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Strategic Bushfire Study

Wilga-Wilson Precinct Ingleside NSW Planning Proposal

Prepared for
Mirvac Homes (NSW) Pty Ltd

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.5

15 July 2025

Project Name:	**Wilga-Wilson Precinct Ingleside Planning Proposal**
Client Details:	Mr. Adam Perrott Development Director Mirvac Homes (NSW) Pty Limited Level 28, 200 George Street Sydney NSW 2000
Project site	Wilga-Wilson Precinct, Ingleside Wilga Street, Wilson Parade, Powder Works Road and part of the unformed road reserve of Mirbella Parade

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Version	Primary Author(s)	Description	Date Completed
1.5	David Lemcke & Lew Short	Final	15 July 2025

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Contents

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 defendable 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 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.

Strategic Bushfire Study (SBS)	Provides the opportunity to assess whether proposed 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 has been engaged by Mirvac Homes (NSW) Pty through ADW Johnson Pty Ltd (ADWJ) to undertake a Strategic Bushfire Study (SBS) to support the Planning Proposal (PP) at the Wilga Wilson Precinct Ingleside. The site, context, Concept Masterplan and current zoning are shown in Figures 1-4.

The intended outcome of the PP is to amend the applicable local planning controls to accommodate up to 133 houses, 210 terrace houses and 193 apartments, along with the protection and rehabilitation of two narrow riparian areas including the incorporation of passive recreation areas and stormwater management facilities. Powderworks Road is the main distributor road in the area and runs along the northeast and east sides of the site. The PP area is a sub-precinct of the wider Ingleside Precinct that has been earmarked for future residential development in a variety of past studies by the Department of Planning, Housing and Infrastructure (DPHI) and Northern Beaches Council (NBC) with planning for Ingleside now being led by NBC. The PP area is an extension of the existing urban development.

The PP area includes the existing Serbian Orthodox St Sava Church complex, a variety of existing homes and businesses on large lots, and The Pines residential complex. An indicative Concept Masterplan (Figure 3) has been developed by ADWJ and Place Design Group Pty Ltd (PDG) that is reflective of the site's opportunities and constraints in the areas of biodiversity, bushfire management, and stormwater management.

- To the west of the site is the Monash Country Club,
- to the south of the site is the Elanora Country Club and R5 zoned Large Lot Residential homes,
- to the north of the site is a mixture of RU2 Rural Landscape zoned land that is a mixture of businesses, homes and bushland, and
- to the east of the site is existing managed agricultural land, a large dam and the existing residential area of Elanora Heights.

The subject land is approximately 28.8 hectares in size, of which:

- 15.97 hectares is proposed to be residential with this area generally inclusive of Asset Protection Zones (APZ)
- 3.91 hectares of intact native vegetation is proposed to be zoned C2 (Environmental Conservation)

The land proposed to be zoned C2 is to be acquired and rehabilitated and managed in perpetuity by NBC and will be subject to a Vegetation Management Plan (prepared by others). The ultimate vegetation assemblage will be a mixture of Forest vegetation types as well as stormwater management facilities, walking paths and passive recreation areas. The riparian areas are narrow and typically less than 60m wide.

The site is on designated Bushfire Prone Land and a Strategic Bushfire Study (SBS) is required. The PP has been designed to meet the bushfire requirements within the *Environmental Planning and Assessment Act, 1979* (EPA Act), specifically Direction under section 9.1 of the Act, and Direction 4.3 *Planning for Bush Fire Protection* which applies to Planning Proposals that affect, or are in close proximity to, land mapped as BPL. This report demonstrates compliance with the NSW Rural Fire Service (RFS) document *Planning for Bushfire Protection 2019* (PBP).

Based on comment from Council and other stakeholders, including the RFS, the design of the Concept Masterplan has been amended (see Figure 3). Response to specific issues raised by the RFS is at Section 38.

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 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 was an active fire fighter for over 20 years with 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.

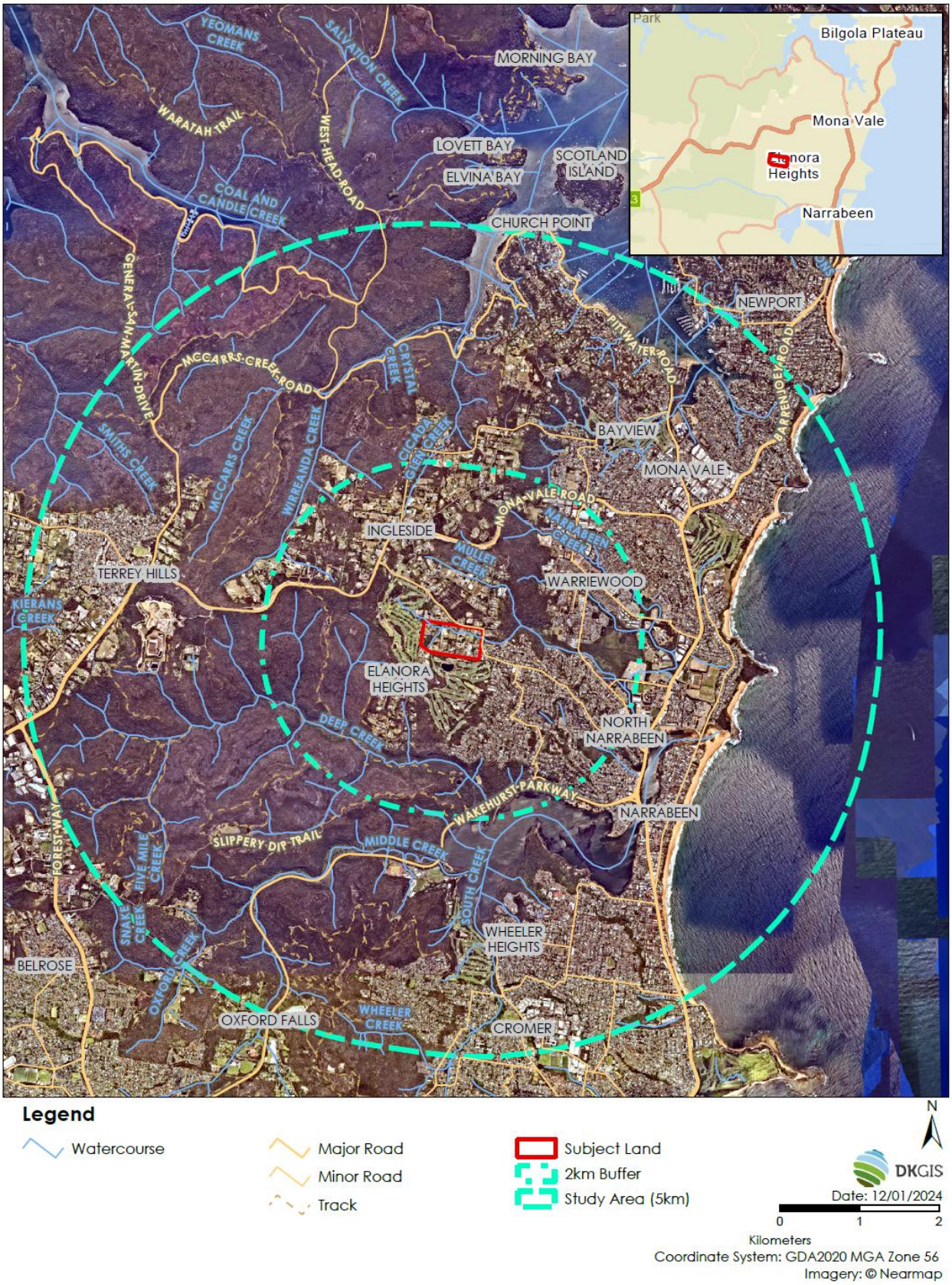


Figure 1 Site location

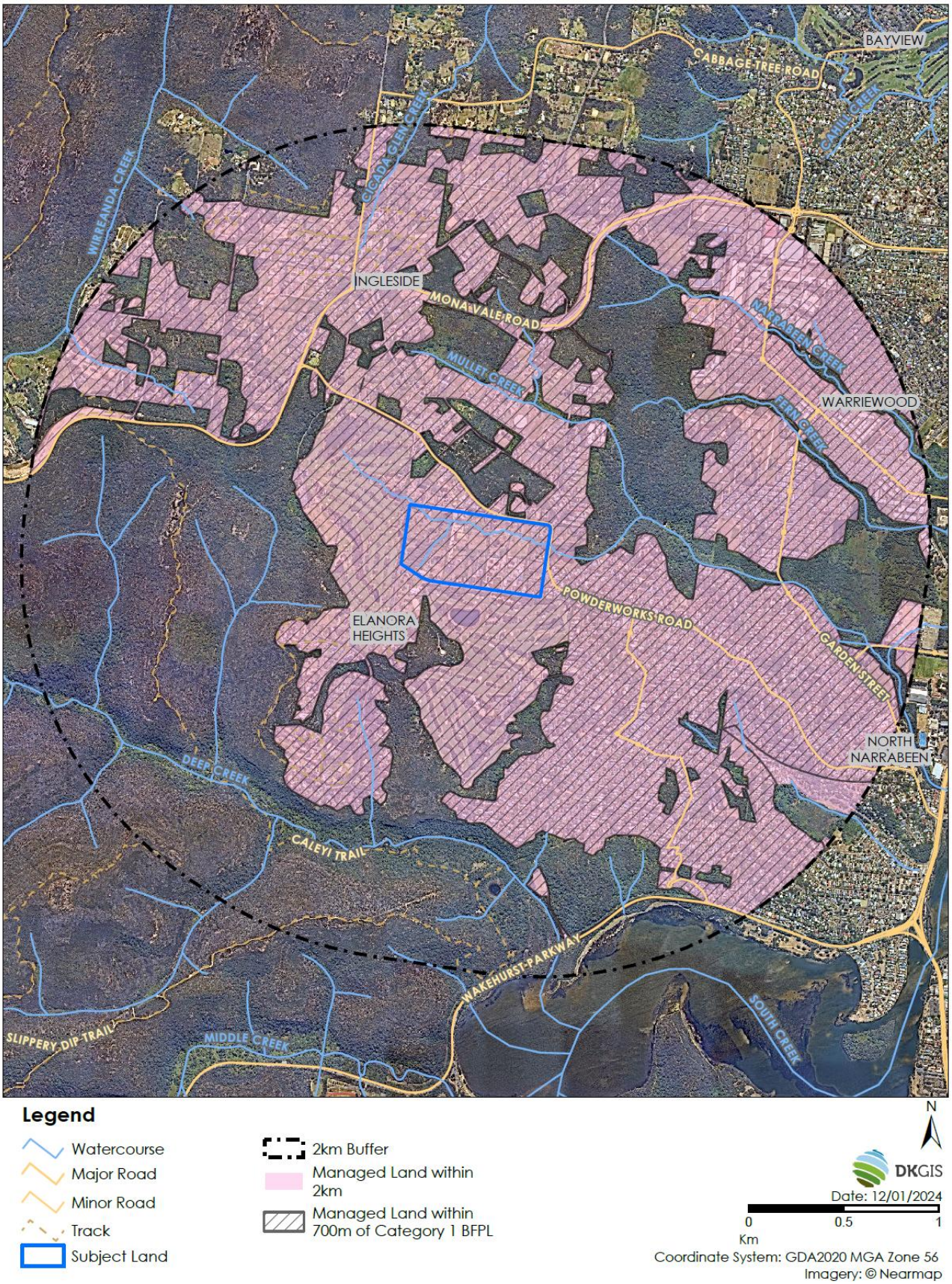
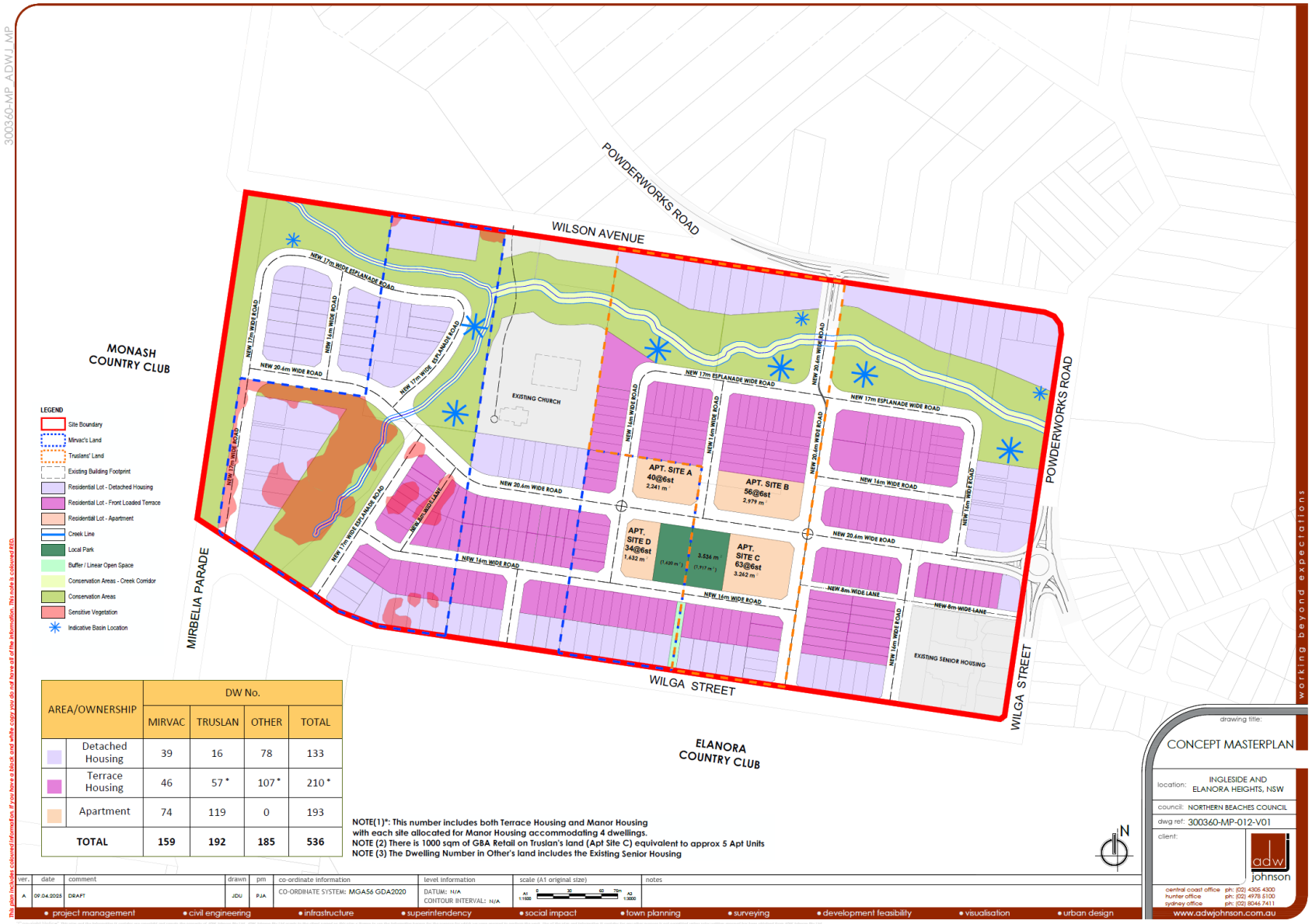


Figure 2 Site context and managed land in the study area



AREA/OWNERSHIP		DW No. MIRVAC	TRUSLAN	OTHER	TOTAL
	Detached Housing	39	16	78	133
	Terrace Housing	46	57 *	107 *	210 *
	Apartment	74	119	0	193
	TOTAL	**159**	**192**	**185**	**536**

NOTE(1)*: This number includes both Terrace Housing and Manor Housing with each site allocated for Manor Housing accommodating 4 dwellings.
NOTE (2) There is 1000 sqm of GBA Retail on Truslan's land (Apt Site C) equivalent to approx 5 Apt Units
NOTE (3) The Dwelling Number in Other's land includes the Existing Senior Housing

ver.	date	comment	drawn	pm	co-ordinate information	level information	scale (A1 original size)	notes
A	09.04.2025	DRAFT	JDU	PJA	CO-ORDINATE SYSTEM: MGA56 GDA2020	DATUM: N/A CONTOUR INTERVAL: N/A	A1 1:1000 0 30 60 75m A3 1:2000	

project management • civil engineering • infrastructure • superintendency • social impact • town planning • surveying • development feasibility • visualisation • urban design

Figure 3 Concept Masterplan

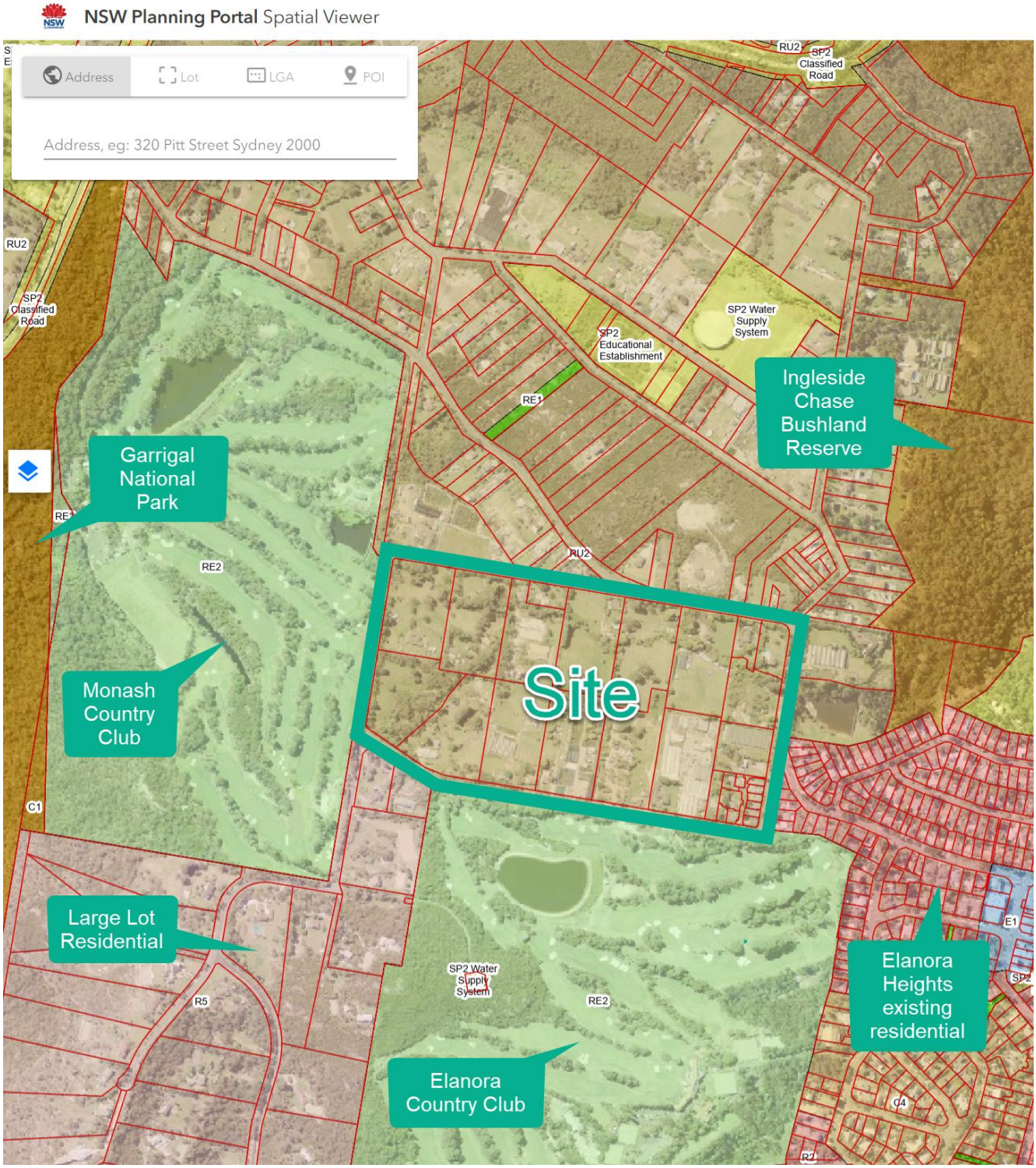


Figure 4 Current zoning context

4. Approach to the Bushfire Strategic Study

The PP and design of the site meets the deemed to satisfy requirements of PBP. No alternative solutions or performance-based assessment are required for any part of this proposal.

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 are[1]:

- *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*
- *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.

To assist with appreciation of the reporting and mapping, maps depicting the **Study Area** provide broad landscape scale context with 2km and 5km buffer zones. The **Subject Site** is the area within or close to

[1] Planning for Bushfire Protection 2019 p. 34

the subject site and shows detail of key mapping considerations at the local level. The two approaches to the mapping offer crucial visual aids for understanding the spatial context and relationships within the study. These maps provide valuable insights into the geographic extent of the study area and its surroundings, as well as the proximity of features or points of interest to the subject site.

Study Area Map with 2km and 5km Buffer (Figure 1):

This map displays the designated Study Area outlined with a clear boundary. A 2km buffer zone surrounding the Study Area is depicted, marked by a concentric boundary extending outward from the edges of the Study Area. The 5km buffer extends further beyond the Study Area, providing a broader context of the geographic landscape and potential impacts or influences on the subject site. These maps help identify features or areas within a wider radius that may have relevance to the study objectives or outcomes.

Subject Site Context Map (Figure 2):

This map focuses specifically on the subject site or area of interest within the Study Area. The subject site is highlighted with a distinct marker or boundary, making it easily identifiable on the map. Surrounding land uses (particularly managed land), infrastructure, natural features, or other relevant characteristics may be depicted to provide context for the subject site's location and surroundings. This map aids in understanding the spatial relationship of the subject site to its immediate environment within the Study Area.

Each map is accompanied by a legend that explains the symbols, colors, and boundaries used, ensuring clarity and comprehension for readers. Additionally, labels, annotations, or captions may be included to provide additional context or highlight specific features of interest on the maps. These maps collectively contribute to the comprehensive analysis and presentation of spatial information relevant to the study or research being conducted.

Ingleside Planned Precinct

The *Ingleside Place Strategy* envisaged 3,400 dwellings, biodiversity conservation and associated water related services and urban amenities. It covered an area of approximately 700 hectares for land release area (see Figure 7) which included areas north of Mona Vale Road that are exposed to landscape scale bushfires. The Department of Planning did not proceed with the strategy. The key issues raised in submissions include traffic, public transport, bushfire safety, conservation of the natural environment, density controls and acquisition of land for environmental conservation purposes.

