




**Holiday Coast
Bushfire Solutions**

Steve Ellis
Bushfire Risk Assessor
MACKSVILLE NSW
Mobile: 0419 245 725
E-mail: steve@bushfiresolutions.com.au

BUSHFIRE STRATEGIC STUDY

REPORT PREPARED IN RELATION TO:	PLANNING PROPOSAL AND RURAL SUBDIVISION
PROPERTY DESCRIPTION:	ABERGLASSLYN URBAN RELEASE AREA, OAKHAMPTON ROAD AND KEZIA ROAD, OAKHAMPTON, MAITLAND.
REPORT COMMISSIONED BY: (my Client)	Bremer Park Pty Ltd (Walker Corp Holdings Pty Ltd)
	 DATE ISSUED: 10/06/2022

VERSION	REVISION
1	Original

Table of Contents

1	FRAMEWORK	6
1.1	LEGAL FRAMEWORK	6
1.2	BUSHFIRE PRONE LAND MAPPING	6
1.3	STRATEGIC PLANNING.....	7
1.4	DEVELOPMENT ASSESSMENT	8
1.5	CONSTRUCTION PROVISIONS: THE NATIONAL CONSTRUCTION CODE (NCC) AND BUSHFIRE STANDARDS	11
1.6	PLANNING FOR BUSHFIRE PROTECTION	11
2	INTRODUCTION.....	14
3	BUSHFIRE STRATEGIC STUDY	17
3.1	BUSHFIRE LANDSCAPE ASSESSMENT	17
3.2	LAND USE ASSESSMENT	23
3.3	ACCESS AND EGRESS.....	32
3.4	EMERGENCY SERVICES.....	38
3.5	INFRASTRUCTURE	41
3.6	ADJOINING LAND	43
4	MINISTERIAL DIRECTIONS (SECTION 9.1(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979)	44
4.1	A PLANNING PROPOSAL MUST HAVE REGARD TO PLANNING FOR BUSHFIRE PROTECTION 2019	45
4.2	A PLANNING PROPOSAL MUST INTRODUCE CONTROLS THAT AVOID PLACING INAPPROPRIATE DEVELOPMENTS IN HAZARDOUS AREAS	54
4.3	A PLANNING PROPOSAL MUST ENSURE THAT BUSHFIRE HAZARD REDUCTION IS NOT PROHIBITED WITHIN THE APZ	54
4.4	A PLANNING PROPOSAL MUST, WHERE DEVELOPMENT IS PROPOSED, COMPLY WITH THE FOLLOWING PROVISIONS, AS APPROPRIATE - PROVIDE AN ASSET PROTECTION ZONE (APZ) INCORPORATING AT A MINIMUM 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	55
4.5	A PLANNING PROPOSAL MUST, WHERE DEVELOPMENT IS PROPOSED, COMPLY WITH THE FOLLOWING PROVISIONS, AS APPROPRIATE - PROVIDE AN ASSET PROTECTION ZONE (APZ) INCORPORATING AT A MINIMUM AN OUTER PROTECTION AREA MANAGED FOR HAZARD REDUCTION AND LOCATED ON THE BUSHLAND SIDE OF THE PERIMETER ROAD	55
4.6	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.....	56
4.7	CONTAIN PROVISIONS FOR TWO-WAY ACCESS ROADS WHICH LINKS TO PERIMETER ROADS AND/OR TO FIRE TRAIL NETWORKS	58
4.8	CONTAIN PROVISIONS FOR ADEQUATE WATER SUPPLY FOR FIREFIGHTING PURPOSES	58
4.9	MINIMISE THE PERIMETER OF THE AREA OF LAND INTERFACING THE HAZARD WHICH MAY BE DEVELOPED	59
4.10	INTRODUCE CONTROLS ON THE PLACEMENT OF COMBUSTIBLE MATERIALS IN THE INNER PROTECTION AREA	59
5	CONCLUSION AND RECOMMENDATIONS	60
5.1	LIMITATION	61
6	REFERENCES.....	62
7	APPENDICES	62

