

Rural Fire Service
Various foundational, technical, specialist and incident management qualifications
2002 - current

21. Appendix 3 EP&A Act 1979 – Section 9.1 Ministerial Direction

4.3 Planning for Bushfire Protection

Objectives

The objectives of this direction are to:

- (a) protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and
- (b) encourage sound management of bush fire prone areas.

Application

This direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land.

This applies where the relevant planning authority is required to prepare a bush fire prone land map under section 10.3 of the EP&A Act, or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act.

Direction 4.3

- (1) In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 3.34 of the Act, and prior to undertaking community consultation in satisfaction of clause 4, Schedule 1 to the EP&A Act, and take into account any comments so made.
- (2) A planning proposal must:
 - (a) have regard to *Planning for Bushfire Protection 2019*,
 - (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and
 - (c) ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).
- (3) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:
 - (a) provide an Asset Protection Zone (APZ) incorporating at a minimum:
 - i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and
 - ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,
 - (b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the *Rural Fires Act 1997*), the APZ provisions must be complied with,
 - (c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,
 - (d) contain provisions for adequate water supply for firefighting purposes,
 - (e) minimise the perimeter of the area of land interfacing the hazard which may be developed,
 - (f) introduce controls on the placement of combustible materials in the Inner Protection Area.

Consistency

A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the council has obtained written advice from the Commissioner of the NSW Rural Fire Service to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the planning proposal.

Issued to commence 1 March 2022 (replaces previous Direction 4.4)