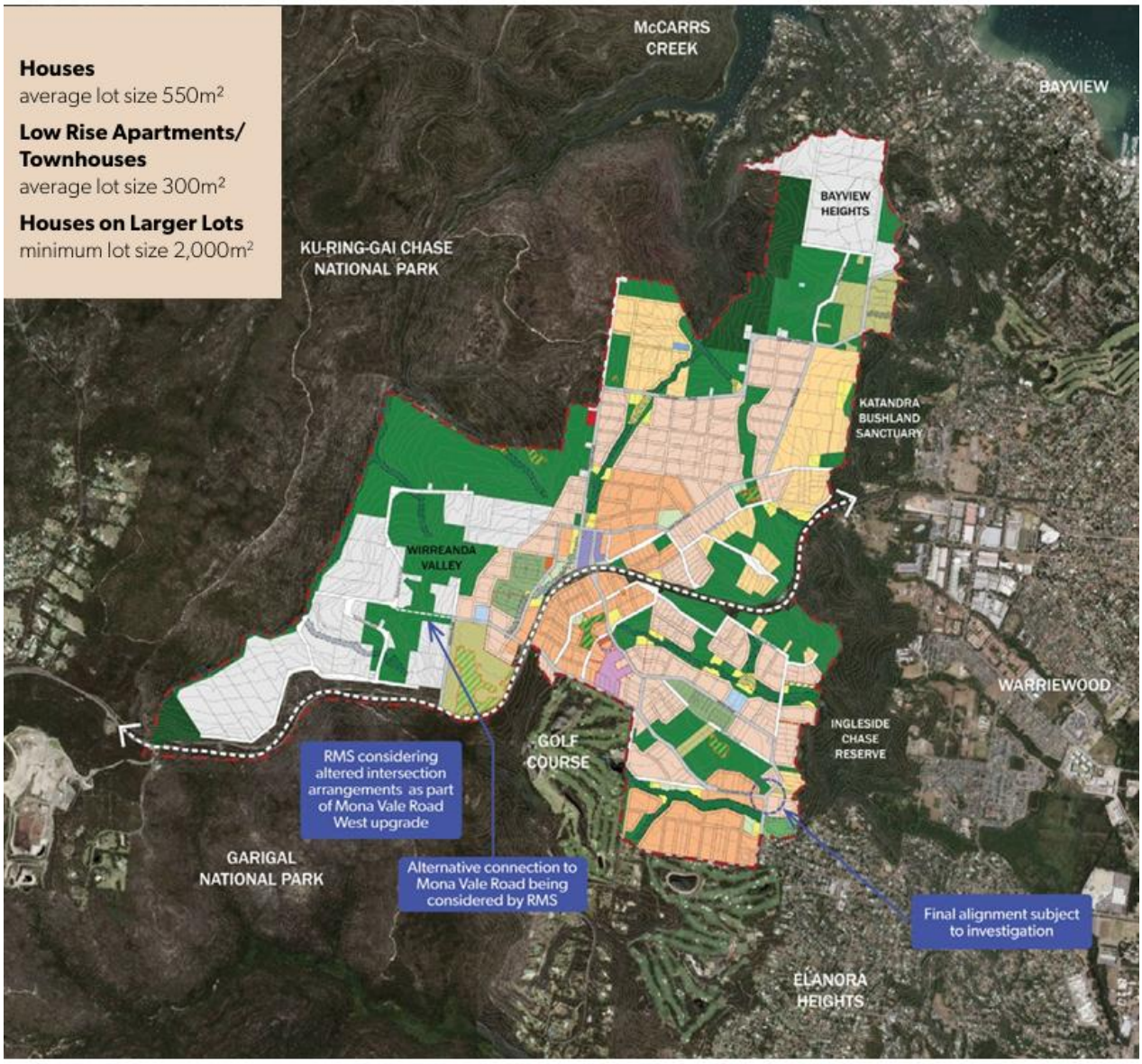
A bushfire risk study commissioned by the Department of Planning, Industry and Environment in 2018 showed the potential of the Ingleside Precinct to be exposed to extreme to catastrophic bushfire risk, as well as concerns about the ability to evacuate the precinct safely in a bushfire event. In response to community concerns and the findings of the Bushfire Risk Assessment, the planning package exhibited in 2016 will not be implemented. Blackash Bushfire Consulting was engaged by Northern Beaches Council during this process and provided reports acknowledging the extreme bushfire risk and associated evacuation issues for the broader precinct.

The evacuation challenges for the Ingleside Precinct focused on the unavailability of key evacuation routes along Mona Vale Road which would be compromised in the event of a large bushfire, which would force evacuation down Powderworks Road. Powderworks Road was compromised by an area of retained vegetation that formed a pinch point that could slow, hinder or stop evacuating residents from the Ingleside Precinct down Powder Works Road and into areas of managed land which are not bushfire prone. The pinch point is above the Wilga Wilson Precinct and no evacuation routes would be utilised toward or on Mona Vale Road in the event of a bushfire.

The Materplan Concept (Figure 3) provides multiple egress points out of the Wilga Wilson precinct that are not exposed to bushfire impact.

The distinct difference between the evacuation challenges for the Ingleside and Wilga Wilson precincts lies in their exposure to compromised evacuation routes. The Ingleside Precinct faced significant evacuation risks due to its reliance on Mona Vale Road, a key route that would be unavailable during a large bushfire and Powderworks Road, which is impeded by a pinch point of retained vegetation. This bottleneck could delay or prevent safe evacuation from Ingleside to managed, non-bushfire-prone areas. In contrast, the Wilga Wilson Precinct is not exposed to these risks, as no evacuation routes from this area that depend on Mona Vale Road, nor would they be affected by the pinch point above it. This separation creates a fundamentally different evacuation profile and level of bushfire evacuation risk for the two precincts.

Importantly, new development that is planned in accordance with PBP and designed, and constructed in accordance with *AS 3959: Construction of buildings in bushfire-prone areas* provides a significantly increased level of protection for occupants during a bushfire event. Buildings constructed to this standard are specifically designed to withstand bushfire attack, including ember attack, radiant heat, and direct flame contact, up to Catastrophic bushfire conditions. As a result, the building within the Wilga Precinct offer a defendable area of refuge for occupants, reducing or removing the need for evacuation. By sheltering within a properly constructed AS 3959-compliant building, residents are provided with a higher level of safety in circumstances where evacuation may be unsafe, unfeasible, or unnecessary.



Key

- Precinct Boundary
- Houses on Larger lots
- Houses
- Low Rise Apartment/ Townhouses (3 storeys)
- Environmental Management
- Rural
- Parks
- Sporting Fields
- Environmental Conservation
- Road within Ingleside Chase Reserve
- National Park
- Endangered Ecological Community
- Neighbourhood Centre
- Proposed School
- Proposed Mona Vale Road Alignment
- Water Management
- Water
- Sewer
- Rural Fire Service Station
- Creek Corridor
- Heritage Curtilage
- Community Centre
- Preferred Location for Neighbourhood Shops

Figure 5 Ingleside Structure Plan

While retaining some vegetation corridors within riparian areas in the Wilga-Wilson Precinct, the overall bushfire risk to the development is low. The precinct is strategically separated from large, contiguous bushland areas by several effective landscape features that act as natural buffers. To the west, Monash Golf Club provides an extensive area of managed, non-bushfire-prone land (approximately 350m separation – see Figure 9), while to the south, Elanora Golf Club and existing large lot residential development further reduce exposure to significant bushfire hazards. A narrow, fragmented band of vegetation exists between the Elanora Golf Club and the large lot residential area, but this does not constitute a high risk bushfire corridor. To the east, the precinct is bordered by existing urban development, which is not classified as a bushfire hazard and offers additional protection from potential fire fronts. To the north, large lot residential areas and an area of retained bushland north of Powderworks Road are present, but this vegetation is sufficiently distant and does not present any evacuation challenges within the Wilga-Wilson Precinct site itself.

Importantly, no evacuation routes from this precinct are reliant on Mona Vale Road or traverse bushfire-prone areas. The combination of this surrounding low-risk context, internal vegetation management, and the application of bushfire-resilient building standards ensures that the Wilga-Wilson Precinct can be safely developed without introducing evacuation or life safety issues for future residents.

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 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 occur[2]. The application of legislation, policy, and guidelines provides one of the most effective means of bushfire planning to ensure future developments are

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

resilient and capable of protecting life. The benchmark for PPs is the Ministerial Direction and detail within PBP.

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.
- 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.

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), *Rural Fires Regulation* 2013 (RFR) which is articulated through PBP.

The site is designated Bushfire Prone Land (BPL) (Figure 5). 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 the local Council and certified by the Commissioner of the RFS.

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

Figures 5 and 6 show that the site has Category 1 and Category 2 Bush Fire Prone Vegetation and the associated buffer covering much of the site. The map is somewhat inconsistent in application of vegetation categories. The presence of this vegetation does not preclude development; it merely starts the process to consider bushfire in the design of any new development.

7. 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. 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 PPs 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 Planning Proposal to amend an LEP can be submitted to the DPHI. The SBS may be considered by DPHI as part of the Gateway Determination. This determines whether the Planning Proposal 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.

This report has also considered the Draft Local Planning Direction 4.3 - Planning for Bushfire Protection which proposes updates to the original 4.3 Ministerial Direction including the consideration of bushfire risk out to 700m from the site.

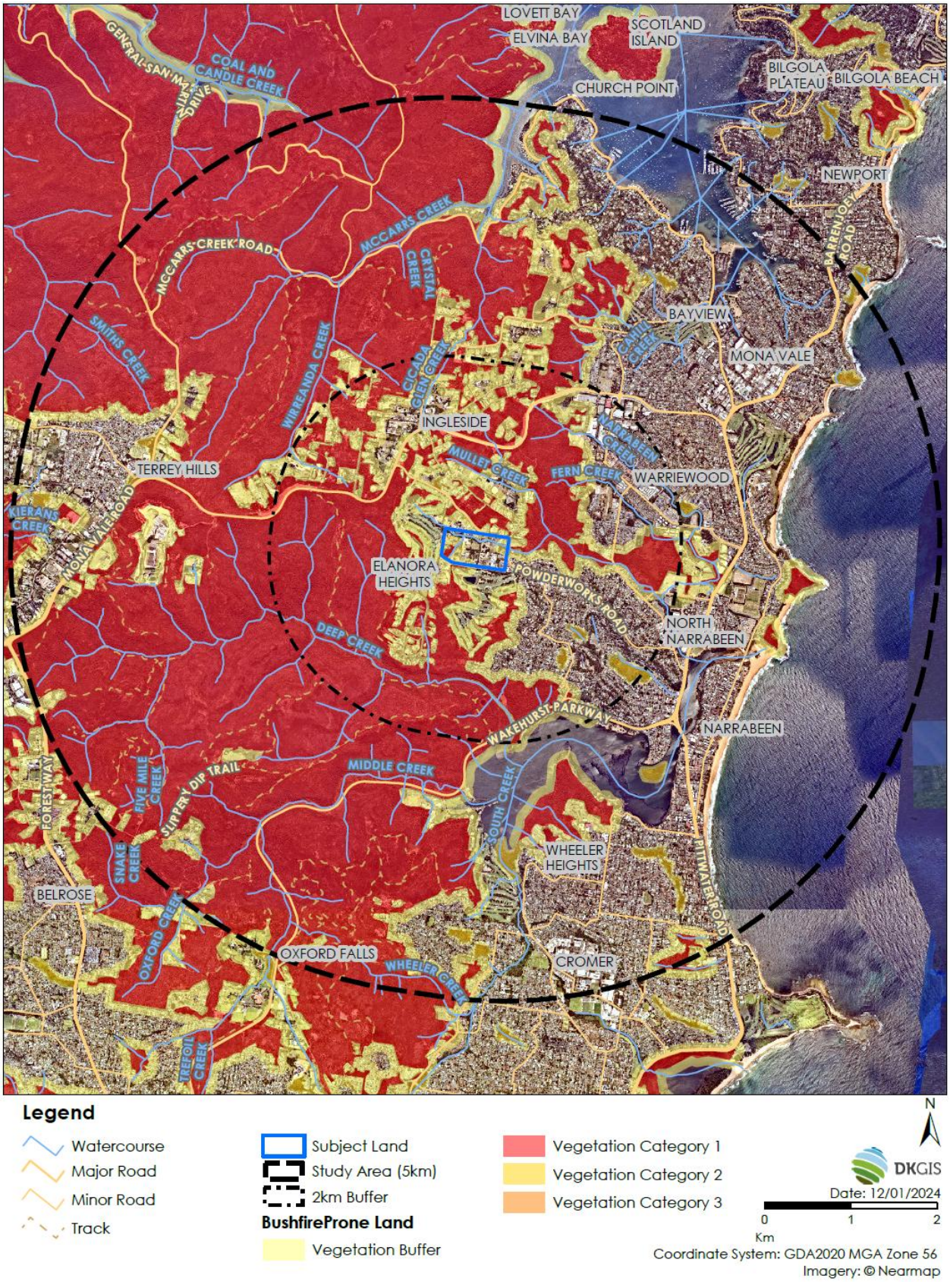


Figure 6 Bushfire Prone Land Study Area

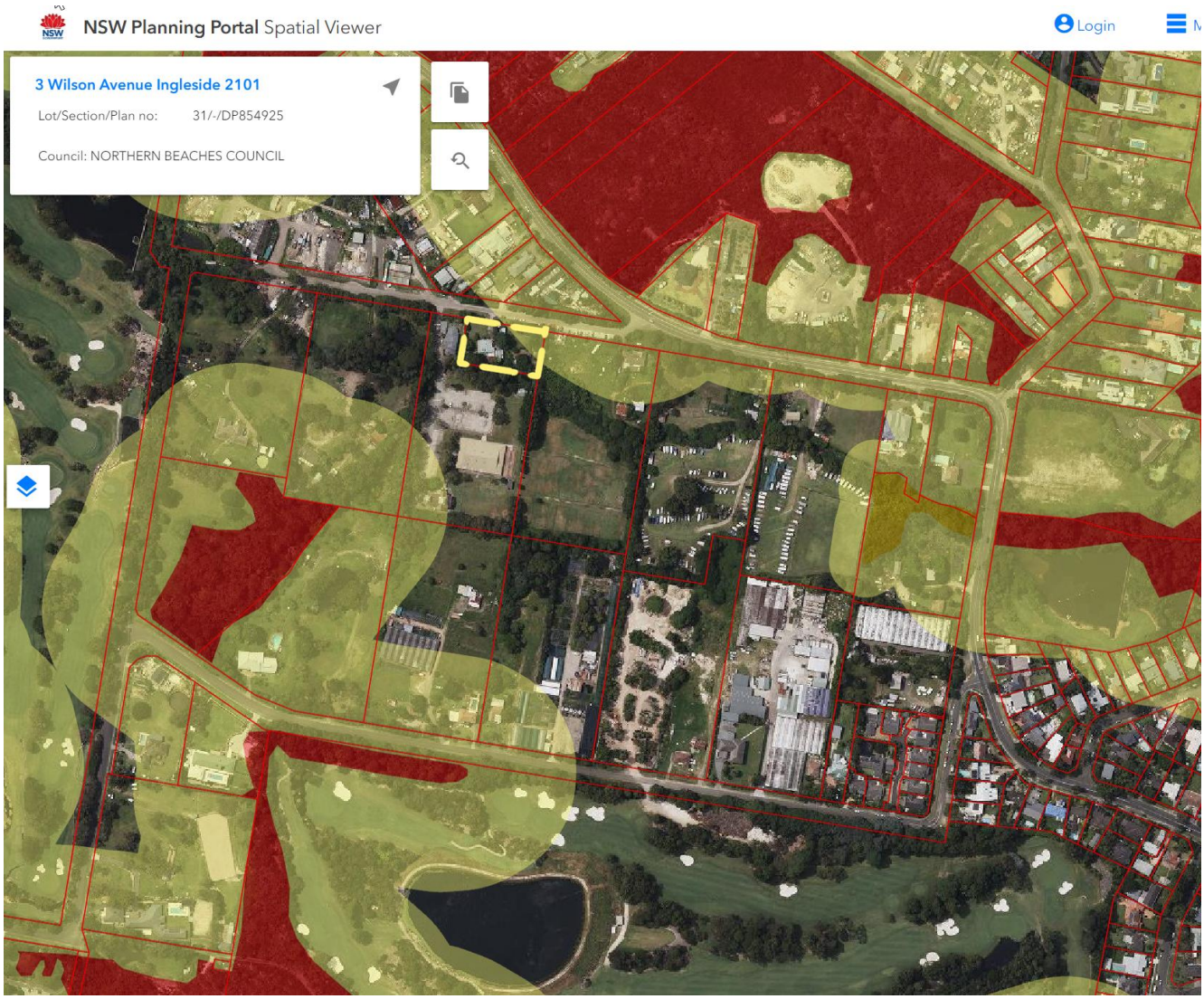


Figure 7 Bush Fire Prone Land Map extraction from Planning Portal Spatial Viewer

8. Development Assessment

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.

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 RF Act for residential and rural residential subdivision, or development of land for a Special Fire Protection Purpose (SFPP) on BPL. The PP meets the acceptable solutions within PBP, and the subsequent development applications will provide detail on specific

subdivision requirements. Future applications will address the extent to which the development complies with PBP.

A BSA 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, proposed new residential or rural residential subdivision development needs to justify that the Planning Proposal results in development that can meet the requirements of PBP using a risk-based approach.

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 (2014) *Steel Framed Construction in Bushfire Areas* (NASH Standard).

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.

9. 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 defendable 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 development proposed. This is designed to provide flexibility for later project stages while progressing the rezoning to permit the new uses.

10. Strategic Planning Compliance

PBP requires that Planning Proposals in bushfire prone areas require the preparation of a 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 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*
- *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*
- *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 7.

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

11. Landscape Assessment – Scale Context

The bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape. This is reflected in the various Study Area maps with the 2km and 5km buffers. The broader landscape and the potential size or scale of a bushfire has been a key design response by the project team throughout the preparation of the PP. One of the key balancing approaches has been site utilisation, sensible layout, biodiversity and ecology requirements and bushfire requirements.

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
- 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 features which provide the current urban form of the area, including bushfire, vegetation corridors, existing land uses, drainage and ecology/biodiversity values.

This site is affected by Category 1 and 2 Vegetation (Figures 5 & 6). Landscape scale and local fires are possible within 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 unmanaged bushland areas meets the APZ requirements, providing passive protection to both buildings and people within the site.

By situating the proposed new development in this area to the west of Elanora Heights, this will act as an additional buffer zone between the existing residential areas and potential bushfire-prone areas beyond to the west and northwest. This may reduce the spread of bushfires, reducing the immediate threat to Elanora Heights, and provide a closer urban retreat area for the Large Lot Residential development to the southwest of the site.

12. 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 1 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)[3] 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*.[4]

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:

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

4 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
- the extent of neighbourhood-scale damage the bushfire may produce.

PBP refers to the Greater Sydney 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 forested vegetation, typically National Parks and State Forests that also adjoin substantial areas of private bushland.

The Kuringai Chase National Park is approximately 2km to the northwest of the site; Garrigal National Park to the south and west of the site is approximately 600m from site; and the Ingleside Chase Bushland Reserve (managed by NBC) is approximately 200m to the east of the site (Figure 8).

There is significant potential for large landscape scale fires to develop within the National Parks and to a lesser extent within the Ingleside Chase Bushland Reserve. Landscape scale bushfires will not directly impact the PP site.

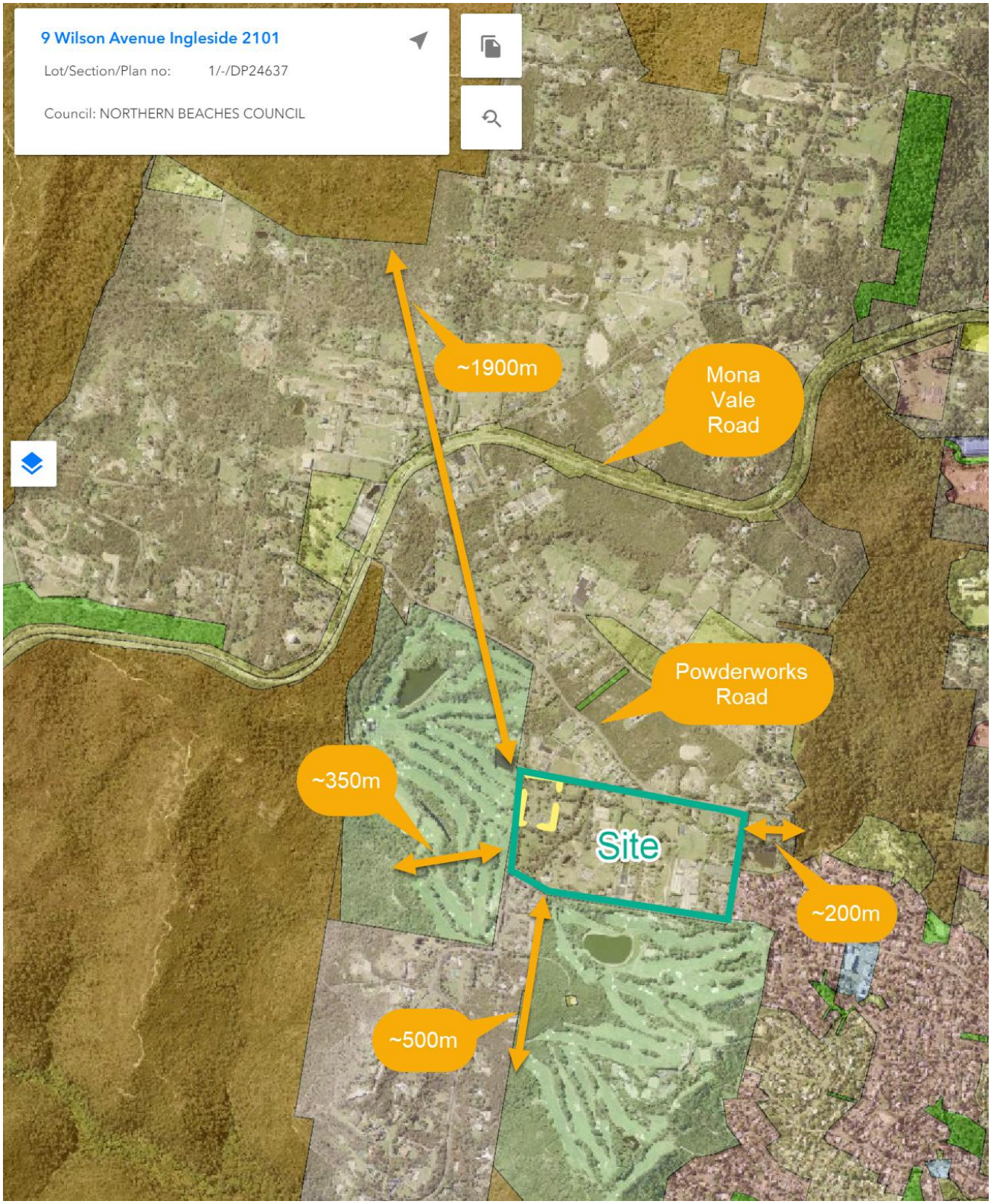

Figure 9 Site distances to areas of contiguous significant bushland

The PP site is within a landscape setting that has a long history of vegetation modification for recreation, agriculture, rural residential and urban development outside of the National Park areas. Remnant areas of vegetation are retained on large lots typical of non-urban development that are capable of carrying local scale bushfires, particularly if there is a significant landscape scale fire in the area with significant ember generation.