Table of Figures

Figure 1: extract of MCC's BPLM	7
Figure 2: site map (Walker Corp. Scoping Proposal Report)	15
Figure 3: proposed masterplan (Urbanco, 25/5/2022)	16
Figure 4: Table 7.9a of PBP-2019	24
Figure 5: schematic of different approaches to providing APZs / separation	24
Figure 6: plan identifying BAL zones across development site (9/6/2022)	26
Figure 7: plan identifying GDP zones across development site (9/6/2022)	27
Figure 8: plan identifying <i>Special Fire Protection Purpose</i> setbacks across development site (9/6/2022)	28
Figure 9: extract from "Scoping Proposal Report" (Walker Corporation P/L, March 2022)	29
Figure 10: McKeachie Drive terminates at site boundary	32
Figure 11: McKeachie Drive, looking west from Dunnart Street	33
Figure 12: Dunnart Street, looking south from Goshawk Street	33
Figure 13: Goshawk Street terminates at site boundary	33
Figure 14: looking east along Oakhampton Road	34
Figure 15: looking west along Oakhampton Road	34
Figure 16: Oakhampton Road network	36
Figure 17: Table A1.12.2 of PBP-2019	46

IMPORTANT NOTICE

Site inspections, and the results found herein, are carried out in accordance with the methodology as set out in the documents Planning for Bushfire Protection 2006 & 2019.

The results of the site inspections and their correlation with PBP are based on information provided by the "Reference Documents" and information provided by the Client (or his/her agents).

HCBS Pty Ltd will not be held liable for the omission to provide, or restrict access to, critical information (such as restrictions on property Title, easements, relevant consultant reports, etc) relevant to this development proposal.

The author of this Report, S. Ellis, possesses qualifications which include Graduate Diploma in Design for Bushfire Prone Areas (UWS) and Certificate 2 & 3 in Firefighting Operations and Certificate 4 in Firefighting Supervision.

This Report is not an application for a Bushfire Safety Authority, but rather forms part of such application. It is the proponent's responsibility to provide the Consent Authority with an assessment of the matters set out in Clause 44 of the Rural Fires Regulation 2013. It is the Consent Authority's responsibility to provide the application for a Bushfire Safety Authority to the NSW Rural Fire Service, in its entirety.

© **Holiday Coast Bushfire Solutions Pty Ltd, 2020**

Commercial in confidence. The information contained in this document produced by **HCBS Pty Ltd** is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared. **HCBS Pty Ltd** undertakes no duty to, or accepts any responsibility to, any third party who may rely upon this document. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of **HCBS Pty Ltd**. All rights reserved.

GLOSSARY

Acceptable solution	Measures which have been deemed to meet the specified performance criteria.
Assembly point	An area or building/structure that is used to assemble people for evacuation or that have evacuated from a site in an emergency situation.
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 asset protection zone varies with slope, vegetation and Fire Danger Index (FDI).
Australian Standard AS 3959 (AS 3959)	AS 3959:2009 <i>Construction of buildings in bushfire-prone areas</i> , Standards Australia, 2009.
BAL certificate	A certificate issued to identify the bushfire attack level (BAL) of a proposed development in the Complying Development process under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
BFCC	Bush Fire Coordinating Committee
BFMC	Bush Fire Management Committee



Bushfire assessment report	A report submitted with the development application (DA) which establishes compliance with PBP. The report determines the extent of bushfire attack and the proposed mitigation measures. Appendix 1 sets out the information requirements for a bushfire assessment. See also clause 44 of the <i>Rural Fires Regulation 2013</i> .
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. In the Building Code of Australia, the BAL is used as the basis for establishing the requirements for construction to improve protection of building elements.
Bushfire	An unplanned fire burning in vegetation; also referred to as wildfire.
Bushfire attack	Attack by burning embers, radiant heat or flame generated by a bushfire.
Bushfire hazard	Any vegetation that has the potential to threaten lives, property or the environment.
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 prone land map (BPLM)	A map prepared in accordance with NSW RFS requirements and certified by the Commissioner of the NSW RFS under section 10.3(2) of the <i>Environmental Planning and Assessment Act 1979</i> .
Bushfire protection measures (BPMs)	A range of measures (controls) used to minimise the risk arising from a bushfire. BPMs include asset protection zones (APZs), construction standards, suitable access, water and utility services, emergency management and landscaping.
Bushfire risk	Is the likelihood and consequence of a bushfire igniting, spreading and causing damage to assets of value to the community. Risk may be rated as being extreme, major, moderate, minor or insignificant and is related to the vulnerability of the asset.
BRMP	Bushfire Risk Management Plan
Bushfire safety authority (BSA)	An approval by the Commissioner of the NSW RFS that is required for a subdivision for residential or rural residential purpose or for a SFPP development listed under section 100B (6) of the <i>Rural Fires Act 1997</i> .
Certifying authority	As defined in the <i>Environmental Planning and Assessment Act 1979</i> , those with authority to issue Part 6 certificates and Complying Development Certificates (CDCs).
Complying development	Complying development is a combined planning and construction approval for straightforward development that can be determined through a fast track assessment by a council or private accredited certifier.
Consent authority	As defined in the <i>Environmental Planning and Assessment Act 1979</i> , in relation to development consents, usually the local council.
Defendable space	An area adjoining an asset that is managed to reduce combustible elements and is free from constructed impediments. It is a safe working environment in which active firefighting can be undertaken to defend the structure, before and after the passage of a bushfire.
Development	As defined in the <i>Environmental Planning and Assessment Act 1979</i> .
Development application (DA)	An application for consent to carry out development such as building, subdivision, or the use of a building or land. Applications are normally made to the local council.
Development footprint	The building envelope or area shown on a plan over which any buildings and associated asset protection zones may be constructed.
Ecologically sustainable development	As defined in section 6 of the <i>Protection of the Environment Administration Act (NSW) 1991</i> .
Effective slope	The land beneath the vegetation which most significantly affects fire behaviour, having regard to the vegetation present.
Exit	A doorway opening to a road or open space, as defined in the National Construction Code (NCC).
Fire Danger Index (FDI)	The chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long- and short-term drought effects. Note: FDI in PBP refers to the Forest Fire Danger Index calculated by the McArthur Mk 5 Forest Fire Danger Meter using the equations published by Noble, I.R., Bary, G.A.V., and Gill, A.M., 1980. Grassland Fire Danger Index (GFDI) values are calculated by the McArthur Mk 4 Grassland Fire Danger Meter using the equations published by Purton, C.M., 1982.
Flame zone	The distance from a bushfire at which there is deemed to be significant potential for sustained flame contact to a building. The flame zone is determined by the calculated distance at which the radiant heat from the design fire exceeds 40kW/m ² .