The key landscape feature affecting the site is the presence of the two golf courses to the south and west of the site. Whilst both are ultimately connected to the Garrigal National Park these are managed lands consisting of highly fragmented bushland vegetation only. Much of the remaining vegetation is also highly managed being uplifted canopy trees with no 'ladder fuels' and highly maintained grass underneath, these are defining fairways rather than being characteristic of native bushland (Figure 9). These provide several hundred metres of separation from Garrigal National Park and the site that is unlikely to carry significant bushfires.

Figure 10 Typical vegetation management of the golf courses south and west of site - note uplifting of trees and managed grass between fairways

The three large residential lots (6 & 8 Mirbelia Parade & 15 Wilga Street) located south of the PP site and between the two golf clubs are highly managed properties, largely cleared and maintained for equestrian activities and landscaping (Figure 10). These are incapable of sustaining a bushfire such is the level of management and are considered 'managed lands'.

Figure 11 View into Mirbelia Parade properties southwest of the site. The opposite side of road is Monash Country Club - (Google streetview)

The fragmented bushland on the Elanora Country Club site to the east of these properties is a narrow triangular strip centered on the steep rocky area with a Sydney Water reservoir on the highest point. This area is retained as native vegetation being too steep for golf course development. This area of bushland, whilst being approximately 6ha in size is unlikely to carry anything other than local scale fire. This area is largely surrounded by managed lands and the area extending north towards the PP site is steeply downslope from the reservoir and therefore will limit bushfire spread and intensity. This area also reduces in width to becoming a narrow strip ultimately only 6-8m wide as it approaches Wilga Street (Figure 11).

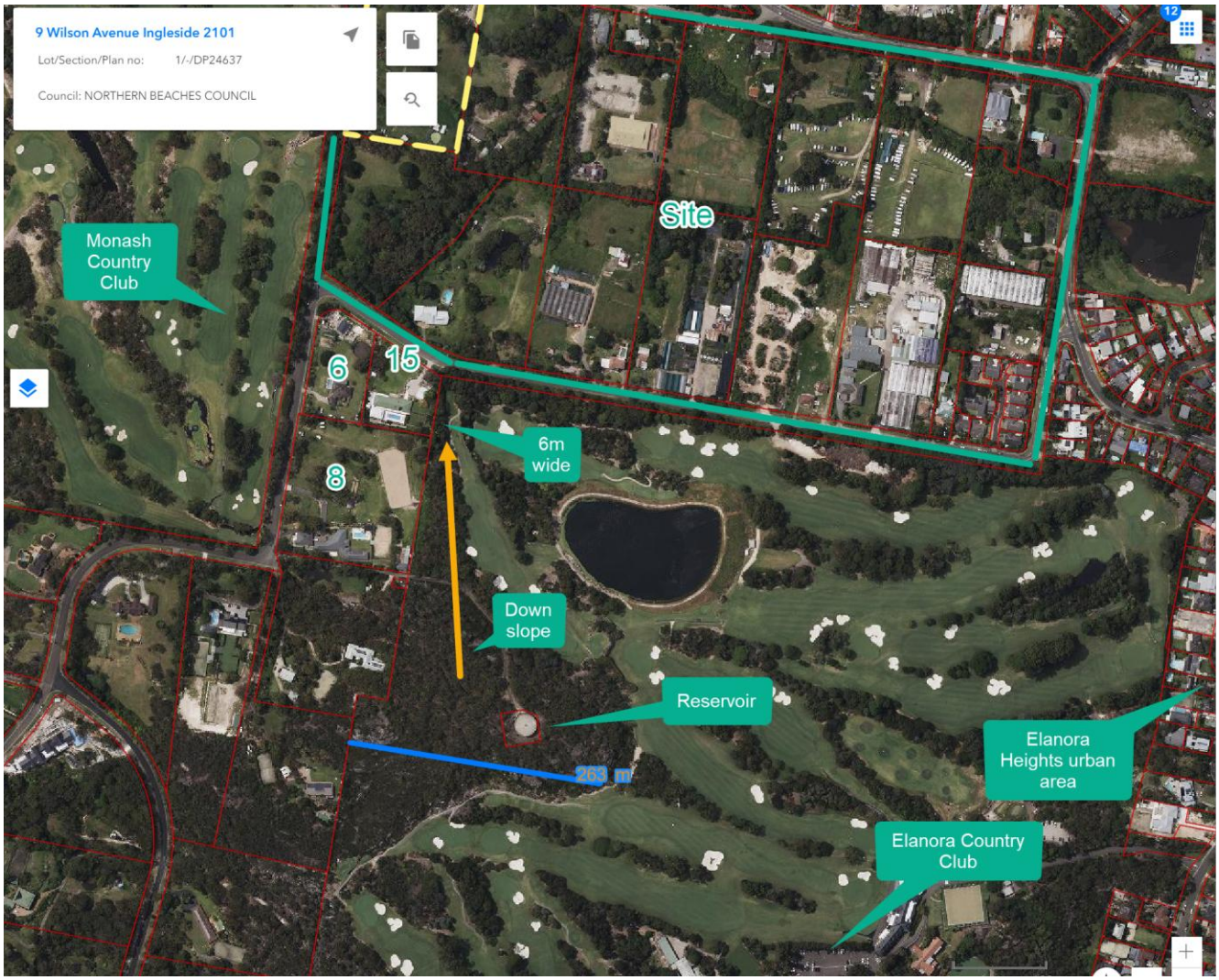

Figure 12 Detail of bushland hazard to south of the site

To the southeast of the site is Powderworks Road and the existing Elanora Heights urban area. To the east of the site is a large permanent dam that the riparian areas within the PP area will ultimately flow into and a large single property at 235 Powderworks Road previously used for market gardening, maintained as managed land and used as a commercial Dog Day Care Centre. To the northeast of the site is existing residential development on Ingleside Road that is also managed land. The NBC managed Ingleside Chase Bushland Reserve is approximately 200m from the PP site at the closest point with only a narrow riparian vegetation corridor (~35m wide) leading towards the site, which is then further fragmented by Powderworks Road (Figure 12).

Figure 13 Detail of bushland hazard to east of the site

The north of the site is bounded by Wilson Avenue and Powderworks Road. The Wilson Avenue area to the northwest of the site is characterised by being almost exclusively cleared and managed for a range of commercial operations and rural businesses such as nurseries, landscape supplies and fabricators. The closest that the upslope Heath vegetation on the north side of Powderworks Road comes to the site is 45m at the Wilson Avenue intersection (Figure 13).

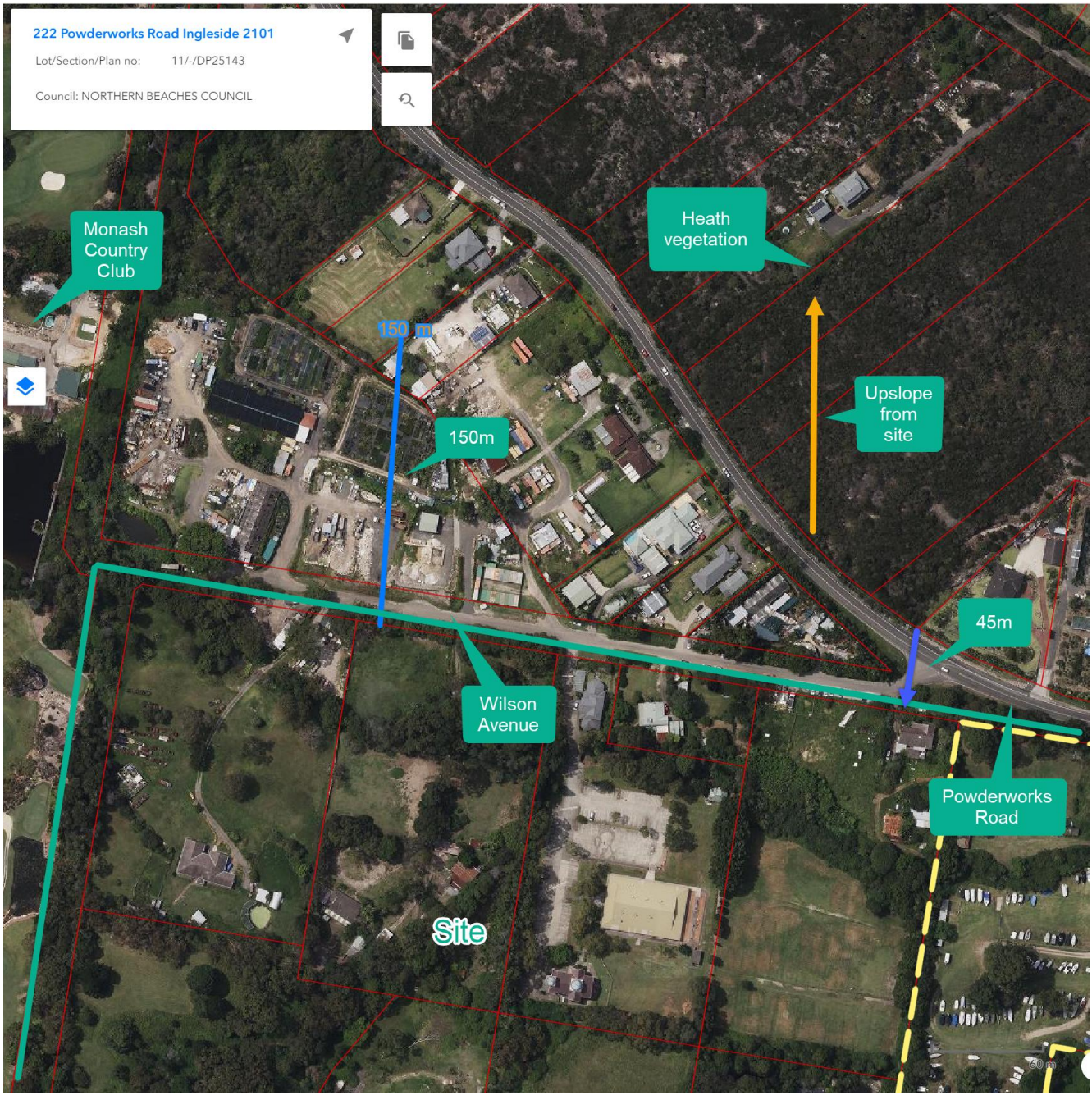

Figure 14 Detail of bushland hazard to north of the site – Wilson Avenue area

The Powderworks Rd area on the northern side of the site is characterised by being significantly cleared and the remaining upslope Heath vegetation being highly fragmented. The vegetation extends for a maximum upslope run of 250m, with additional urban development to the north of the vegetation. The area is largely managed for a range of commercial operations and large lot residential living (Figure 14).

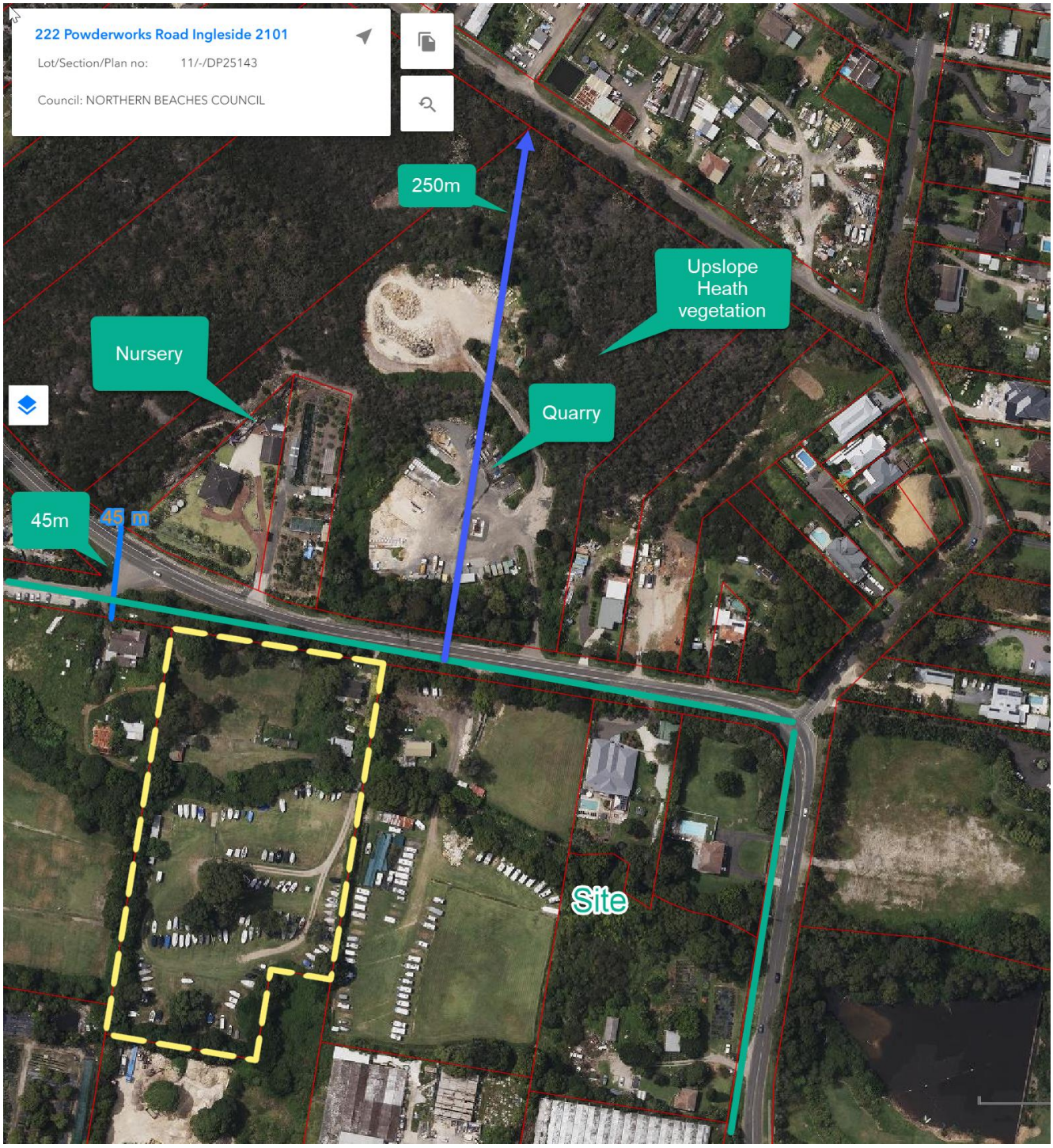

Figure 15 Detail of bushland hazard to north of the site – Powderworks Road area

The examination of the land uses and bushland surrounding the PP site demonstrates there is a minimum of 200m separation to any areas of bushland capable of supporting a landscape scale fire, and therefore, significantly lesser bushfire risk overall. It remains possible for local scale fires to impact the PP site, however these will typically be less intense and harder to spread due to the fragmentation of retained vegetation by urban development, managed land and roads.

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 in such a managed landscape also tend to be noticed quickly by the public and called in to emergency services soon after ignition.

Due to the application of PBP requirements throughout the development process there will be good access for firefighting at the interface, suitable construction standards keeping radiant heat levels at buildings below 29kW/m^2, suitable firefighting water supplies, and management of open space areas for the site. These will be detailed in the subsequent Bushfire Hazard Assessment with the DA.

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 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 site has good access to the existing distributor road – Powderworks Road – and this will be enhanced with an additional road proposed to join Powderworks Road to the northern side, and a significant upgrade and multi-lane roundabout proposed on the eastern side of the development to be discussed further below. Analysis of the potential vehicle loads, and increased traffic generated by the PP is presented in the supporting documentation "*Wilga Wilson Precinct Ingleside – Flood and Bushfire Evacuation Capability Assessment*" (Evacuation Report) by Water Technology (dated 23 August 2024). Several key issues are relevant due to the site location and characteristics and as outlined in the Evacuation Report.

The existing traffic network to the northwest of the site is likely to be impacted by fire when significant bushfires are occurring in the National Parks, and therefore the normal traffic feeder load from Mona Vale Road onto Powderworks Road will rapidly decrease to zero as the bushfire impacts Mona Vale Road and this road is closed (formally by emergency services or informally by users). Powderworks Road

is shown as having normal capacity of 1,200 vehicles per hour and this is potentially reduced to 600 per hour due to adverse conditions.

Secondly, the evacuation traffic load generated by the PP site in the last hour before and up to the fire impacting the wider area is likely to be approximately 25% of the population or approximately 197 vehicles if all vehicles are taken. This is a conservative estimate given that approximately 60% of the fully developed site will be rated as BAL-12.5 or BAL-Low.

Thirdly, the PP includes a significant upgrade of the intersection to a two-lane roundabout which facilitates evacuation from the site without unduly restricting traffic heading south on Powderworks Road away from the fire. This intersection is on the edge of the 'Vegetation Buffer' of the BPL Map and is unlikely to be impacted directly by bushfire. The intersection location means the travel distance from this point to the broader Elanora Heights urban area is less than 100m. There is a registered RFS Neighbourhood Safer Place (NSP) at Cooleena Road reserve 1.3km away from the roundabout.

Fourthly, the proposed PP area being developed will provide additional managed lands, additional evacuation routes and a roundabout for the large lot residential area to the southwest which will provide significantly improved evacuation options for these residents who have a significantly higher bushfire risk.

Finally, the primary method of life safety on the site is likely to involve a shelter in place strategy for smaller fires or evacuation from the site if directed by emergency services.

While there are remnant areas of vegetation within the riparian areas, these will not be able to develop or maintain landscape scale fires, as opposed to local scale bushfire threat. The development will have been assessed against PBP again at subdivision stage and again at each of the individual development applications and have a suitable combination of Bushfire Protection Measures (BPM) including APZ, water supplies, access, and landscaping for the types of uses proposed.

When the individual factors are scored, after consideration of the landscape context, the site design complying with PBP, and the large urban area, the overall Landscape Scale Threat for the site is assessed as **Moderate Risk**. The summary and weighted scores are presented in Table 1 below.

Development will be subject to bushfire assessment and specific building standards as required by PBP and AS 3959:2018 (or contemporary documents as time passes) and will therefore provide suitable shelter from bushfire for individual buildings ultimately approved within the PP site up to and including Catastrophic Bushfire Danger Ratings. This shelter in place approach, combined with quick and intuitive self-evacuation away from bushland to within the site and suitable buildings will provide options for immediate life safety for occupants and will reduce the need or desire for evacuations from the site.

Table 1 Blackash Landscape Scale Assessment Tool

Landscape Scale Assessment Tool

Wilga-Wilson Precinct, Ingleside NSW

Landscape scale bushfire risk factors

Parameter	Low landscape scale threat	Moderate landscape scale threat	High landscape scale threat	Extreme landscape scape threat	
1. Surrounding Vegetation	Landscape scale bushfire cannot directly approach the site as it is surrounded by urban development and non-mapped vegetation or managed land.	Landscape scale 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.	Landscape scale 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 contigous bushfire vegetation with a typical fire run in any direction of 0.1-2.0 km distance.	Landscape scale 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 contigous bushland with fire runs of more than 2 km possible.	**Moderate**
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 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 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 150m from the site 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 150m from the site 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.	**Low**
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 and urban areas more than 100m from bushland hazard.	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.	**Moderate**
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 interuption.	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.	**Moderate**
		Overall Threat Rating	**Moderate Risk**	**Total**	150

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

13. Consideration of 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.

Consideration of the location of the site in the wider landscape and the possibility of the site being impacted by Landscape Scale bushfire threat and Local bushfire threat.

This 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.*

As a new development, the ultimate residential component is next assessed against the requirements of PBP. Future building lots must provide for radiant heat levels no greater than 29 kW/m^2 within an APZ that can be established and reasonably maintained within the site or which is managed land in accordance with PBP.

The PP 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 7.

14. Bushfire Hazard 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 development, APZ requirements are based on providing practical building envelopes on lots that keep radiant heat levels at future buildings below 29kW/m^2 for residential development.

The following assessment is prepared in accordance with Section 100B of the RFA, Section 44 of the *Rural Fires Regulation 2013* (RFR) and PBP. This assessment is based on the following resources:

- Planning for Bush Fire Protection (RFS, 2019);
- Northern Beaches Council Bush Fire Prone Land Map (2020);
- 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.

15. Fire Danger Weather District

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

16. 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 by formation on the site and adjoining land is highlighted in Figure 15 and the vegetation formation in the broader study area is shown in Figure 16.

The vegetation by classification on the site and adjoining land is highlighted in Figure 17 and the vegetation classification in the broader study area is shown in Figure 18.