Grasslands	Grassed areas capable of sustaining a fire. Under Australian Standard 3959, this is identified as low open shrubland, hummock grassland, closed tussock grassland, tussock grassland, open tussock, sparse open tussock, dense sown pasture, sown pasture, open herbfield, and sparse open herb field. Grass, whether exotic or native, which is regularly maintained at or below 10cm in height (including maintained lawns, golf courses, maintained public reserves, parklands, nature strips and commercial nurseries) is regarded as managed land.
Grassland deeming provision	An acceptable solution applying to properties in grassland hazard areas which replaces the site assessment procedure in AS 3959.
Infill development	Refers to the development of land by the erection of or addition to, a building (or buildings), which is within an existing allotment and does not require the spatial extension of services. Existing services may include public roads, electricity, water or sewerage.
Inner protection area (IPA)	The component of an asset protection zone which is closest to the asset (measured from drip line). It consists of an area maintained to minimal fuel loads so that a fire path is not created between the hazard and the building.
Integrated development	As referred to under s4.46 (formerly S91) of the <i>Environmental Planning and Assessment Act 1979</i> , an integrated development is one that requires development consent and approval from one or more government agencies, and is not a state significant development (SSD) or complying development.
Isolated development	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 bushfire prone areas.
Local Environmental Plan (LEP)	An environmental planning instrument prepared under Part 3 of the <i>Environmental Planning and Assessment Act 1979</i> . Local environmental plans guide planning decisions and the ways in which land is used through zoning and development controls.
Managed land	Land that has vegetation removed or maintained to a level that limits the spread and impact of bushfire. It may include existing 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 will be managed to meet the requirements of an asset protection zone.
National Construction Code (NCC)	The National Construction Code, published by the Australian Building Codes Board, comprising the Building Code of Australia as Volumes One and Two, and the Plumbing Code of Australia as Volume Three.
Outer protection area (OPA)	The outer component of an asset protection zone, where fuel loads are maintained at a level where the intensity of an approaching bushfire would be significantly reduced. Applies to forest vegetation only.
Performance-based solution	A method of complying with the Performance Criteria other than by an acceptable solution.
Primitive camping	A predetermined site which is part of a commercially operated venture where there may already be a site for a tent and a fire pit.
Setback	The distance required through planning provisions to separate a building from the bushfire hazard, street frontage or from adjacent buildings or property boundary.
Short fire run	A fire run which has a single point of ignition and a short distance to travel, where the calculated resultant head width is less than 100 metres.
Special fire protection purpose (SFPP) developments	Developments where the vulnerable nature of the occupants means a lower radiant heat threshold is required in order to allow the evacuation of occupants, and emergency services to operate in support of those occupants.
State Environmental Planning Policy (SEPP)	An environmental planning instrument prepared under Part 3 of the <i>Environmental Planning and Assessment Act 1979</i> .
Subdivision	As defined in the <i>Environmental Planning and Assessment Act 1979</i> .
Tourist accommodation	A building or place that provides temporary or short-term accommodation on a commercial basis including backpackers accommodation, bed and breakfast accommodation, farm stay accommodation, hotel or motel accommodation and serviced apartments.
Vegetation classification	Vegetation type identified using the formations and classifications within <i>Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT (Keith, 2004)</i> .



1 FRAMEWORK

Below are relevant extracts of the document “Planning for Bushfire Protection 2019” (PBP-2019). Sections have been suitably modified to reflect the scope of this proposed development and its relationship with the relevant legislation.

1.1 Legal Framework

The Environmental Planning and Assessment Act 1979 (EP&A Act) and the Rural Fires Act 1997 (RF Act) were amended on 1 August 2002 to enhance bushfire protection in the development assessment process.

The NSW land use planning framework provides, in broad terms, two main phases: strategic planning and development assessment.

PBP-2019 provides the foundation for the application of bushfire protection during both of these phases of development. Appropriate consideration of bushfire hazards at the strategic planning phase is required by the EP&A Act s.9.1(2) and PBP-2019 should be considered in applying the Section 9.1 Direction.

At the development assessment phase, development on land that is identified as being bushfire prone must comply with PBP-2019. Some types of development on BPL can be undertaken as Complying Development and must also comply with PBP-2019.

A Bushfire Safety Authority (BSA) is required from the NSW RFS for residential and rural residential subdivision and *Special Fire Protection Purpose* (SFPP) developments on BPL. An application for a BSA must address the extent to which the development complies with PBP-2019.

Building work on BPL must also comply with the requirements of the National Construction Code (NCC). The NCC contains the technical provisions for the design and construction of buildings. 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). This does not apply however in Bushfire Attack Level - Flame Zone (BAL-FZ), or where modified by the specific conditions of the relevant development consent.

1.2 Bushfire Prone Land Mapping

The identification of Bushfire Prone Land in NSW is required under the EP&A Act s.10.3. BPL Maps provide the trigger for the various development assessment provisions.

The Commissioner of the NSW RFS designates what constitutes BPL and how it is to be mapped. Each council prepares a map in accordance with the guidelines and submits the map to the NSW RFS for certification by the Commissioner. These maps are required to be

recertified at least every five years and the Commissioner may make direct changes to a BPL Map at any time.

Guidelines for the mapping of BPL can be found on the NSW RFS website at www.rfs.nsw.gov.au.

You can determine whether a site is mapped as being bushfire prone by referring to the BPL Map which is held by the local council, or on the NSW RFS website.

The BPL Map is a trigger for the consideration of BPL Maps for new development. It is not intended as a detailed measure of risk. The map does not form part of the site assessment process, which must be carried out in accordance with Appendix 1 of PBP-2019. A consent authority can refer a development application (DA) to the NSW RFS under the provisions of EP&A Act s.4.15, even where it is not mapped as BPL.