Figure 16 Highlighted mapped vegetation formation - heath, forest and rainforest - refer to Figure 16 for legend

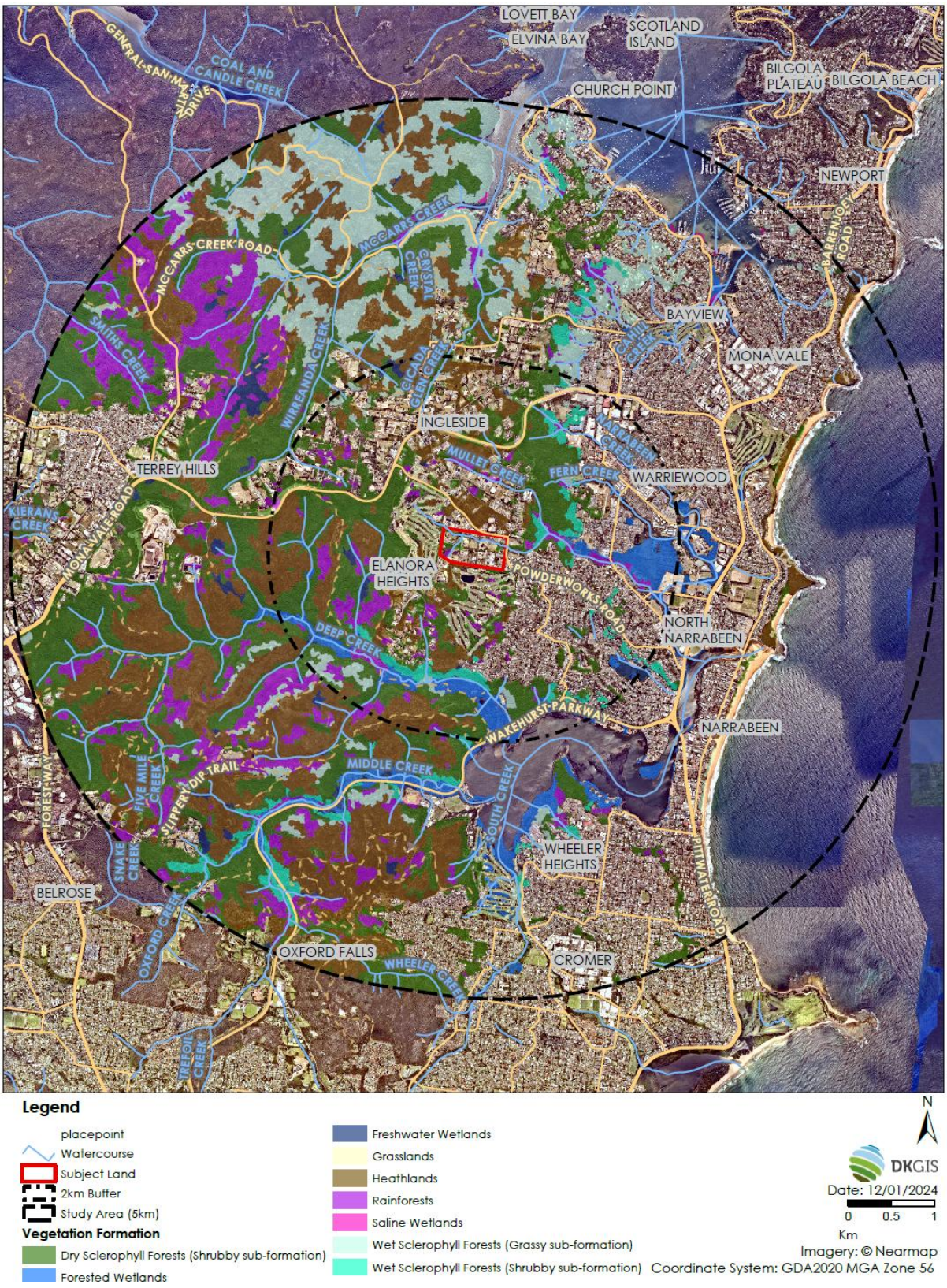

Figure 17 Study Area Vegetation Formation

Figure 18 Highlighted mapped vegetation formation - heath, forest and rainforest - refer to Figure 18 for legend

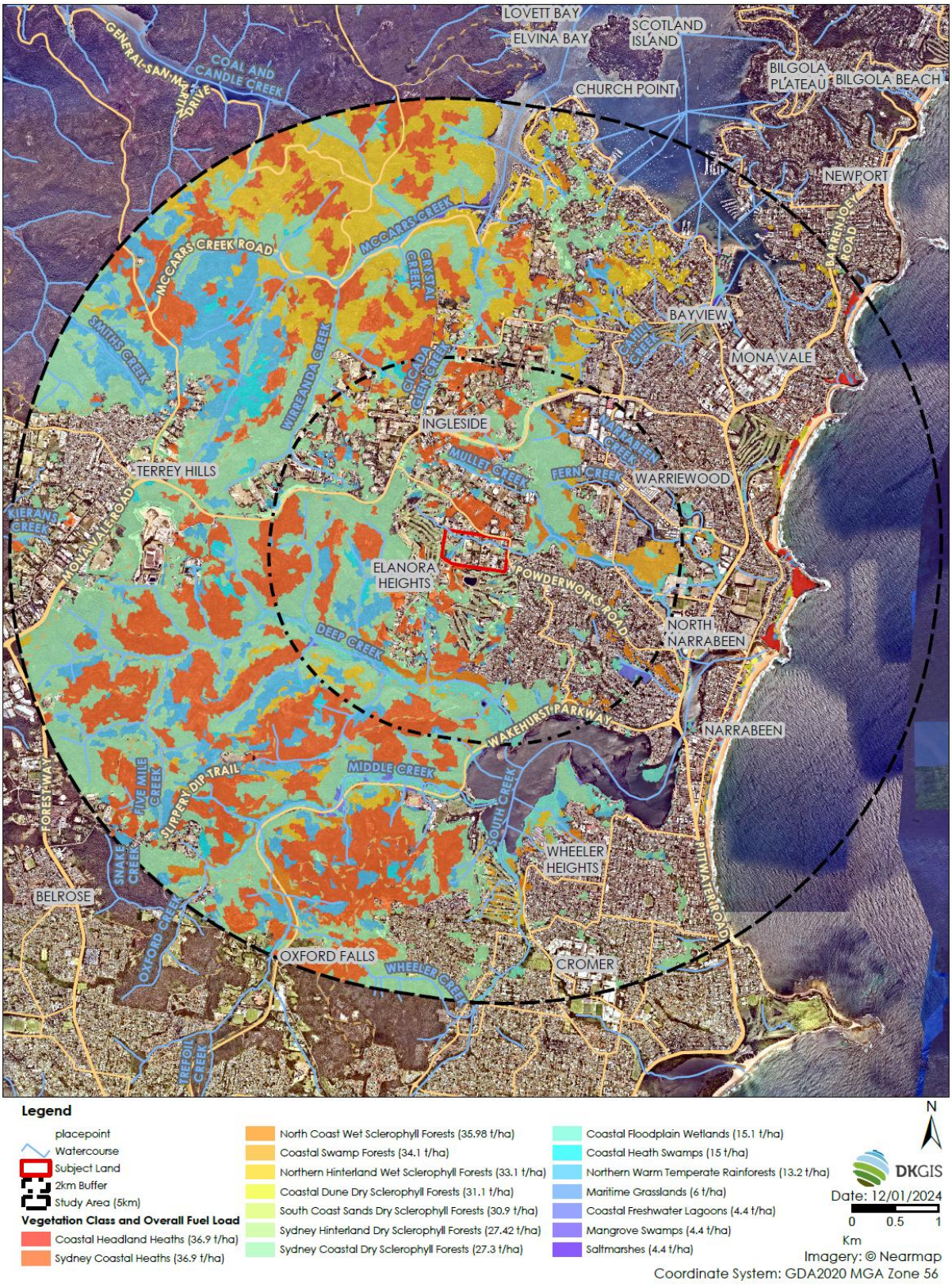

Figure 19 Study Area Vegetation Class and Overall Fuel Load

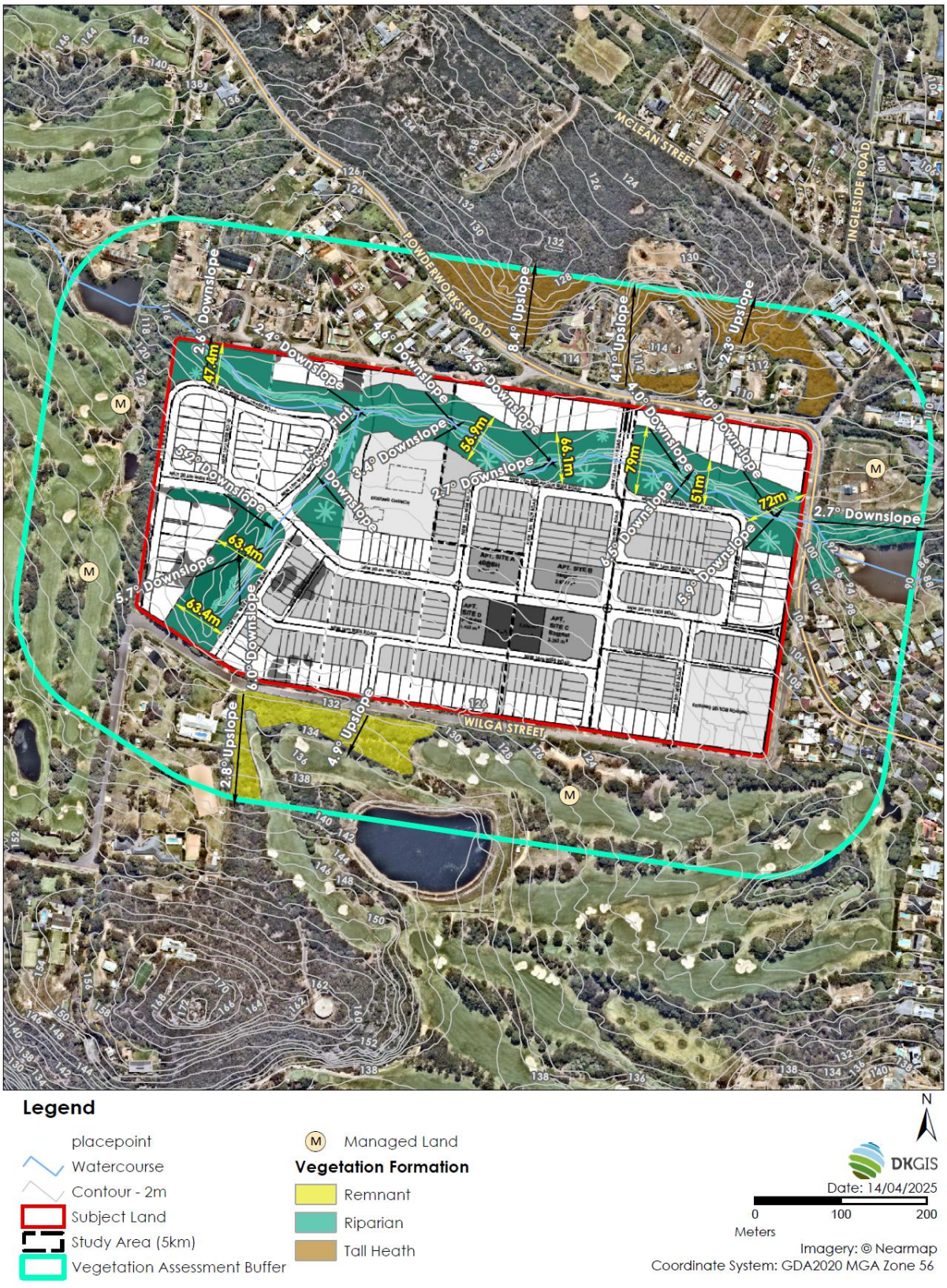

Figure 20 Site Vegetation and Slope Assessment (with corridor widths)

The intent of the PP is to rehabilitate the riparian corridors with suitable native vegetation. As shown above the corridors are fragmented and disconnected from the wider bushland areas outside of the site by roads, urban development and managed land. These will be rehabilitated in accordance with a Vegetation Management Plan (VMP) prepared by AEP Environmental forming part of this PP. The current vegetation is a mixture of rainforest and forest vegetation and the VMP is informed by the existing vegetation.

The riparian corridors are narrow in width, being 35-70m wide. This means any potential bushfire runs from the creek line uphill towards development will be less than 50m in length. The corridors are fragmented by roads, pedestrian paths for recreation and significant stormwater management facilities.

There is potential for bushfire winds to carry embers into the riparian corridors from larger fires in Garrigal or Kuringai Chase National Parks. Such winds would result in either very short bushfire runs within the corridors (<50m length) or flank fires only impacting development if the newly developed fires are driven parallel along the riparian corridors.

Therefore, in accordance with Appendix A1.11 of PBP (Figure 19), for assessment purposes these riparian corridors will be treated as remnant vegetation, and APZ setbacks will be assessed the same as for rainforests.

17. 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 Subject Site slopes are all moderate and range from upslope to 6.0 degrees in the steepest part of the southern riparian corridor, and are shown in Figure 19.

The wider slope context in the study area is shown in Figure 20.

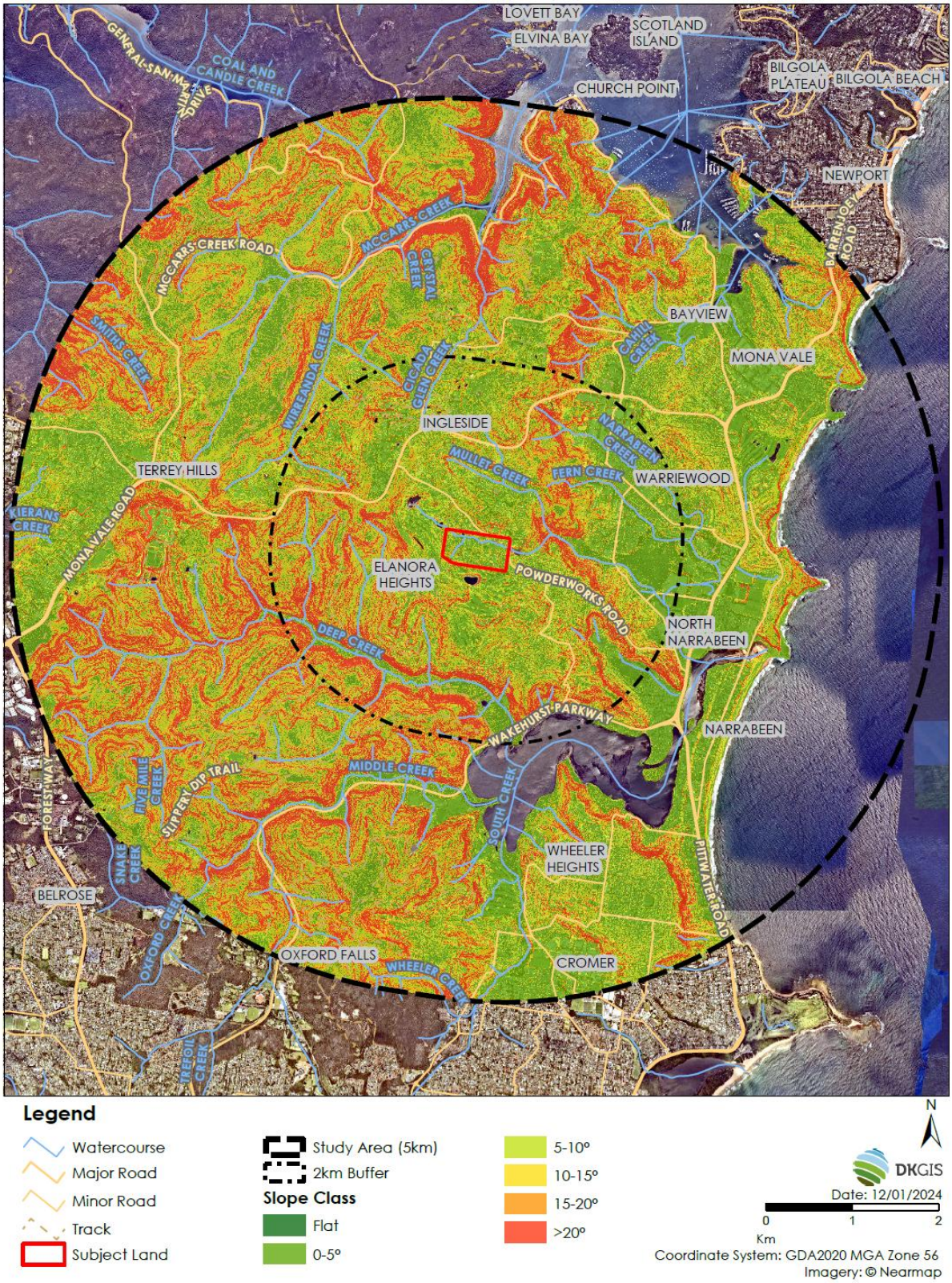

Figure 21 Study area slope context

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

The maximum potential fire behaviour is limited by the location, topography and vegetation surrounding the PP site. The evidence supports the view that the potential of the most severe fire weather is from the northwest through to the southwest of the site. Bushfires under these winds would not directly impact the PP area, rather they may send embers that could potentially ignite spot fires in and around the site. As shown previously, the PP area is surrounded predominantly by managed lands and lower threat remnant vegetation, and there are perimeter roads around the site. Winds from other directions may have an impact on fires in the area, however these are associated with a maritime influence and are typically of higher moisture. The narrow corridor of riparian to the east of the site (~35m wide) and the upslope heath vegetation to the north are also separated from the site by Powderworks Road which is typically a 10m wide carriageway (including verges) within a managed 20m wide road reserve.

It is very unlikely that a fully developed crowning fire could impact the site. PBP is predicated on a fully developed crowning fire burning under a Forest Fire Danger Index (FFDI) of 100 or at the start of Catastrophic Bushfire Danger Rating conditions. The design fire within PBP is a probable worst-case fire and the separation distances and bushfire protection measures within PBP are developed in anticipation of a 1:50 year fire or up to Catastrophic fire conditions.

The standard APZ output Table A1.12.2 (PBP p. 91) uses the most conservative interpretation of vegetation fuel loads and broad slope classes to provide a standard set of APZ distance solutions to achieve radiant heat levels of <29kWm^2. Detailed discussion on APZs is covered in Section 23.

Figure 21 is the output of the Delany, J, 2019 fire calculator that is accepted by the RFS as an acceptable radiant heat flux calculator. This shows the worst-case scenario fire likely to be generated from within the riparian corridors. This has used a conservative approach assuming a short fire run of 50m, which is very unlikely given the corridor widths, and the steepest slope available being 6.0 degrees, although most of the slopes in the riparian corridors are less than that. The separation distance used is that from the standard in Table A1.12.2 in PBP (p. 90) and is therefore in accordance with the acceptable solutions.

The conclusion is that radiant heat flux is **<29kW/m^2** even if a fully developed bushfire could occur (**28.03kWm^2** as shown in Figure 21), and the radiant heat flux from the realistic bushfire within the corridor is calculated as **17.24 kW/m^2**.

Forest/Woodland - FDF & SFR Calculation page:

Fire run specifics	Wilga Willson Planning Proposal - worst case

Common and bushfire behaviour contributor inputs:

Predominant vegetation	Northern Warm Temperate Rainforests - 10 & 13.2 - Tall - 1.4m - 2.0m				
Surface & Elevated Fuel Load	10	tph	Overall fuel load	13.2	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	14	Metres	Target elevation of receiver	2	Metres
Effective slope	6	Degrees	Ambient temperature	308	Kelvin
Site slope	1	Degrees	SFR fire run length	50	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	6.692	Metres	Default elevation of receiver	5.369	Metres
FDF Flame Angle	57	Degrees	SFR Flame Angle	54	Degrees
FDF Flame Length	13.38	Metres	SFR Flame Height	10.738	Metres
FDF Intensity	12381	kW/m	SFR Intensity	9380	kW/m
FDF FROS	1.8154	kph	SFR FROS	1.8154	kph
FDF Flame transmissivity	0.8627	kW/m	SFR Flame transmissivity	0.8609	kW/m
FDF View Factor	0.4274		SFR View Factor	0.2634	
			Calculated SFR Head Width	18.302	Metres
			SFR fire run length	50	Metres
			Approx. SFR travel time	3:32	min/sec
FDF Radiant Heat	28.03	kW/m^2	**SFR Radiant Heat**	17.24	kW/m^2

Input cells

Locked output cells

Glossary of abreviations/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 22 Radiant heat flux calculation for worst case fire in riparian corridors (Delany, J. 2019 calculator)

19. Any history of bushfire in the area

State-based data provides for the fire history for the Study Area (Figures 22-25). The wider study area has a history of large fires coming out of Kuringai Chase and Garrigal National Parks. 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.*
>
> *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 new development based on a Fire Danger Rating of Catastrophic. The response to potential fires affecting the site are determined 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.

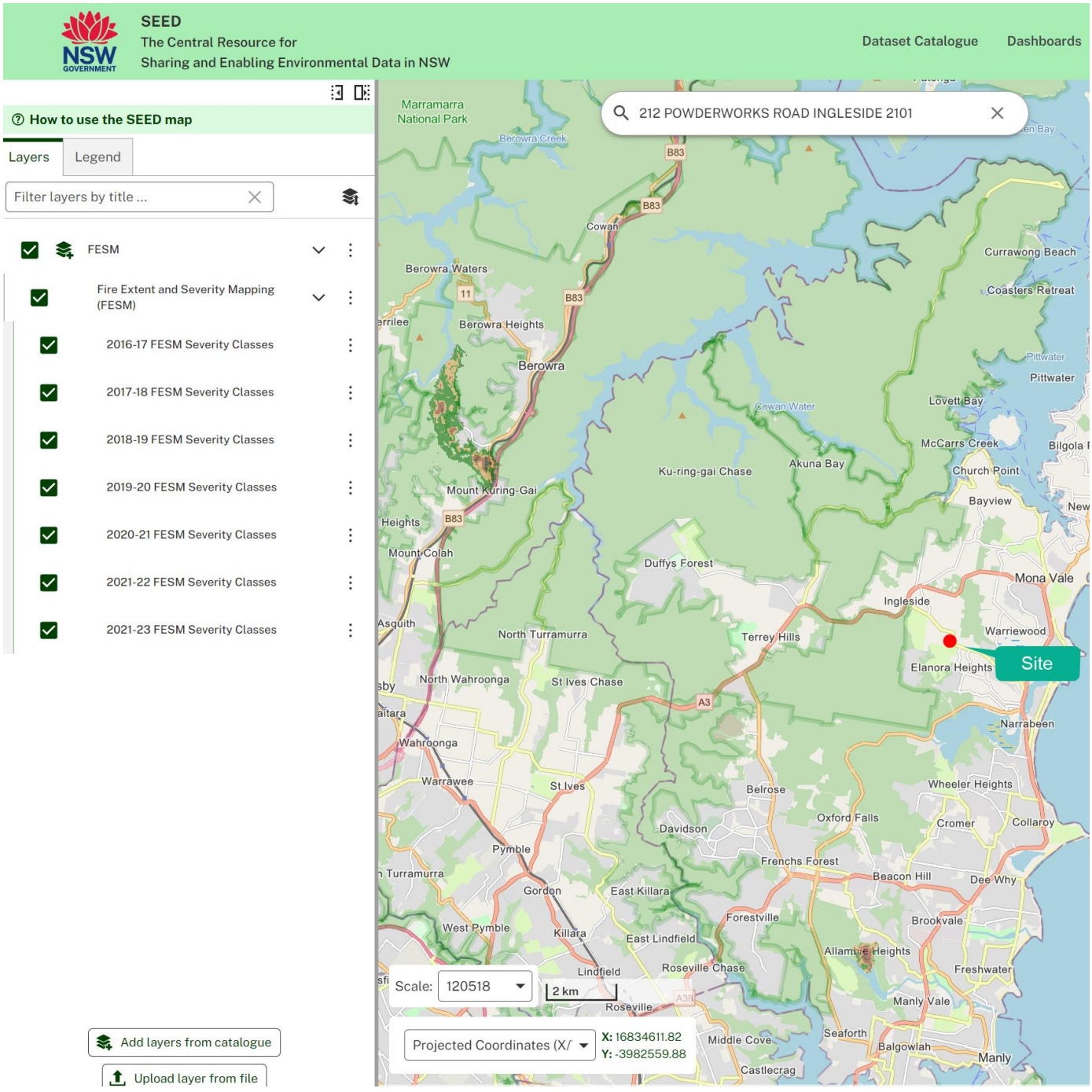

Figure 23 Fire Extent & Severity Mapping (FESM) per SEED Portal 2016/17 - 2022/23

Figure 22 shows the Fire Extent and Severity Mapping for the last 7 bushfire seasons in the wider area, with no significant fires in the area or impacting the site.

Figure 23 shows a large wildfire affecting the site and surrounding areas in 1993-2003 period. This fire was the 1994 bushfires which were significant in the area. Since the 1994 fire, the site and surrounding area has been further developed with vegetation being modified or removed for new

development. It is unlikely that such a fire would move through the area in a similar way due to the ongoing development of the area in the past 3 decades.

Figure 24 shows a number of hazard reduction burns as being completed around the site in the ten year period from 1993 to 2003. A mosaic of hazard reduction burning has been completed (Figure 24) within the subject land (out to 5km) which reduces fuel availability and reduces the potential and consequence of large scale landscape scale fires affecting the site.

Figure 25 shows the time since fire affecting the site and surrounding areas is 21 – 30 years which accords with the development pattern since the 1994 bushfire.

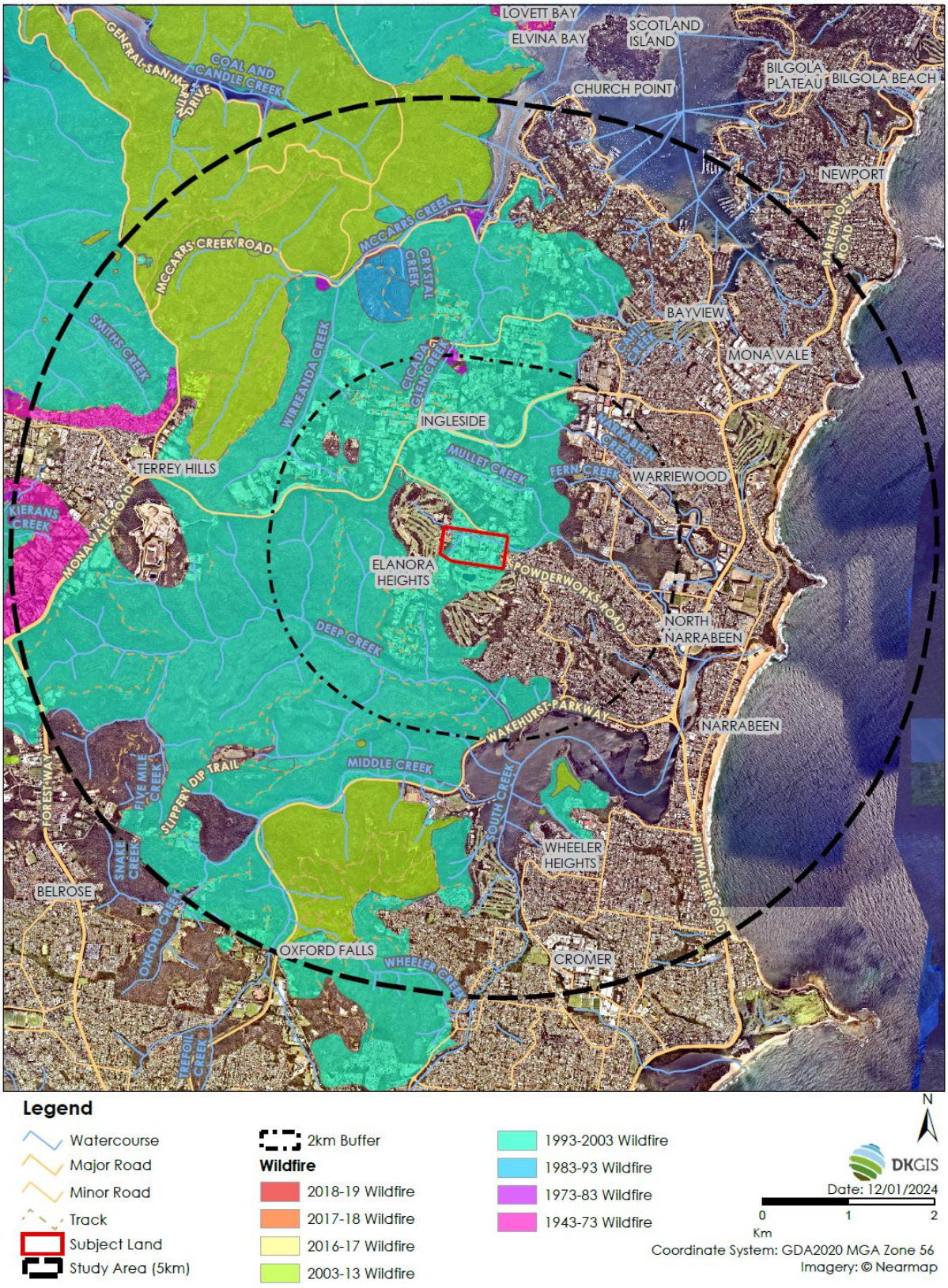

Figure 24 Wildfire mapping in study area (NSW government source data)

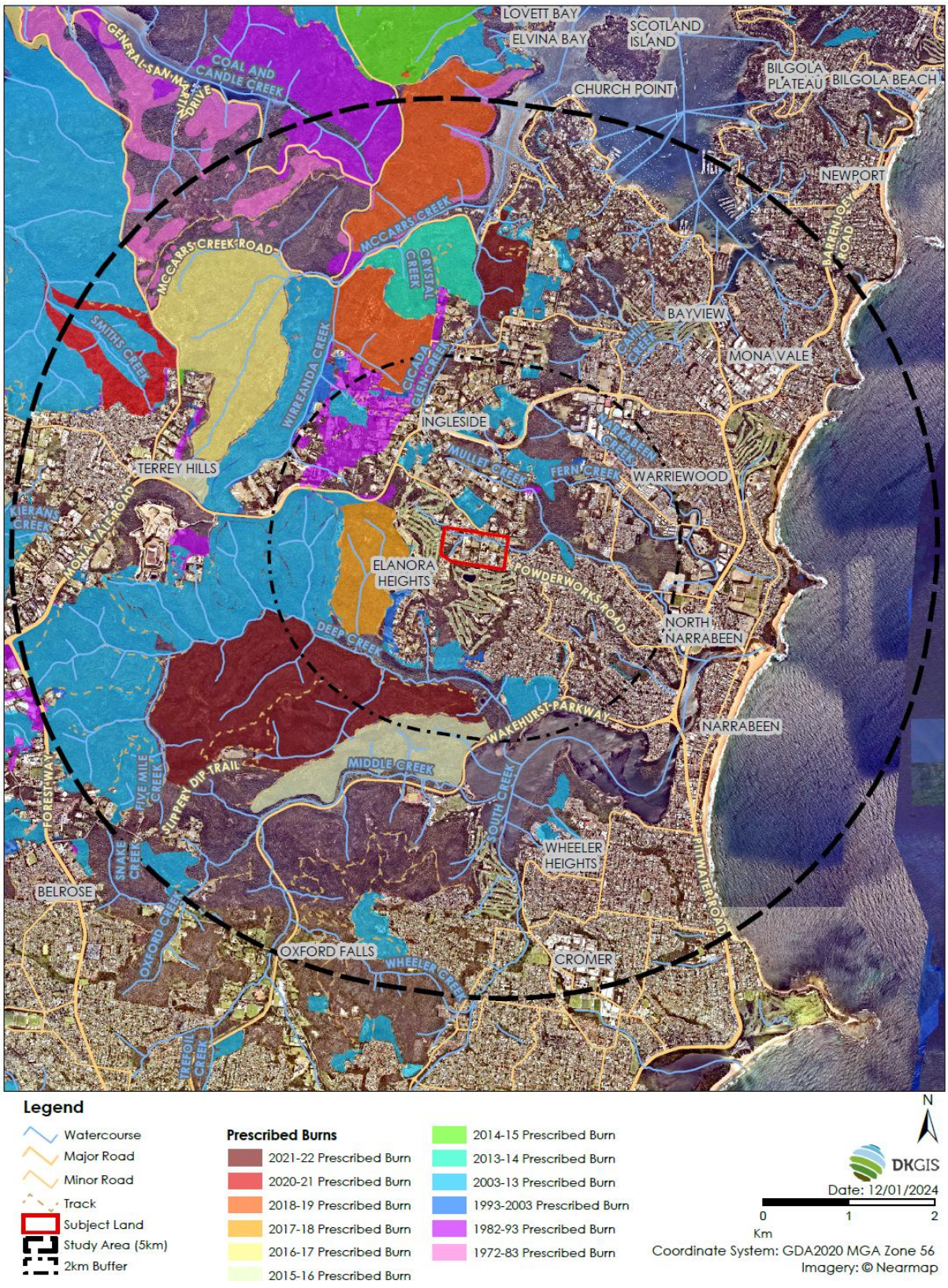

Figure 25 Prescribed burn mapping in study area (NSW government source data)

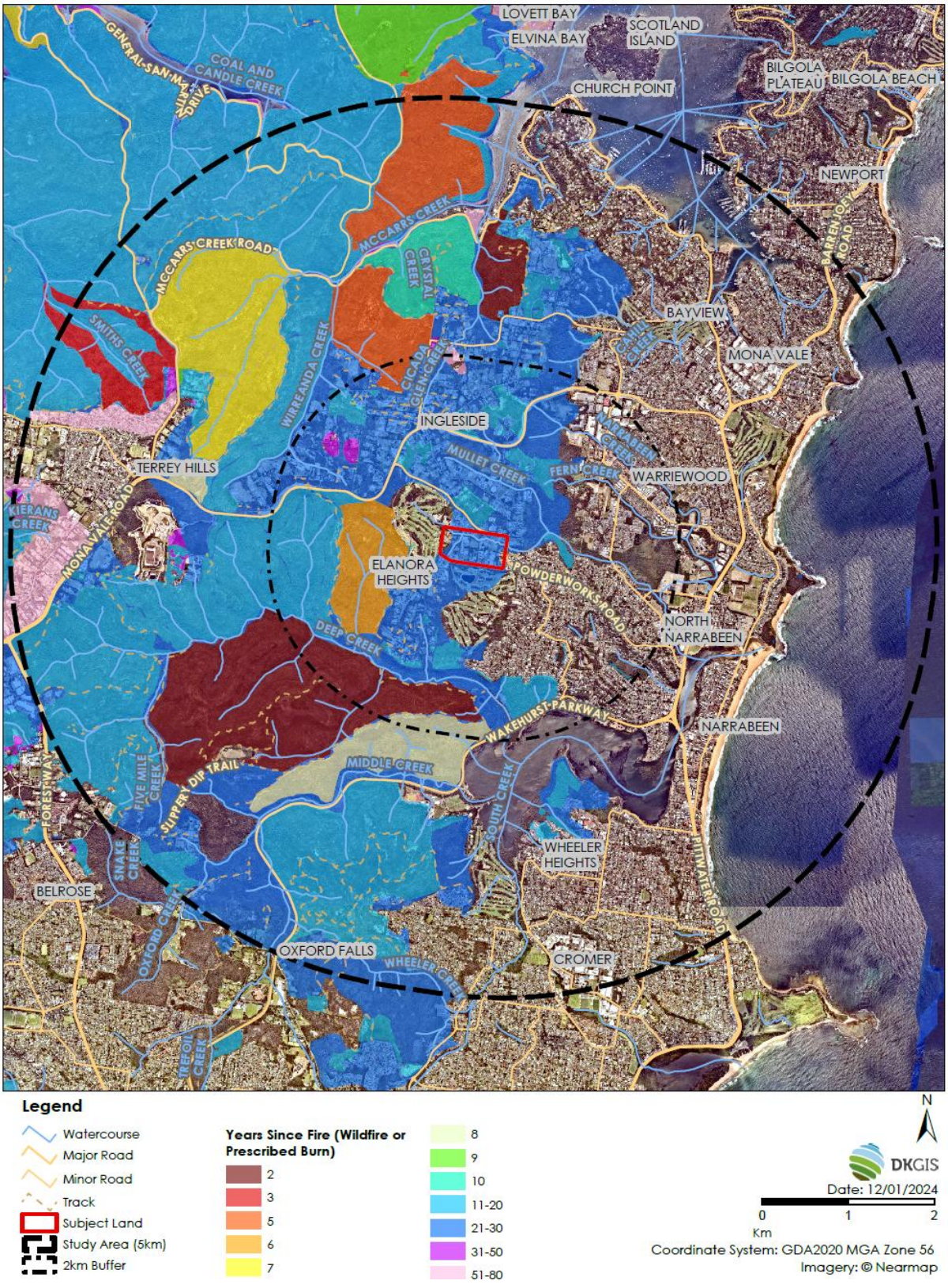

Figure 26 Time since fire mapping in study area (NSW government source data)

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

Potential fire runs impacting the site are shown in Figure 26. A number of potential fire runs can run into or into the vicinity of the site. The potential fire intensity within these fire runs depends on the prevailing weather conditions. Fires driven by north westerly, westerly or southerly winds may be fully developed fires burning at maximum intensity through the vegetation types, however these landscape fires cannot directly impact the site (see Figure 9).

For the purposes of PBP, the worst-case design fire has been adopted (FFDI 100) for this assessment which provides acceptable risk up to Catastrophic Fire Danger Ratings. As shown in Figure 21, the worst-case scenario fire will be of relatively low intensity due to the limited fuel and limited fire runs possible. The design combination of perimeter roads and APZ with construction standards means the worst-case fire scenario is within the requirements of PBP.

The most likely scenario to impact the site is for a fire to start within the riparian corridors. This could be started locally by arson or accident; or could be started by ember attack from a large-scale fire in one of the National Parks. As shown above in Figures 22-25 however a wildfire impacting the site is a relatively rare event, having occurred only once in the last 30 years. The increase in development and managed land around the site during recent decades further reduces the chance of fire impacting the site from outside the PP area. The wider study area also has been a focus area for prescribed burning over past decades, with significant areas burned in the National Parks especially with the intent to both reduce hazard and to improve ecological resilience by creating a mosaic of age classes for time since fire.

Three fire runs (Figure 26) have been considered for the site:

- Fire from the west which would impact the western edge of Monash Country Club and Golf Course. The fire could not run toward the site as the golf course is managed land which would prevent the spread of fire to the site. However, ember attack at the site is likely.
- Fire from the south could run between rural properties in Dendrobium Cres and Elenora Golf Club. The fire could not run toward the site as the golf course is managed land which would prevent the spread of fire to the site. A fire from the south would narrow between the Elenora Golf Course and Dendrobium Cres and Mirbelia Parade. Some vegetation is retained between fairways within the Elanora Golf Course that could burn from spot fires. Any such fires would be isolated and discrete within the Golf Course. A fire driven toward the site from the south would result in ember attack at the site.
- Fire from the north east within Ingleside Chase Reserve which is pushed toward the site by a easterly or north easterly wind. A fire from the east would narrow between Ingleside Rd and Wesley Street and Powderworks Rd. Fire cannot directly impact the site from the east.

Fire could impact Powderworks Rd to the south of Ingleside Rd. However, the retained vegetation is narrow and discreet, resulting in a very short impact period that would not cause prolonged restriction of access at the pinch point. A fire driven toward the site from the east would result in ember attack at the site.

An area of retained vegetation is to the north of the site between Powderworks Rd and McLean St. This area is isolated from larger areas of contiguous vegetation in surrounding areas and is above the site in terms of access and egress. The site does not require or rely on evacuation toward Mona Vale Rd and if required, people within the site could shelter in place or evacuate the east down Powderworks Rd and away from any unmanaged fire (see Figure 2). Access to the site and surrounding areas is facilitated by a network of existing roads (Figure 32) that provides access for fire fighters and creates breaks in vegetation for fire suppression activities.

Fire may affect the areas surrounding the site. However, contiguous fire cannot affect the site from adjoining bushland areas. Development around the site provides breaks in vegetation which create fire breaks and asset protection zones restricting direct fire impact at the site. However, the site may be affected by ember attack from fires within 2km of the site. Ember attack may start small, isolated fires within the site but this can be reduced by the site management as an Inner Protection Area.

Narrow riparian corridors (see Figure 19) are within the site. However, these will be managed riparian areas with mesic species that are specialised for the riparian vegetation areas. The riparian areas and mesic vegetation play a crucial role in limiting fire spread by providing moisture rich, less flammable fuel that can act as natural fire breaks. Riparian areas can reduce fire intensity, disrupt fuel continuity and create micro-climates that further supress fire behaviour. The riparian areas within the site are discrete, presenting narrow vegetation corridors. Ember attack or arson could start small fires within the riparian areas in the site, however, such fires would be isolated, low intensity with extremely limited potential to run.

The developed areas within the site have been designed in accordance with PBP to provide perimeter access for firefighting purposes and the APZs are in accordance with PBP to ensure subsequent development is afforded appropriate constriction in accordance with AS3959:2018 to reduce the impact of fire on built assets. The site provides a network of connected roads with access away from the riparian vegetation corridors to ensure unrestricted egress out of the site by those people who choose to evacuate the site.

The site has been designed to take a conservative position in relation to bushfire attack.

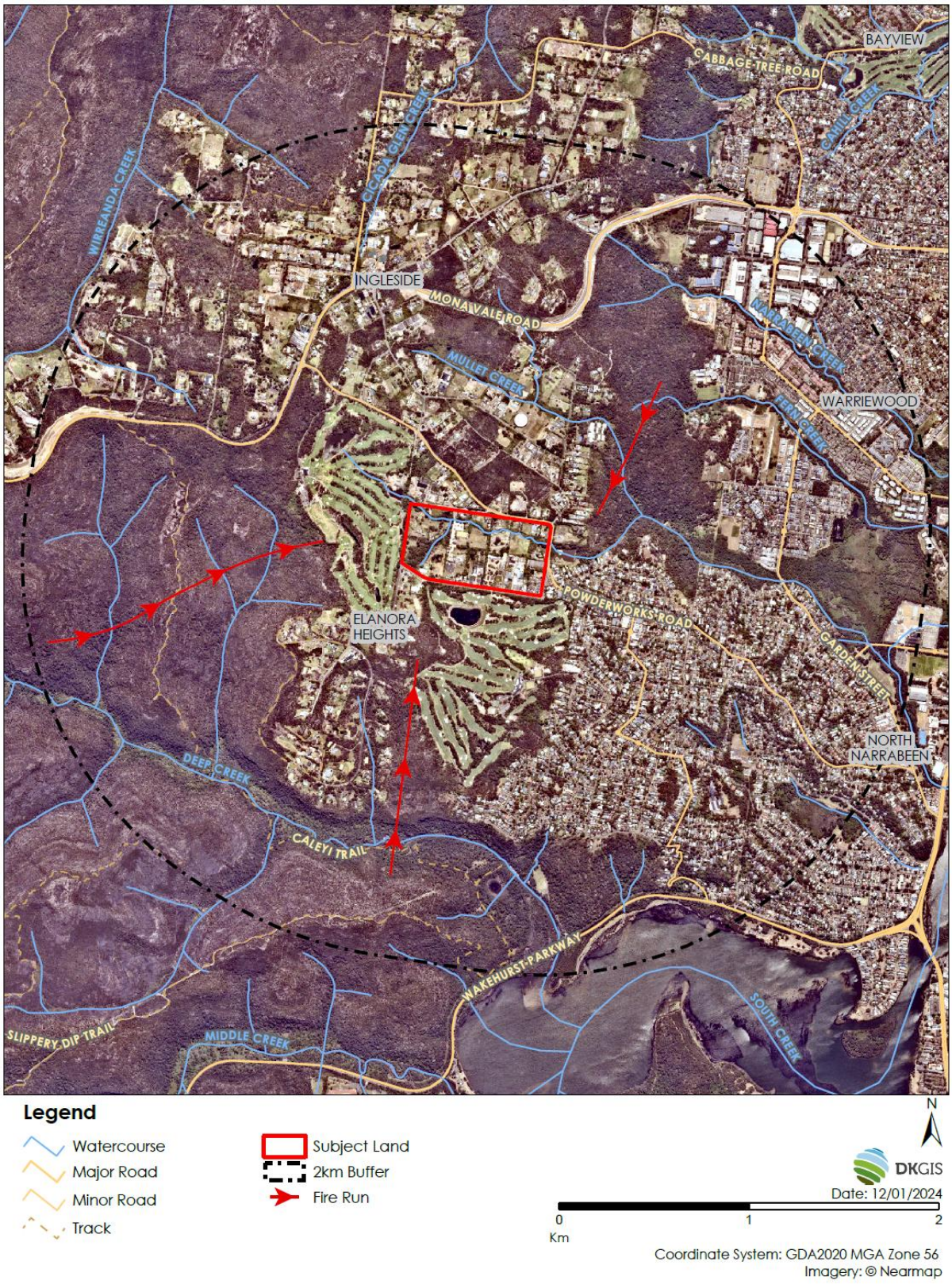

Figure 27 Potential significant fire runs

21. 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 landscape within close proximity to the site is fragmented and separated by existing and proposed roads and is unlikely to impact the site directly. Also see Section 20.