The subject property has been identified as BPL by the Maitland City Council's BPL map, an extract of which is provided below.



Figure 1: extract of MCC's BPLM

(©NSW Crown Copyright – Department of Planning, Industry and Environment)

1.3 Strategic planning

Strategic planning is the preparation of planning instruments and policies and includes the making of Local Environmental Plans (LEPs), Development Control Plans (DCPs), housing strategies and other planning instruments that identify proposed uses and land zonings. This also includes any associated strategic proposals and studies.

The strategic planning phase of development is particularly important in contributing to the creation of safer and sustainable communities (COAG 2011). It is an effective way of achieving bushfire protection objectives in new developments.



Strategic bushfire 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 *PBP-2019* is achievable.

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.

Planning instruments and policies can ensure bushfire management principles are given appropriate consideration at all stages of the planning and development process.

Once development has been assessed as being appropriate in its bushfire prone context, it will need to be capable of complying with *PBP-2019*. The ability of proposed land uses and associated future developments to comply with *PBP-2019* will be assessed at the strategic planning stage. The expectation will be that the development will be able to comply with *PBP-2019* at the DA stage.

1.4 Development assessment

The provisions of *PBP-2019* apply to all development on land which is bushfire prone (see section 2.2 of *PBP-2019*). *PBP-2019* may also apply where proposals are referred to the NSW RFS under other referral instruments such as *EP&A Act* s.4.15.

If a development of a type not specifically addressed in *PBP-2019* is proposed on BPL, the development must meet the Aim and Objectives of *PBP-2019* and the consent authority can refer the proposal to the NSW RFS for advice. The NSW RFS will advise which specific standards apply to that development. In these circumstances, the development proposal will be a performance-based solution and in more complex cases, this may be achieved collaboratively through the BFDB process.

The vast majority of DAs in NSW are assessed by local councils. Councils may assess DAs for certain developments on BPL that are compliant with this document without the need to refer the proposal to the NSW RFS.

In certain cases building work may not require development consent and can proceed through the Exempt or Complying Development process if the development type is covered by a State Environmental Planning Policy (SEPP) or the relevant LEP.

For further information on development types, please contact the local council or the NSW Department of Planning, Industry and Environment (DPIE).

1.4.1 Development requiring a Bushfire Safety Authority

Proposals for subdivision and *SFPP* development on BPL require an approval from the NSW RFS in the form of a BSA under *RF Act* s.100B.



Development requiring a BSA is considered Integrated Development under *EP&A Act* s.4.46.

The BSA is critical in ensuring these key developments are designed and located in a manner that is suitable to protect human life and facilitate appropriate operational firefighting arrangements. This is a means by which the NSW RFS Commissioner fulfills their statutory obligation to ensure the protection of the community, including firefighters from the impacts of bushfire.

1.4.2 State significant development and infrastructure

In September 2011, *EP&A Act* pt. 3A was repealed, leading to the creation of two new major project development categories: state significant infrastructure (SSI) and state significant development (SSD).

Because of their size, complexity, importance and/or potential impact, DPIE is predominantly responsible for assessing these DAs. The Minister for Planning and Public Spaces is the consent authority for SSI and SSD applications.

Applications under the now-repealed Part 3A of the *EP&A Act* and state significant projects are exempt from requiring a BSA and are not required to be assessed under *EP&A Act* s4.14.

Given the scale of SSI and SSD projects, the requirements of *PBP-2019* should still be applied, and seeking advice from the NSW RFS is encouraged. Even where comments have been provided by the NSW RFS at the strategic planning stage, future DAs may benefit from further advice from the NSW RFS.

1.4.3 Streamlining development assessment

The NSW Government has provided a pathway for streamlined assessment to occur under the *Environmental Planning and Assessment Regulation 2021* cl.272 for new lots in Urban Release Areas (URAs) that are located on BPL.