The PP design provides excellent firefighting access via perimeter roads within most of the site and extensive APZ network. Access within the site is available to Medium Rigid (MR) fire appliances and internal access is provided in accordance with PBP. There are two RFS brigades within 2km of the site, and 3 more RFS brigades and two Fire & Rescue NSW brigades within 5km of the site (Figure 27). Should a fire from Kuringai Chase National Park cut Mona Vale Road and prevent emergency service access south along Powderworks Road, resources will still be able to access the site from the southeast heading north along Powderworks Road from North Narrabeen.

The riparian corridors are fragmented by road crossings and large stormwater management facilities. The riparian corridors have modest slopes and are 35-70m wide, meaning that bushfires cannot become fully developed, and that firefighting access from the perimeter of bushland will be very good. Any fires starting within the local area, or the PP site will be seen and reported quickly due to the relatively large population in the area and the large volumes of traffic on the road network.

Typical firefighting procedure allows for a 70m radius around fire trucks parked on the streets near available hydrants, with two lengths of 30m hose and a 10m stream of water. Any local scale fires in the area are likely to be managed within normal procedures using local resources.

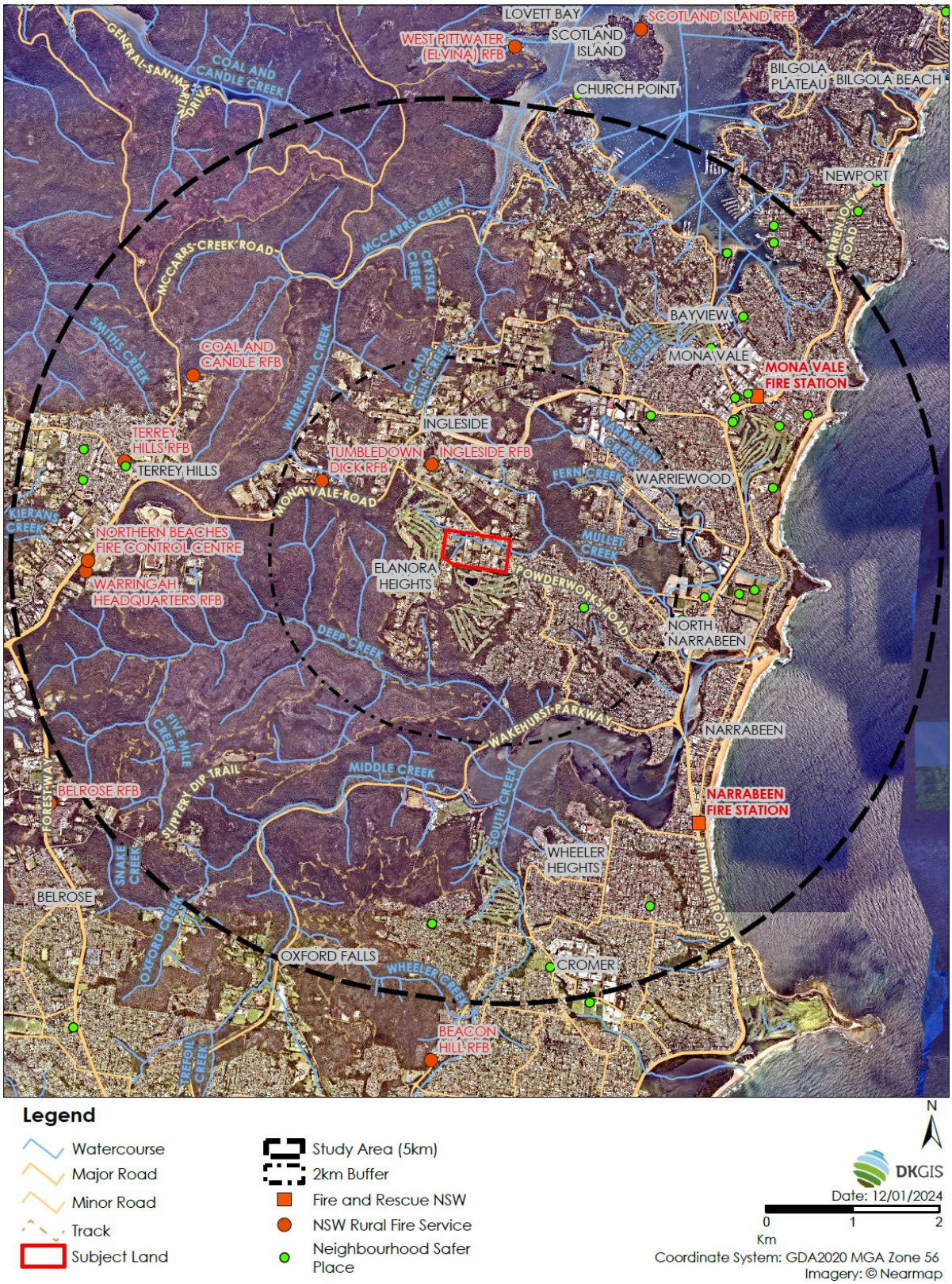

Figure 28 Emergency services within the study area

22. 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 proposed layout allows for perimeter roads for most of the site with relation to the riparian corridors. Areas shown as suitable for apartment buildings will be managed with suitable APZ onsite. The local scale fires possible within the riparian areas have been shown to be well within the ability to be managed using the PBP methodology of a suite of bushfire protection measures using the acceptable solutions.

The APZs meet the PBP requirements and construction can be completed in accordance with the *Australian Standard for Construction of Buildings in Bushfire Prone Areas* (AS3959). Subdivision and construction will be addressed in detail with the subsequent DA. Services are able to comply with PBP. Landscaping for the PP area has been developed having regard to the APZ requirements.

Properties on the north side of the east-west riparian corridor do not have a perimeter road as they are constrained by the need to retain and rehabilitate the corridor. They do have direct access to Powderworks Road and Wilson Avenue and future subdivision and development applications will ensure adequate access, construction standards and APZ are provided in accordance with PBP.

The most constrained properties are existing development on the northern side of the site, including the St Sava Serbian Orthodox Church complex which will remain. The entry to the church is via Wilson Avenue including a 6m wide concrete driveway across the riparian corridor and an extensive car park. This part of the corridor will be rehabilitated in keeping with the ongoing existing use of the site (Figures 28 & 29).

The combination of suitable access, APZ, onsite water supplies and compliance with contemporary building standards will significantly reduce the need for late-stage evacuations. Appropriately designed lots (in accordance with PBP), and buildings constructed (in accordance with AS3959) and prepared properties will offer people options for sheltering during most bushfires (below Catastrophic FDR), 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.

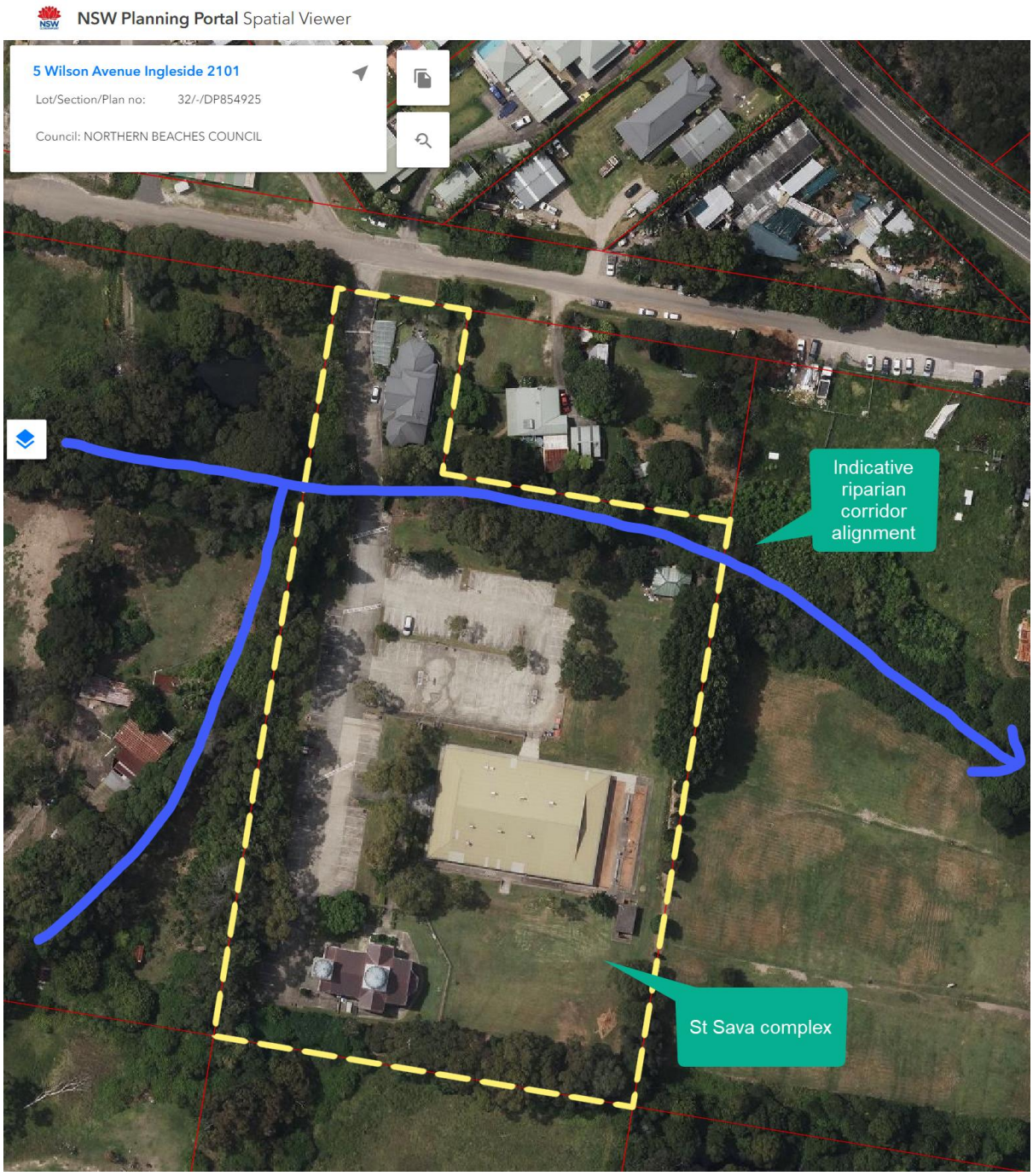

Figure 29 St Sava Church complex - access from Wilson Avenue

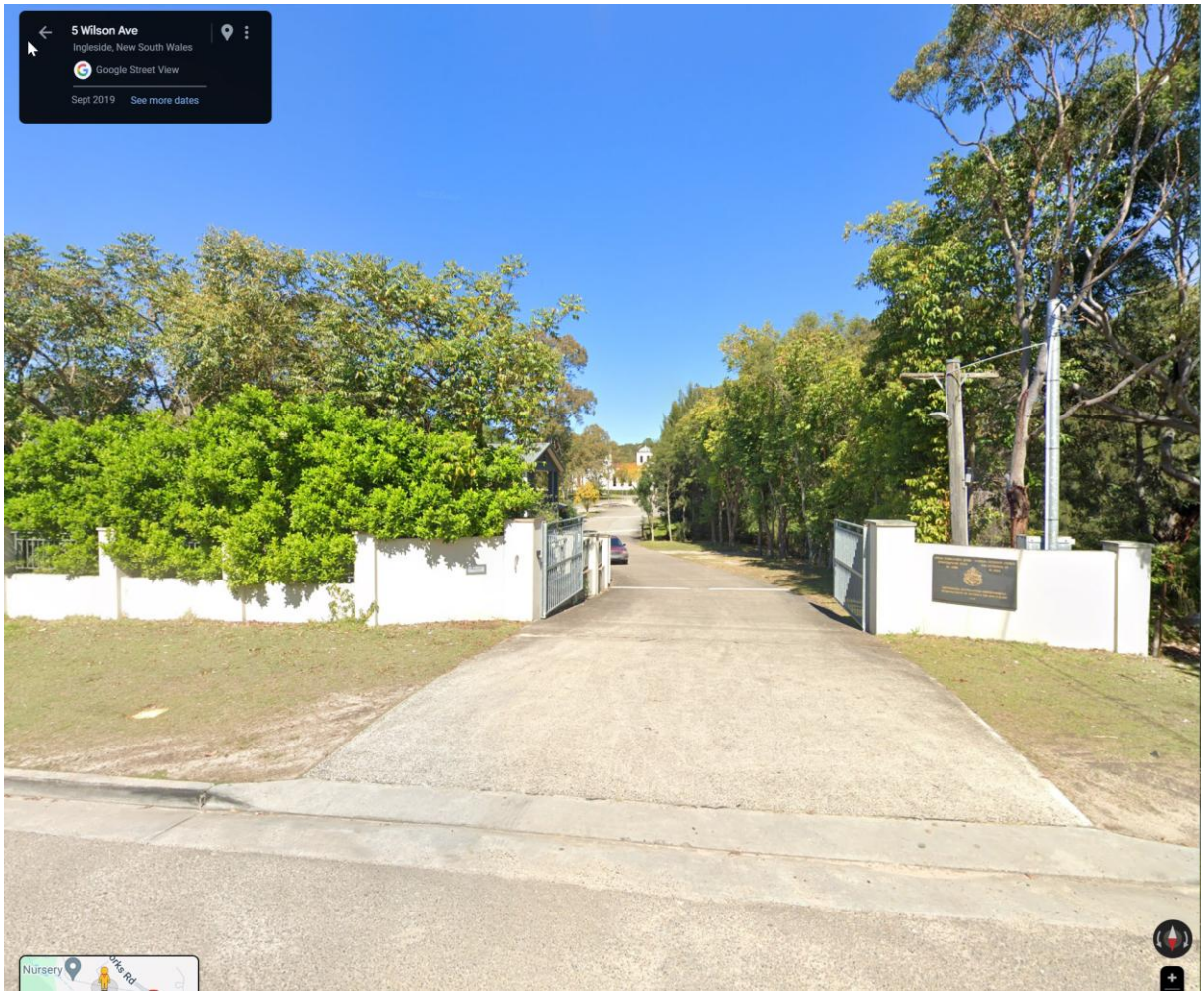

Figure 30 Entry to St Sava Church complex from Wilson Avenue (Google streetview)

23. Asset Protection Zones

For proposed new subdivision development, PBP requires that a minimum separation 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 buildings below 29kW/m^2 as the maximum exposure on all sides of the future development sites (Figure 30).

A conservative approach using acceptable solution APZ has been taken and the site has sufficient room to provide compliant APZ for the entire site shown as Figure 30. In accordance with PBP APZs have been relied upon within and around the site where they are clearly managed lands.

APZs have been determined for riparian vegetation (Figure 30) and in accordance with PBP. The APZs throughout the site are 16m wide and are incorporated into perimeter roads or some larger lots.

PBP (p. 112) defines managed land as:

> *Land that has vegetation removed or maintained to a level that limits the spread and impact of bush fire. 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.*

The application is not seeking to extend or burden any adjoining land with any APZ. An APZ can rely on adjoining areas where they are managed and have a high degree of confidence in ongoing management.

To provide confidence and to be abundantly cautious, Blackash have provided a worst case scenario of the vegetation within the riparian corridors being assessed as Sydney Coastal Dry Sclerophyll Forest at Figure 31. The riparian areas are discrete and narrow that make these areas available to use the Short Fire Run methodology (SFR methodology).

The inputs for the SFR modelling are:

- **FFDI**: 100
- **Vegetation**: Sydney Coastal Dry Sclerophyll Forest
- **Vegetation fuel load:** Surface and elevated 21.3t/ha. Elevated 27.3t/ha

- **Distance to vegetation:** 16m separation provided from the riparian areas to building footprints.
- **Effective slope:** 5° downslope.
    - **Note:** The riparian areas have narrow corridors with slopes down to the center line of the creek line and then up the other side of the riparian corridor. For assessment purposes, slopes could be determined as flat on an average basis. However, a conservative position has been assumed with the predominant slope being 5° downslope for the length of the potential fire run – this discounts the upslope part of the assessment and as a result, the radiant heat outputs are higher than they would otherwise be.
- **SFR length**: has taken to widest potential fire run affecting the riparian areas as 70m. However, Figure 19 shows the riparian corridor has transect widths of 58.5m, 63.4m, 47.4m, 56.9m, 66.1m, 61.7m and 52.4m. The 70m is above all transect widths within the riparian corridor.
- **Flame Temperature**:1090K.
- **Output -** The modelled output is 26.91kWm2 as shown in Figure 31. This is below the requirements of 29kW as required by PBP.

The development meets the requirements of PBP for the provision of separations distances from the riparian areas within the site. It is noted the Masterplan shows indicative footprints for apartment buildings only and these designs will be assessed in detail during later applications.

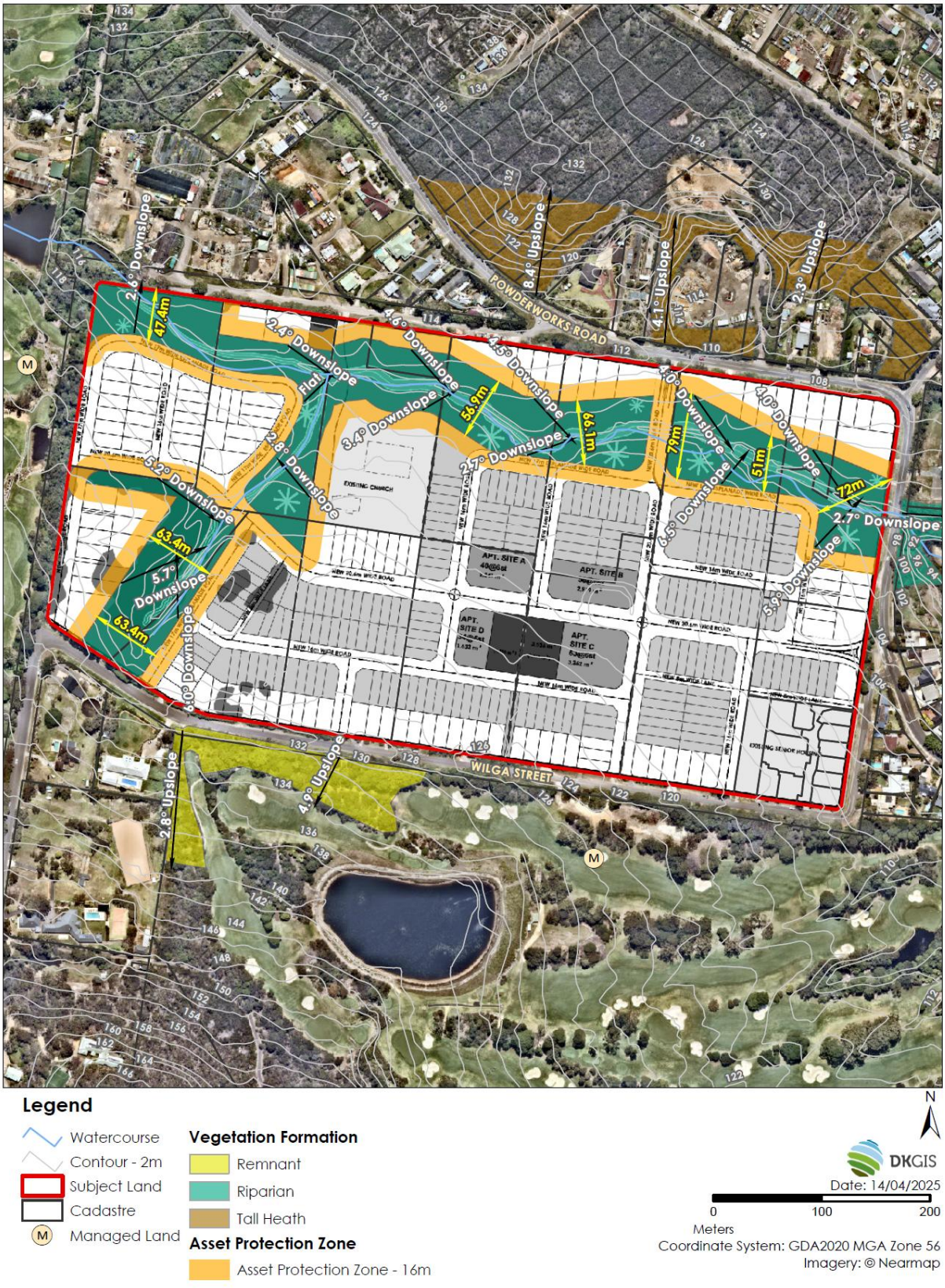

Figure 31 Acceptable Solution APZ

Common and bushfire behaviour contributor inputs:

Predominant vegetation	Sydney Coastal Dry Sclerophyll Forests - 21.3 & 27.3 - Medium - > 0.9m - < 1.4m				
Surface & Elevated Fuel Load	21.3	tph	Overall fuel load	27.3	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	16	Metres	Target elevation of receiver	2	Metres
Effective slope	5	Degrees	Ambient temperature	308	Kelvin
Site slope	0	Degrees	SFR fire run length	70	Metres
DF 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	13.367	Metres	Default elevation of receiver	8.824	Metres
FDF Flame Angle	19	Degrees	SFR Flame Angle	40	Degrees
FDF Flame Length	26.73	Metres	SFR Flame Height	17.647	Metres
FDF Intensity	50906	kW/m	SFR Intensity	39718	kW/m
FDF FROS	3.6090	kph	SFR FROS	3.6090	kph
FDF Flame transmissivity	0.8902	kW/m	SFR Flame transmissivity	0.8668	kW/m
FDF View Factor	0.7025		SFR View Factor	0.4082	
			Calculated SFR Head Width	25.623	Metres
			SFR fire run length	70	Metres
			Approx. SFR travel time	19:23	min/sec
FDF Radiant Heat	47.55	kW/m^2	**SFR Radiant Heat**	26.91	kW/m^2

Figure 32 Worst case scenario Forest Vegetation within Riparian Corridors

24. 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 *Australian Standard AS 3959-2018 Construction of buildings in bushfire-prone areas*. The BAL ratings are used as the basis for establishing the requirements for construction for future buildings to improve protection from bushfire attack.

The BAL ratings across the site are shown in Figure 32 and range from 29kW to BAL Low within the site. This meets the requirements of PBP. It is noted the Masterplan shows indicative footprints for apartment buildings only and these designs will be assessed in detail during later applications. Future buildings within the site can be built in accordance with the acceptable solutions of AS3959: 2018.

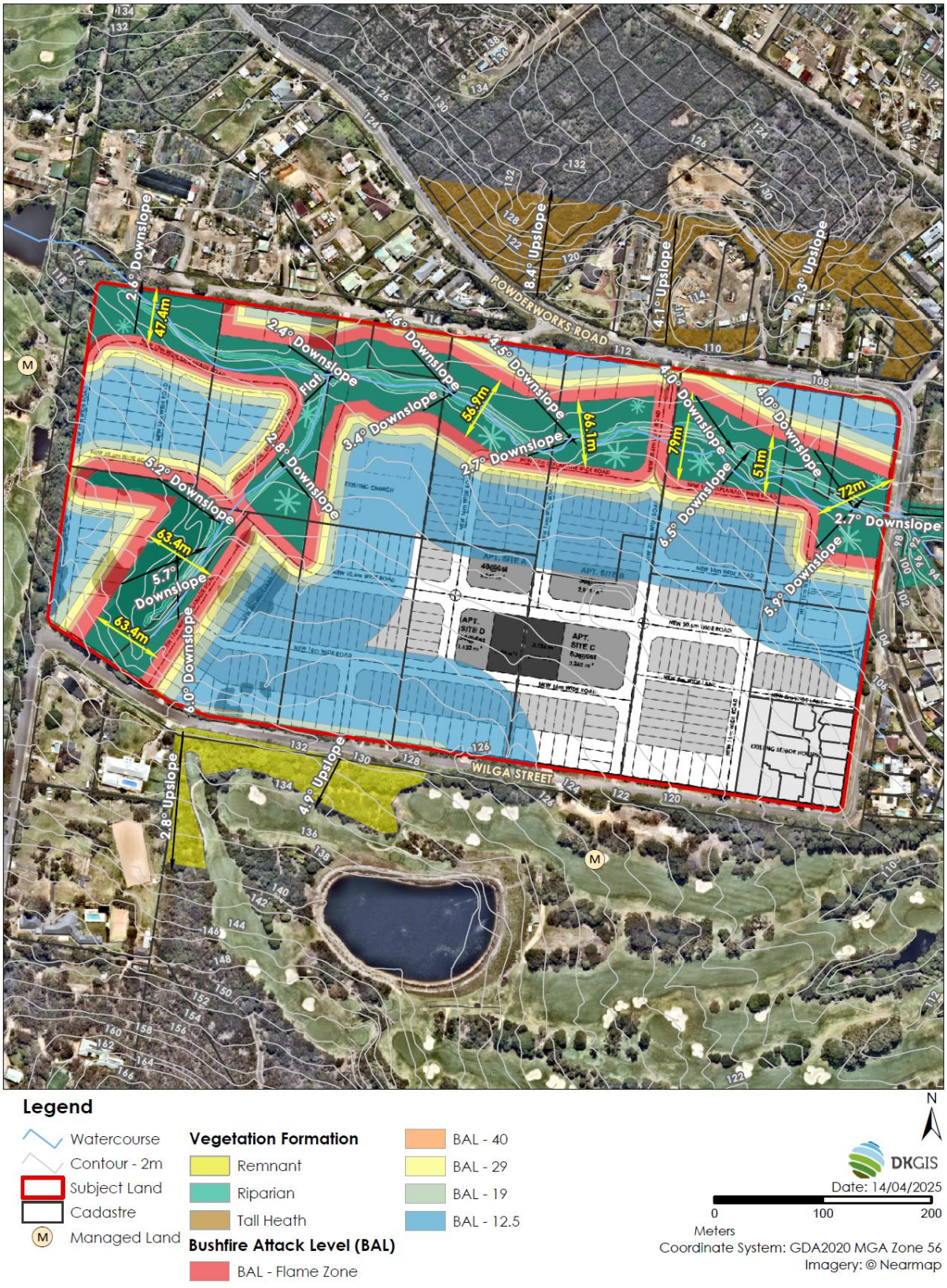

Figure 33 Bushfire Attack Levels across the PP area

25. The proposed land use zones and permitted uses

The PP responds to the site and considers bushfire constraints in relation to the proposed likely uses for permanent riparian corridors and residential development. This complies with PBP.

26. 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. The most appropriate siting of different land uses based on risk profiles within the site involves considering various factors related to land use planning, ultimate uses and tenures and bushfire risk management, particularly concerning mitigating the impacts of natural hazards like bushfires.

The proposed locations for residential apartment buildings will allow detailed consideration at DA stage that can incorporate onsite APZ managed under a single tenure. The design reflects the planning requirements of PBP.

The minimum requirements of PBP can be achieved by the PP. This complies with PBP.

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

The PP 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.

No APZs will be located within environmental conservation areas or require new or additional off site management. This complies with PBP.

28. Access and egress - 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 PP includes constructing one additional new road to connect to Powderworks Road on the north side of the development, and a substantial upgrade to construct a roundabout at the Wilga Street intersection with Powderworks Road on the east side of the site. The proposal also upgrades the existing alignments of Wilga Street and Wilson Avenue.

Analysis of the potential vehicle loads, and increased traffic generated by the PP is presented in the supporting documentation "*Wilga Wilson Precinct Ingleside – Flood and Bushfire Evacuation Capability Assessment*" (Evacuation Report) by Water Technology (dated 23 August 2024). Several key issues are relevant due to the site location and characteristics and as outlined in the Evacuation Report.

The existing traffic network to the northwest of the site is likely to be impacted by fire when significant bushfires are occurring in the National Parks, and therefore the normal traffic feeder load from Mona Vale Road onto Powderworks Road will rapidly decrease to zero as the bushfire impacts Mona Vale Road and this road is closed (formally by emergency services or informally by users). Powderworks Road is shown as having normal capacity of 1,200 vehicles per hour and this is potentially reduced to 600 per hour due to adverse conditions.

Secondly, the evacuation traffic load generated by the PP site in the last hour before and up to the fire impacting the wider area is likely to be approximately 25% of the population or approximately 197 vehicles if all vehicles are taken. This is a conservative estimate given that approximately 60% of the fully developed site will be rated as BAL-12.5 or BAL-Low.

Thirdly, the PP includes a significant upgrade of the intersection to a two-lane roundabout which facilitates evacuation from the site without unduly restricting traffic heading south on Powderworks Road away from the fire. This intersection is on the edge of the 'Vegetation Buffer' of the BPL Map and is unlikely to be impacted directly by bushfire. The intersection location means the travel distance from this point to the broader Elanora Heights urban area is less than 100m. There is a registered RFS Neighbourhood Safer Place (NSP) at Cooleena Road reserve 1.3km away from the roundabout.

Fourthly, the proposed PP area being developed will provide additional managed lands, additional evacuation routes and a roundabout for the large lot residential area to the southwest which will provide significantly improved evacuation options for these residents who have a significantly higher bushfire risk.

Finally, the primary method of life safety on the site is likely to involve a shelter in place strategy for smaller fires or evacuation from the site if directed by emergency services.

The conclusion of the Evacuation Report includes the following statement:

> *The provision of vegetated riparian corridors through the precinct will expose some dwellings to a bushfire hazard. The positioning of buildings on each block and the construction of the buildings to the appropriate BAL rating will ensure that all residents in the precinct can stay in their homes during a bushfire.*
>
> *However, using conservative assumptions and assuming residents will evacuate onto Powderworks Road at the same time as bushfire evacuees from surrounding areas, it is expected that all vehicles will be able to evacuate in the time available.*

Compliance with PBP and NCC standards, will allow for a shelter in place strategy to be the primary method for protection of life safety. Buildings that are more than 100m away from the fire front and able to provide safe refuge for residents during the short-lived bushfire that may impact the site.

It is also important to note that any evacuation required of the 40 properties to the southwest of the site on Mirbelia Parade, Caladenia Close, and Dendrobium Crescent will be significantly enhanced and made safer by the development of the PP area. There will be another entry point accessible to Powderworks Road, and significantly improved access for vehicles using Wilga Street to access Powderworks Road turning right towards Elanora Heights urban area via the new roundabout. Perhaps of even greater assistance to these properties is that the PP area will be a suitable location to retreat to, with approximately two thirds of the site rated as BAL-12.5 or lower, and this also saves approximately 800m of driving to reach a developed urban area (Figure 33).

This complies with PBP.

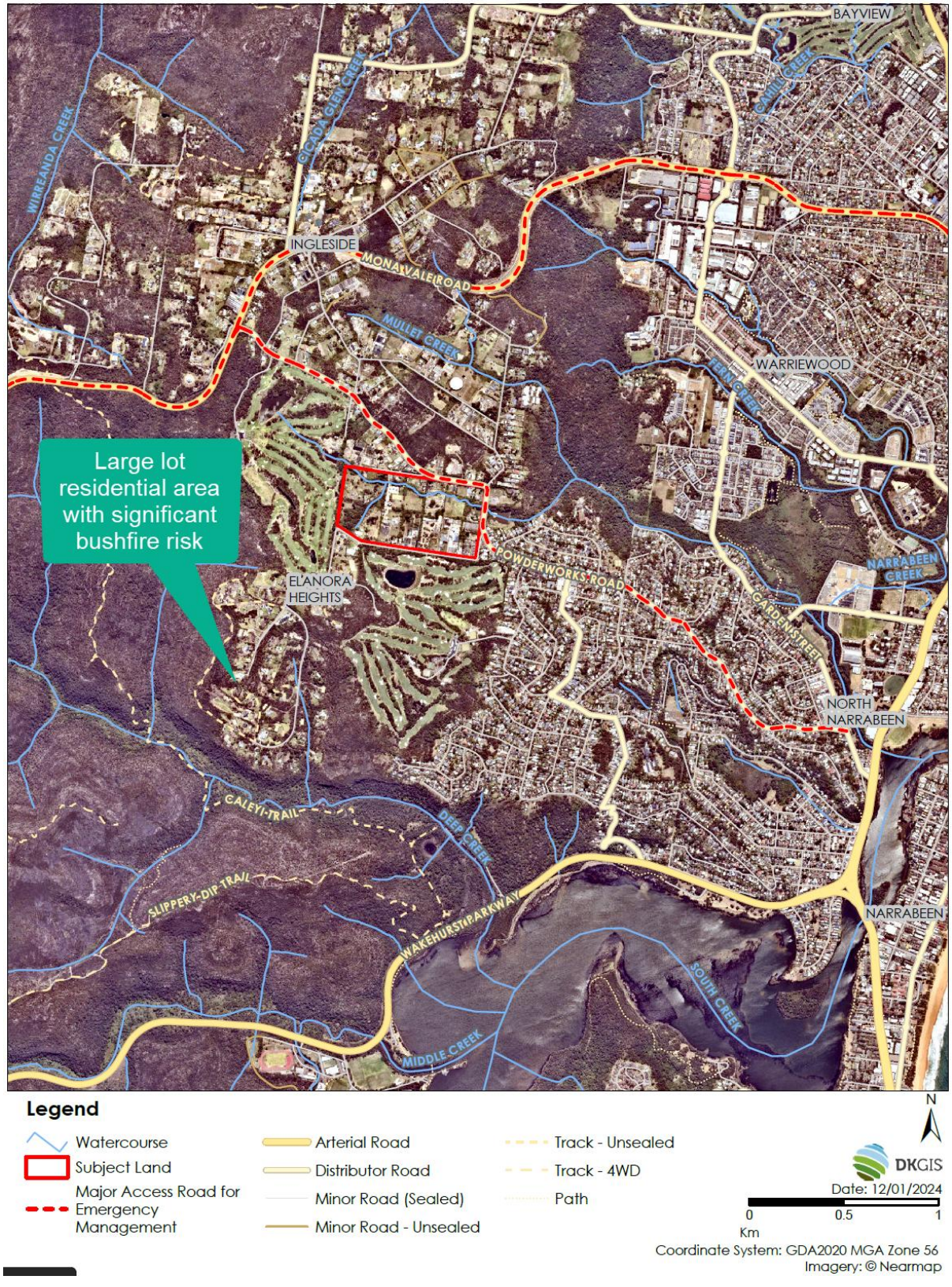

Figure 34 Access and Egress

29. The location of key access routes and direction of travel

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*[5]. 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.

The design team recognises that a bushfire can be a difficult situation with smoke obscuring vision, stressed people more likely to make mistakes, and the likely influx of firefighting vehicles adding to traffic loads whilst people leave. As discussed above, due to the short space of time between ignition and impact of any bushfire, the site is able to make available safe refuge areas more than 100m from the interface, a shelter-in-place is the likely primary response for residents.

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. Wider evacuations related to landscape scale fires in the study area are discussed in the Evacuation Report.

There are multiple firefighting resources located within 5km of the site (Figure 27), including Neighbourhood Safer Places and large areas of modified and managed land (Figure 2). The distance from the roundabout servicing the PP area to enter Powderworks Road to the existing urban area of Elanora Heights is less than 100m and this route cannot be directly impacted by bushfire.

This complies with PBP.

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

30. 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.*

The site is not in a remote area and the wider area is suitable for development in compliance with PBP. The PP site has multiple access points to the wider road network and is predominantly surrounded by roads, managed land and urban development (Figure 2). While it is possible that a large fire to burn into adjoining residential areas, this is unlikely as the design fire for PBP is up and including Catastrophic Fire Behaviour Ratings. Improved weather forecasting and official warning systems typically provide a 4 day window to advise people of bad fire weather, with the result that many people concerned about upcoming conditions have significant time to plan an evacuation under planned and orderly conditions well in advance of any bushfire greater than local scale.

Multiple routes for firefighting resources are available to access the site and the southern route cannot be cut off by bushfire due to large built up areas of existing residential development.

This complies with PBP.

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

There are substantial existing firefighting resources including RFS brigades (Figure 27) within close proximity to the PP area including:

- Within 2km of the site:
    - 2 RFS brigades being: Ingleside RFB and Tumbledown Dick RFB
- Within 5km of the site:
    - 2 Fire and Rescue stations being: Narrabeen and Mona Vale Fire Station
    - 4 RFS brigades being: Warringah Headquarters, Northern Beaches Fire Control, Terry Hills and Coal and Candle RFB.

The development is able to meet the acceptable solutions requirements for PBP and AS3959: 2018. The scale of development on its own will not require additional emergency services.

Modern firefighting arrangements are better coordinated than in previous decades. There are also more and improved resources including fire mapping, bulk water tankers, heavy plant (e.g. bulldozers and graders), helicopters and Large Air Tankers (LATS). These are much more readily available, and enable a major addition to firefighting capabilities, especially on bad fire weather days. Substantial improvements to Operational Readiness systems on bad fire weather days means any fire at the site will have an efficient and effective response.

All these characteristics mean that when such fires are ignited there is a relatively quick and effective response meaning that the fire is less likely 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 low 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. Large landscape fires will develop over days or weeks providing emergency managers with time to determine appropriate combat strategies, including evacuation of residents if required. The PP complies with the requirements of PBP.

32. 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 Paper[6] 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 improved 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 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 PP will also provide a significant improvement in bushfire safety for the adjoining properties which have been approved and constructed prior to 2002 and the development of any bushfire protection standards consistent with contemporary practice.

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

33. Infrastructure - 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 application will detail provisions for services. There is no reason to suggest the reticulated system will not be able to service the proposed development. Should there be any concerns raised over the capability of the reticulated system negotiations for upgrades or alternate solutions should be determined at that stage of the process.

This complies with PBP.

34. 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. This complies with PBP.

35. Adjoining land - 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 or practices on the adjoining land.

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.

36. Summary

This Section evaluates the PP against the bushfire strategic planning requirements of PBP and is shown in Table 2.

Table 2 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	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	Fire history map and fire run map completed. Assessment has been completed in accordance with fires up to Catastrophic Fire Danger Rating as required within PBP.	**YES**
		Any history of bush fire in the area.	Significant fire history in the area. The PP can comply with PBP requirements.	**YES**

Issue	Detail	Assessment considerations	Evidence	Suitable site
		Potential fire runs into the site and the intensity of such fire runs; and	Fire history map and fire run map completed. Assessment has been completed in accordance with fires up to Catastrophic Fire Danger Rating as required within PBP.	YES
		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.	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 risk profile of the site is minimal and the scale of the site provides ample opportunity to provide a suitable suite of BPM.	YES
		The proposed land use zones and permitted uses	The proposed development is a suitable and practical use of the land.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
		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 siting on APZ provision.	The risk profile of the site is minimal and the scale of the site provides ample opportunity to provide a suitable suite of BPM.	YES
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;	A shelter in place strategy will be the primary method of managing life safety for the site. Evacuation Report concludes no constraints. This will be supported by the layout, parking arrangements and compliance with PBP.	YES
		The location of key access routes and direction of travel; and	The access is protected from bushfire through managed lands and APZ. Multiple external access points are provided with internal access through the site and upgraded access to Powderworks Road.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
		The potential for development to be isolated in the event of a bush fire.	There is little chance of isolation due to landscape and arterial road connection.	YES
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	Not likely that 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.	Insignificant negative impact. Will have positive impact with more local population, water supplies, and active land management adjacent to existing housing not built to contemporary bushfire standards.	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 – water supplies will be conditioned as suitable for uses and locations on site.	YES

Issue	Detail	Assessment considerations	Evidence	Suitable site
		Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.	No life safety issues identified.	YES
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 negative impact identified. Potential positive impact related to additional people, active land management and investment locally.	YES

37. Suitability of the Planning Proposal

This SBS has demonstrated that the PP has considered and responded to the requirements of the Ministerial Direction and 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 3 and the consideration of exclusion of development as required within PBP (p. 34) at Table 4.

Table 3 Strategic Principles

Principle within PBP	Comment	Compliance
Ensuring land is suitable for development in the context of bushfire risk	The PP demonstrates compliance with the deemed to satisfy requirements of PBP in all BPM, with detail for some BPM to be provided at development application stage. 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 PP 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 relevant sections of PBP.	**Yes**
Minimising reliance on performance-based solutions	No performance-based solutions have been proposed or used in this assessment. Scenario testing has been completed using SFR methodology as a	**Yes**

Principle within PBP	Comment	Compliance
	worst case scenario. All BPM will be able to be met using acceptable solutions provisions within PBP.	
Providing adequate infrastructure associated with emergency evacuation and firefighting operations	The internal road network meets or exceeds the relevant minimum requirements of PBP. The development footprint, APZ and additional water supplies will be of significant benefit to existing adjoining housing not built to bushfire protection standards. All services can be provided in accordance with Table 5.3c of PBP.	**Yes**
Facilitating appropriate ongoing land management practices	The future development will not burden or change the existing obligations or management actions of neighbours.	**Yes**

Table 4 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 1). The site is adequately separated from landscape scale bushfires. The new development can be designed to 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	The PP site is in a relatively low risk area and the scale of development will allow for shelter in place strategy. Unimpeded evacuation is available to the east of the development along Powderworks Rd.	**Yes**

Principle within PBP	Comment	Compliance
The development will adversely effect other bush fire protection strategies or place existing development at increased risk	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 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 by permanently removing a bushfire hazard and provide ongoing active management.	**Yes**
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 proposal will allow for PBP compliant APZ on site, a shelter in place strategy can be adopted with modern construction requirements of the National Construction Code. The catchment of people using the road network is limited and it is not expected that the PP will impact the capacity of roads.	**Yes**
The development has environmental constraints to the area which cannot be overcome	The environmental constraints have been considered and assessed separately. The PP layout reflects the environmental constraints.	**Yes**

38. Rural Fire Service Letter and Issues

The RFS provided a letter dated 6 March 2025 (Appendix 4) and comments on the PP. Key RFS issues are addressed below:

RFS comment: This study must give due regard to the issues raised in the Bushfire Risk Assessment prepared by Meridian Urban (dated29/08/2018, reference:18-014) for the Ingleside Planned Precinct, primarily relating to the ability of the existing infrastructure (traversing through significant bush land) to facilitate evacuation during bush fire emergencies.

Due regard has been given to the previous bushfire risk assessments including those completed by Meridian Urban and Blackash Bushfire Consulting.

The Ingleside Planned Precinct was for a large-scale development of approximately 700ha for 3,400 new homes and associated development. Commentary on the consideration of the Ingleside Precinct is at Section 4 of this report.

The Wilga Wilson Concept Massterplan covers an area of 15.97 hectares which is proposed to be residential inclusive of APZs. 3.91 hectares of intact native vegetation is proposed to be zoned C2 (Environmental Conservation). The intended outcome of the PP is to amend the applicable local planning controls to accommodate up to 133 houses, 238 terrace houses and 193 apartments, along with the protection and rehabilitation of two narrow riparian areas including the incorporation of passive recreation areas and stormwater management facilities.

The Wilga Wilson Precinct represents a substantially smaller scale development compared to the previously proposed Ingleside Precinct. It is strategically located in the lowest bushfire risk areas of the former Ingleside Planned Precinct and is situated below the identified pinch point on Powderworks Road, avoiding the primary evacuation constraint associated with the Ingleside Precinct.

If evacuation were required during a bushfire event, it is important to note that no evacuation routes, assembly points, or vehicle movements within or from the Wilga Wilson Precinct would occur within areas subject to radiant heat levels that could compromise life safety. The proposed development layout and road network within the Wilga Wilson Precinct have been deliberately designed to act as a buffer, with AS 3959-compliant buildings and managed APZs positioned between retained vegetation and the evacuation route.

Unlike Ingleside, which faced significant evacuation challenges due to its reliance on compromised routes through bushfire-prone areas, the Wilga Wilson Precinct benefits from multiple evacuation points that are clear of surrounding bushland and not subject to hazards such as

smoke, radiant heat, or active fire. This creates a fundamentally different and safer evacuation context for future residents, significantly reducing life safety risks associated with bushfire emergencies.

Powderworks Road serves as the main distributor road in the area, running along the northeast and east boundaries of the site. The Wilga Wilson Precinct PP area forms a new and discrete sub-precinct of the broader Ingleside Precinct, which has been identified in various past studies by the Department of Planning and Northern Beaches Council (NBC) as a future residential growth area, with current planning for Ingleside now being led by NBC. Importantly, the Wilga Wilson site benefits from direct access to Powderworks Road without traversing designated bushfire prone areas, meaning there are no evacuation impediments caused by potential bushfire attack along this route.