The streamlining process allows the assessment of bushfire provisions at subdivision stage within URAs and may exempt the lots from reassessment of bushfire issues when land owners are ready to develop their lots. Post-Subdivision Bushfire Attack Level Certificates may be issued assigning BALs to all individual lots within the subdivision. An applicant can rely on this Post-Subdivision BAL Certificate for Complying Development up to and including BAL-29.

The option to use Complying Development also allows for a streamlined process for developing on BPL.



1.4.4 Infill and other development

The EP&A Act s.4.14 requires that the consent authority be satisfied that the relevant specifications and requirements of *PBP-2019* are complied with for development on BPL. This applies to any development other than subdivision of land that could lawfully be used for residential purposes or development for a *SFPP*. This can be achieved by the following means:

- a. the consent authority is satisfied that the development conforms to the specifications and requirements of *PBP-2019*; or
- b. the consent authority has been provided with a certificate by a person who is recognised by the NSW RFS as a qualified consultant in bushfire risk assessment stating that the development conforms to the relevant specifications and requirements; or
- c. If the consent authority is satisfied that the development does not conform to the relevant requirements of *PBP-2019*, it may still grant consent to the development but only after it has consulted with the Commissioner of the NSW RFS concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bushfire.

1.4.5 Exempt and Complying Development

Some straightforward residential, commercial and industrial development can be undertaken as Exempt or Complying Development under various SEPPs and LEPs.

Exempt Development is minor building works that can be carried out without development approval, such as decks, garden sheds, carports and fences.

Complying Development can be undertaken on lower risk BPL up to and including BAL-29 where the appropriate construction requirements and all other relevant development standards have been met. Complying Development is not permitted on higher risk BPL (BAL-40 or BAL-FZ) and a DA is required in these circumstances.

Specified development requirements and standards apply to new development, including alterations and additions, to ensure the relevant provisions of *PBP-2019* are met. This allows for Complying Development on BPL, while maintaining an appropriate assessment regime for managing bushfire risk.

In certain circumstances, a BAL Certificate must be obtained from the local council or a person recognised by the NSW RFS as a suitably qualified consultant in bushfire assessment, stating that the development is not located in BAL-40 or BAL-FZ.

The development must also meet the identified development standards within the relevant SEPP or LEPs.



1.5 Construction provisions: the National Construction Code (NCC) and bushfire standards

The NCC is a performance based code which comprises the Building Code of Australia (BCA) as Volumes 1 and 2 and the Plumbing Code of Australia as Volume 3.

The NCC contains Performance Requirements and Deemed-to-Satisfy provisions relating to the construction of buildings in bushfire prone areas. In NSW, these provisions apply to Class 1, 2 and 3 buildings, Class 4 parts of a building, Class 9 buildings that are SFPPs, and associated class 10a buildings and decks.

The construction requirements of AS 3959 and the National Association of Steel-framed Housing (NASH) Standard are a Deemed-to-Satisfy solutions in the NCC, as varied in NSW, for buildings in designated bushfire prone areas.

1.6 Planning for Bushfire Protection

1.6.1 Aim and objectives

All development on BPL must satisfy the aim and objectives of *PBP-2019*.

The aim of *PBP-2019* 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 are to:

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

1.6.2 Bushfire protection principles

Bushfire protection can be achieved through a combination of strategies which are based on the following principles:

- control the types of development permissible in bushfire prone areas;
- minimise the impact of radiant heat and direct flame contact by separating development from bushfire hazards;



- minimise the vulnerability of buildings to ignition and fire spread from flames, radiation and embers;
- enable appropriate access and egress for the public and firefighters;
- provide adequate water supplies for bushfire suppression operations;
- focus on property preparedness, including emergency planning and property maintenance requirements; and
- facilitate the maintenance of Asset Protection Zones (APZs), fire trails, access for firefighting and on site equipment for fire suppression.

1.6.3 How to use PBP

Applications for development on BPL should include a bushfire assessment report. This report must demonstrate that the proposal satisfies the requirements of *PBP-2019*. All applications must meet the Aim and Objectives of *PBP-2019*.

PBP-2019 uses a performance-based approach, and identifies objectives and detailed *performance criteria* to satisfy desired outcomes and meet the Aim and Objectives. Ultimately, any performance-based approach must demonstrate that bushfire protection is afforded to a proposed development commensurate with the assessed level of bushfire risk and the characteristics of the occupants.