It is also important to recognise that evacuation is not the only bushfire safety strategy available. Appropriately planned, designed, and constructed developments in accordance with PBP and AS 3959: Construction of buildings in bushfire-prone areas and relevant bushfire protection measures—can provide safe areas of refuge for occupants during bushfire events, up to those rated at Catastrophic Fire Danger Rating (FDR). When development is carefully located in low-risk areas, like the Wilga Wilson Precinct, and paired with modern, compliant building construction and asset protection zones, it ensures a high level of life safety is maintained, even without the need for evacuation. This dual approach of ensuring clear, safe access to external evacuation routes while providing on-site refuge options through resilient development design, is a best-practice outcome for managing bushfire risk in peri-urban growth areas.

RFS Comment: On a broader scale, the site is surrounded by bush land in all directions, located within the Ingleside Chase Reserve, the Garigal National Park and the Ku-Ring-Gai Chase National Park. The site is accessed via Powderworks Road which extends east from the Mona Vale Road, major part of which travers through bush land and therefore may not be a safe evacuation route in the event of a bush fire attack. The main access road is shown further to the east of the subject site via Powderworks Road, as the only thorough road leading away from the hazard/Mona Vale Road before merging onto Pittwater Road.

The statement provided by the RFS is not supported by the actual site context, strategic bushfire risk assessment, or evacuation planning outcomes for the Wilga Wilson Precinct. Several inaccuracies and misrepresentations are evident:

1. The site is not surrounded by bushland in all directions. The Wilga Wilson Precinct is bordered to the west by the Monash Golf Club, to the south by the Elanora Country Club and large lot residential areas, and to the east by established urban development that is not bushfire prone land. To the north, while some areas of vegetation remain, these are

fragmented and separated by large lot residential development and Powderworks Road itself, which acts as a substantial separation feature.

2. It is not located within Ingleside Chase Reserve, Garigal National Park, or Ku-Ring-Gai Chase National Park. The Wilga Wilson site sits outside these public reserves and national parks. It is physically and spatially separated from Ingleside Chase Reserve by existing cleared land and development. Garigal National Park and Ku-Ring-Gai Chase National Park are located at substantial distances to the south and north respectively and do not directly interface with the site. This mischaracterisation significantly overstates the proximity and associated bushfire hazard.

3. Access is not reliant on traversing bushfire prone land. Powderworks Road forms the primary distributor road on the northeastern and eastern boundaries of the site, providing direct connection to the east toward Pittwater Road without requiring access via Mona Vale Road. Evacuation routes east of the site are through established, non-bushfire-prone urban areas, and do not traverse through significant bushland. The claim that Powderworks Road is the "only thorough road" leading away from Mona Vale Road is factually incorrect, multiple egress options to the east and southeast exist that remain clear of bushfire hazards. Further, as shown in Figure 2 Managed urban areas inherently provide effective areas of refuge during bushfire events due to their absence of unmanaged vegetation, reduced fuel loads, established road networks, and access to emergency services and infrastructure. These areas are clear of bushfire-prone land and are not subject to direct bushfire attack, radiant heat, or ember exposure at levels experienced in adjacent bushland interfaces. As a result, evacuation routes leading into managed urban environments — such as those available east of the Wilga Wilson Precinct via Powderworks Road and the wider urban road network offer safe and reliable refuge options for residents during bushfire emergencies. This reinforces that evacuation into nearby managed urban areas are both valid and effective bushfire risk management strategies for this precinct.

4. Evacuation is not the only bushfire safety strategy. The RFS statement fails to consider contemporary bushfire risk management principles, which clearly identify that appropriately planned, designed, and constructed development to AS 3959 standards, combined with strategic bushfire protection measures, provide safe refuge on-site up to Catastrophic FDR conditions. The Wilga Wilson Precinct has been deliberately located in the lowest risk areas of the former Ingleside release area, below the previously identified evacuation pinch point, and has multiple safe evacuation options clear of bushfire-prone land — a fact ignored in this assertion.

To the west, Monash Golf Club provides an extensive area of managed, non-bushfire-prone land (approximately 350m separation – see Figure 9), while to the south, Elanora Golf Club and existing large lot residential development further reduce exposure to significant bushfire hazards. A narrow, fragmented band of vegetation exists between the Elanora Golf Club and the large lot residential area, but this does not constitute a high risk bushfire corridor. To the east, the precinct is bordered by existing urban development, which is not classified as a bushfire hazard and offers additional protection from potential fire fronts. To the north, large lot residential areas and an area of retained bushland north of Powderworks Road are present, but this vegetation is sufficiently distant and does not present any evacuation challenges within the Wilga-Wilson Precinct site itself.

The evacuation challenges for the Ingleside Precinct focused on the unavailability of key evacuation routes along Mona Vale Road which would be compromised in the event of a large bushfire, which would force evacuation down Powderworks Road. Powderworks Road was compromised by an area of retained vegetation that formed a pinch point that could slow, hinder or stop evacuating residents from the Ingleside Precinct down Powder Works Road and into areas of managed land which are not bushfire prone. The pinch point is above the Wilga Wilson Precinct and no evacuation routes would be utilised toward or on Mona Vale Road in the event of a bushfire.

The Materplan Concept (Figure 3) provides multiple egress points out of the Wilga Wilson precinct that are not exposed to bushfire impact.

The distinct difference between the evacuation challenges for the Ingleside and Wilga Wilson precincts lies in their exposure to compromised evacuation routes. The Ingleside Precinct faced significant evacuation risks due to its reliance on Mona Vale Road, a key route that would be unavailable during a large bushfire and Powderworks Road, which is impeded by a pinch point of retained vegetation. This bottleneck could delay or prevent safe evacuation from Ingleside to managed, non-bushfire-prone areas. In contrast, the Wilga Wilson Precinct is not exposed to these risks, as no evacuation routes from this area that depend on Mona Vale Road, nor would they be affected by the pinch point above it. This separation creates a fundamentally different evacuation profile and level of bushfire evacuation risk for the two precincts.

Importantly, new development that is planned in accordance with PBP and designed, and constructed in accordance with AS 3959: Construction of buildings in bushfire-prone areas provides a significantly increased level of protection for occupants during a bushfire event. Buildings constructed to this standard are specifically designed to withstand bushfire attack, including ember attack, radiant heat, and direct flame contact, up to Catastrophic bushfire conditions. As a result, the building within the Wilga Precinct offer a defendable area of refuge for occupants, reducing or removing the need for evacuation. By sheltering within a properly constructed AS 3959-

compliant building, residents are provided with a higher level of safety in circumstances where evacuation may be unsafe, unfeasible, or unnecessary.

Importantly, no evacuation routes from this precinct are reliant on Mona Vale Road or traverse bushfire-prone areas. The combination of this surrounding low-risk context, internal vegetation management, and the application of bushfire-resilient building standards ensures that the Wilga-Wilson Precinct can be safely developed without introducing evacuation or life safety issues for future residents.

The RFS statement appears to be based on a broad, outdated, and inaccurate representation of site context and evacuation constraints more applicable to the former Ingleside Precinct proposal than the substantially smaller, better-positioned Wilga Wilson Precinct. The actual site risk context, combined with contemporary development and evacuation planning, contradicts the concerns raised in the statement, which lacks supporting evidence and a current, site-specific assessment.

RFS Comment: Whist new roads are proposed within the Wilga Wilson Precinct, these roads do not connect the proposed lots to surrounding areas to provide additional safe evacuation route for occupants. As a result, it is anticipated that the proposed roads which connects to the existing access layout (most likely Powderworks Road) will be utilised by both the emergency vehicles and the evacuating residents from the existing residential development and the proposed precinct. The suitability of the existing access network to provide safe access for firefighting and evacuation during a bush fire event must be demonstrated for the Wilga Wilson Precinct, which must not compromise the safety of the existing residents on adjoining land depending on the same network for emergency management.

In this regard, a traffic study must be prepared by a suitably qualified traffic engineer to assess the expected traffic volumes and to evaluate the evacuation routes. The recommendations and conclusion of this study must be considered in bush fire risk assessment at the landscape scale to support the planning proposal.

A separate traffic study has been completed that demonstrates that access and egress, including emergency access and egress is available to the site based on the proposed internal and existing external road network.

RFS Comment: Future dwellings on the proposed lots are required to provide appropriate asset protection zones (APZs) to achieve the radiant heat threshold of 29kW/m2 or less, along with the bush fire protection measures for construction, access, water and landscaping in accordance with Sections 8.2.1 and chapter 5 of PBP 2019. Preliminary assessment has indicated that the proposed apartments and detached housing along the proposed C2 zoned corridor is located within potential flame contact and therefore needs to be relocated to provide suitable APZs.

The vegetation within the riparian areas of the Wilga Wilson Precinct will consist of narrow, disconnected riparian corridors, rather than large, continuous tracts of bushland. As a result, these areas present a lower bushfire risk due to their limited width, fragmented nature, and position within a managed development context. In accordance with the PBP, this vegetation is appropriately classified and assessed as riparian vegetation, which carries different risk characteristics compared to broad areas of native bushland. The APZs)proposed (See Figure 31) within the Concept Master Plan have been determined based on the classification and requirements associated with riparian vegetation under PBP. The current Concept Master Plan has the capacity to accommodate the required APZs, ensuring compliance with bushfire protection requirements while maintaining appropriate ecological and waterway management outcomes.

Contrary to the RFS's comment, the BAL Map presented at Figure 33 does not identify any future dwellings within the BAL Flame Zone. The BAL (Bushfire Attack Level) mapping was prepared in accordance with *AS 3959: Construction of buildings in bushfire-prone areas* and the requirements of PBP, using conservative assumptions and maximum credible fire scenarios for the precinct. The mapping demonstrates that proposed future dwellings are located outside areas subject to BAL Flame Zone conditions, with the highest identified exposure limited to BAL-29 or lower, consistent with the application of appropriate APZs based on riparian vegetation classifications and site constraints. Some tighter Lots can be configured during subsequent development applications.

This outcome has been achieved through the careful positioning of development envelopes within the Concept Master Plan, ensuring that adequate separation is provided from retained riparian vegetation by perimeter roads and any other mapped bushfire-prone areas. The proposed APZs have been determined in accordance with PBP guidelines specific to riparian vegetation and have been successfully incorporated into the master plan layout without compromise to dwelling placement or safety standards.

As such, the assertion by the RFS regarding the presence of future dwellings in BAL Flame Zone is factually incorrect and unsupported by the current BAL mapping and site-specific bushfire assessment.

RFS Comment: The subdivision layout is required to include the provision of perimeter road(s) at the hazard interface as per Table 5.3b of PBP 2019. The concept master plan shows that majority of development proposed along the future C2: Environmental Conservation Corridor do not have perimeter roads to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel.

The RFS comment is incorrect and does not reflect the provisions and flexibility available under PBP which provides for both Acceptable Solutions (prescriptive measures) and Performance-Based Outcomes, recognising that site-specific circumstances may warrant alternative, yet equally effective, bushfire protection measures.

The revised Concept Masterplan for the Wilga Wilson Precinct incorporates perimeter roads to the south being Wilga Street, to the north by Powdeerworks Road and Wilson Ave and the east by Wilga Street and Powderworks Road. Internally perimiter roads are provided to the riparian areas around the entire site, with the only exception being where the precinct adjoins existing managed lands associated with the church grounds and existing detached dwellings along Wilson Avenue. These adjoining lands are not classified as bushfire-prone land, and therefore do not require perimeter roads under PBP.

Further, PBP's performance-based approach requires that "*firefighting vehicles are provided with safe, all-weather access to structures*". This requirement can and will be met through the masterplanned road network, which provides safe, continuous, all-weather access for firefighting operations to all dwellings within the precinct. The internal road network will be designed to meet or exceed PBP's minimum access requirements in terms of width, gradient, pavement strength, turning areas, and connectivity, ensuring effective emergency access and egress at all times.

Accordingly, the masterplan complies with both the intent and performance criteria of PBP, while making appropriate, context-specific allowances for existing managed land where perimeter roads are not necessary or required.

39. Conclusion

This Strategic Bushfire Study considers the suitability of the Planning Proposal with respect to bushfire risk within and affecting the site. A conservative position has been taken with regard to the SBS.

The Planning Proposal provides a highly suitable application that can respond to the bushfire risk affecting the site and which will 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 landscape 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 <29kW/m2 at building exposures and will be further assessed at development application stage. The Planning Proposal meets the requirements of PBP and should be supported with respect to bushfire risk management. This report has also considered the Draft Local Planning Direction 4.3 - Planning for Bushfire Protection which proposes updates to the original 4.3 Ministerial Direction including the consideration of bushfire risk out to 700m from the site.

The approach taken in the SBS and in the design of the PP has been to comply with PBP and the Ministerial Direction. The approach taken is consistent with the low bushfire risk of the PP. One of the key requirements for the RFS is the concept of proportionality which refers to ensuring that planning controls, conditions, and requirements are appropriate and commensurate with the scale, nature, risk and potential impacts of a proposed development.

The requirement of proportionality places a requirement on the RFS through the PP process to balance regulatory demands with practical feasibility, ensuring that responses to risks such as bushfire hazards are neither excessive nor insufficient. This is demonstrated in the SBS which can meet the requirements of PBP with further detailed studies to follow in subsequent development applications.

Proportionality when considering the PP ensures that planning decisions are fair, evidence-based, and appropriately tailored to the specific context of each development, avoiding both over-regulation and under-protection. By evaluating site-specific conditions, including landscape

context, vegetation management, access, and exposure pathways, a merit-based approach enables planners and decision-makers to apply bushfire protection measures that are both reasonable and effective. This ensures that the level of planning control and mitigation effort is commensurate with the real risk, supporting more efficient outcomes and allowing greater flexibility in site design, while still meeting the overarching objectives of safety and resilience.

In this context, proportionality informed by merit-based risk assessment supports a balanced approach, ensuring that planning controls reflect the true hazard level and do not impose unnecessary burdens where the bushfire risk within and to the site is low which is supported and reported as such by a BPAD Level 3 Certified Practitioner.

In the authors professional opinion, the Planning Proposal 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 issue of approval 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;
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

Appendix 1 References

Australasian Fire and Emergency Service Authorities Council (2012) *Bushfires and Community Safety*

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

NSW Rural Fire Service (2017) *Neighbourhood Safer Places: Guidelines for the Identification and Inspection of Neighbourhood Safer Places in NSW*. Issued November 2019.

NSW Rural Fire Service (2019). *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Rural Fire Service (2022). *Group Leader Manual GL-19 and Group Leader Training Package.*

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Standards Australia (2014) The storage and handling of LP Gas, AS/NZS 1596:2014. SAI Global, Sydney.

Appendix 2 Curriculum Vitae

BLACKASH
BUSHFIRE CONSULTING

Curriculum Vitae

Lew Short
Director BlackAsh Bushfire Consulting
T: 0419 203 853 E: lew.short@blackash.com.au

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 completed numerous industrial development assessments and assessments of new development in rural areas NSW.

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

- Rezoning and strategic studies
- Industrial development assessment
- Landuse planning & consequence management
- Legal strategy, Land & Environment Court and Expert Witness
- Bushfire planning, design & construction requirements in accordance with National Standards
- 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

BLACKASH
BUSHFIRE CONSULTING

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 3 years as a private sector bushfire consultant. He has undertaken a wide range of development assessment 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 20 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

Qualifications

Graduate Diploma of Bush Fire Planning & Design
Western Sydney University, 2022 – current

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

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)

Appendix 4 RFS Letter

RFS

NSW GOVERNMENT

Northern Beaches Council
PO Box 882
MONA VALE NSW 1660

Your reference: Scoping Proposal Ingleside
Our reference: SPI20241118000246

ATTENTION: Rebecca Sio

Date: Thursday 6 March 2025

Dear Sir/Madam,

Strategic Planning Instrument
Draft LEP – Other
Amendment to *Pittwater Local Environmental Plan 2014*

I refer to your correspondence dated 15/11/2024 inviting the NSW Rural Fire Service (NSW RFS) to comment on the above Strategic Planning document.

The NSW RFS has considered the information submitted and provides the following comments.

The proposal relates to an amendment to the *Pittwater Local Environmental Plan (PLEP) 2014* for the Wilga Wilson Precinct to rezone the site, to apply land use zones including RU2: Rural Landscape to R3: Medium Density Residential, C2: Environmental Conservation and RE1: Public Recreation and to initiate associated changes to the Minimum lot size map, Urban release area map, Biodiversity map and clause 4.5A Density controls. The proposed amendments will facilitate an increase in residential density to deliver up to 700 new homes within the Wilga Wilson Precinct.

The NSW RFS has reviewed the scoping report prepared by GLN Planning (dated: 17 October 2024, project number: 11901) and Wilga Wilson Precinct Masterplan prepared by Place Design Group (dated: 29 October 2024, document number: 230152).

Strategic Bush Fire Study
A strategic bush fire study must be prepared, with regard to the guidelines in Table 4.2 of *Planning for Bush Fire Protection (PBP) 2019* to justify the proposed amendments leading to a substantial increase in residential density. This study must give due regard to the issues raised in the Bushfire Risk Assessment prepared by Meridian Urban (dated29/08/2018, reference:18-014) for the Ingleside Planned Precinct, primarily relating to the ability of the existing infrastructure (traversing through significant bush land) to facilitate evacuation during bush fire emergencies.

The study should aim for the exclusion of inappropriate development in bush fire prone areas, as outlined in chapter 4 of *PBP 2019*:

- *the development area is exposed to a high bush fire risk and should be avoided;*
- *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;*

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RFS

NSW GOVERNMENT

- *the development will adversely effect other bush fire protection strategies or place existing development at increased risk;*
- *the development is within an area of high bush fire 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.*

Note: An update to Chapter 4 of PBP 2019 in response to recommendation 27 of the 2019/20 NSW Bush Fire Inquiry is underway.

On a broader scale, the site is surrounded by bush land in all directions, located within the Ingleside Chase Reserve, the Garigal National Park and the Ku-Ring-Gai Chase National Park. The site is accessed via Powderworks Road which extends east from the Mona Vale Road, major part of which travers through bush land and therefore may not be a safe evacuation route in the event of a bush fire attack. The main access road is shown further to the east of the subject site via Powderworks Road, as the only thorough road leading away from the hazard/Mona Vale Road before merging onto Pittwater Road.

Whist new roads are proposed within the Wilga Wilson Precinct, these roads do not connect the proposed lots to surrounding areas to provide additional safe evacuation route for occupants. As a result, it is anticipated that the proposed roads which connects to the existing access layout (most likely Powderworks Road) will be utilised by both the emergency vehicles and the evacuating residents from the existing residential development and the proposed precinct. The suitability of the existing access network to provide safe access for firefighting and evacuation during a bush fire event must be demonstrated for the Wilga Wilson Precinct, which must not compromise the safety of the existing residents on adjoining land depending on the same network for emergency management.

In this regard, a traffic study must be prepared by a suitably qualified traffic engineer to assess the expected traffic volumes and to evaluate the evacuation routes. The recommendations and conclusion of this study must be considered in bush fire risk assessment at the landscape scale to support the planning proposal.

Bush Fire Report

The issues in relation to compliance of the proposed residential subdivision with chapter 5 of *PBP 2019*, must be addressed in a bush fire report prepared by a suitably qualified bush fire consultant.

Future dwellings on the proposed lots are required to provide appropriate asset protection zones (APZs) to achieve the radiant heat threshold of 29kW/m² or less, along with the bush fire protection measures for construction, access, water and landscaping in accordance with Sections 8.2.1 and chapter 5 of *PBP 2019*. Preliminary assessment has indicated that the proposed apartments and detached housing along the proposed C2 zoned corridor is located within potential flame contact and therefore needs to be relocated to provide suitable APZs.

The subdivision layout is required to include the provision of perimeter road(s) at the hazard interface as per Table 5.3b of *PBP 2019*. The concept master plan shows that majority of development proposed along the future C2: Environmental Conservation Corridor do not have perimeter roads to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel.

For any queries regarding this correspondence, please contact Surbhi Chhabra on 1300 NSW RFS.

Yours sincerely,

BLACKASH
IRE CONSULTING

RFS

NSW GOVERNMENT

Kalpana Varghese
Supervisor Development Assessment & Plan
Built & Natural Environment

Appendix 5 Meridian Urban Ingleside Bushfire Risk Assessment

The main findings of the Meridiam Urban *Bushfire Risk Assessment for the Ingleside Planned Precinct* are as follows:

Key Observations

1. **Existing Risk**: Ingleside is exposed to extreme bushfire risk due to its proximity to Ku-ring-gai Chase and Garigal National Parks. Historical fire events, such as the 1994 Cottage Point fire, demonstrate the area's vulnerability.

2. **Proposed Development**: The draft Structure Plan proposes a nine-fold population increase (from 1,080 to 9,000 people), which significantly heightens risk exposure.

3. **Ecological Conflicts**: Conservation measures in the plan conflict with bushfire risk mitigation, as retained vegetation corridors may facilitate fire intrusion into the precinct.

4. **Risk to Property**: While property risk can be mitigated to some extent, almost 2,000 dwellings (5,000 occupants) could be expected to be lost in a catastrophic event.

5. **Risk to Life**: Life safety risk is more complex and remains the core criterion for development acceptability. Evacuation challenges, human behavior during emergencies, and the road network's limitations exacerbate this risk.

Evacuation Challenges

- Ingleside is surrounded by bushfire hazards, and evacuation routes traverse bushland, creating bottlenecks and single points of failure.

- Approximately 25% of Mona Vale Road, a key evacuation route, is exposed to potential flame contact.

- Evacuating 9,000 people in a short timeframe during a catastrophic event is unlikely to be feasible.

Mitigation Testing

- No clear mitigation pathway was identified to reduce risk to an acceptable level.

- The proposed road upgrades and evacuation network are insufficient to support the increased population during emergencies.

- The draft Structure Plan fails to adequately address the compounding risks of density, settlement patterns, and evacuation challenges.

Conclusion

The risk assessment concludes that the current draft Structure Plan cannot mitigate bushfire risk to a universally acceptable level. The scale and complexity of risks to life and property, coupled with evacuation challenges, make further development in Ingleside inappropriate under the current framework.