This can be achieved by either applying the identified *acceptable solutions*, or by preparing a performance-based solution.

A performance-based solution must be designed to achieve the appropriate level of protection by tailoring a package of measures which meet the intent and *performance criteria* relevant to the proposed development.

BPMs are set out in Chapter 3 of *PBP-2019*. *Performance criteria* and *acceptable solutions* are shown for each specified development type in Chapters 5 - 8.

1.6.3.1 Bushfire protection measures

BPM's are the relevant specifications and requirements that need to be satisfied to improve life safety, property protection and community resilience to bushfire attack.

They include:

- APZs;
- Access;
- Construction, siting and design;
- Landscaping;
- Services; and
- Emergency and evacuation planning.



1.6.3.2 Intent

For each BPM, a broad intent is outlined. The ensuing *performance criteria* and *acceptable solutions* are designed to ensure that the general intent for each BPM is met.

1.6.3.3 Performance criteria

Performance criteria are the outcomes that need to be achieved to satisfy the intent. The *performance criteria* can be satisfied in one of the following ways:

- *acceptable solutions*; or
- performance-based solution; or
- the combination of the above.

1.6.3.4 Acceptable solutions

Chapters 5 - 8 of *PBP-2019* identify *acceptable solutions* which are considered by the NSW RFS as meeting the *performance criteria*.

1.6.3.5 Performance based solutions

Performance-based solutions allow flexibility and innovation in responding to site-specific opportunities and constraints while still meeting the identified *performance criteria*. They also allow the consideration of a broad range of issues and information, including bushfire risk, community expectations, environmental protection and the application of new science, processes and technologies.

Performance-based solutions must provide substantiated evidence and clearly demonstrate how the specific objectives and *performance criteria* are to be satisfied.

When performance-based solutions are proposed, they will be assessed on their merits and individual circumstances. In these circumstances, a Bushfire Design Brief (BDB) process can be undertaken which would involve early agreement on the key elements and acceptance criteria from all stakeholders including the NSW RFS.

Performance-based solutions may be undertaken for any of the BPMs detailed in Chapter 3 of *PBP-2019* and supported in accordance with the submission requirements in Appendix 2 of *PBP-2019*.



2 INTRODUCTION

The information provided below has been extracted from the proponent's "Scoping Proposal Report" (already tabled to the Maitland City Council), and modified to suit the formatting and context of this *Bushfire Strategic Study*.

The proponent for the planning proposal is Walker Corporation and Bremer Park Pty Limited (together Walker).

The planning proposal site (the "**Site**") is identified in **Error! Reference source not found..**

The Site comprises of the properties listed in **Error! Reference source not found..**

The Site is located within the Maitland Local Government (LGA) at Oakhampton, on the southern side of the Hunter River.

The surrounding area is of a low-density residential and rural nature.

The Site is within the Aberglasslyn Urban Release Area, and the western boundary adjoins the existing residential neighbourhood of McKeachies Run.

The Site adjoins rural land to the east and south, and the Hunter River to the north.

The Site is gently undulating and is largely cleared.

The proposal seeks to amend the MLEP 2011 to rezone the Site from RU1 Primary Production and RU2 Rural Landscape to R1 General Residential and C3 Environmental Management. The existing C2 Environmental Conservation zone will not be altered.

The proposal also seeks to amend MLEP 2011 to expand the Aberglasslyn Urban Release Area (URA).

This Scoping Proposal Report is submitted to the Planning Proposal Authority (i.e. Maitland City Council) requesting it to exercise its functions under Division 3.4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) to amend the Maitland Local Environmental Plan 2011 (MLEP 2011) and rezone land within the Aberglasslyn Urban Release Area at Oakhampton.

Table 1: properties (or parts thereof) comprising the site

Property Description	Street Address	Land Area
Lot 1 DP 1012258	42 Kezia Road	35.2 Ha
Lot 8 DP 248331	43 Kezia Road	10.1 Ha
Lot 7 DP 248331	37 Kezia Road	2 Ha
Lot 6 DP 248331	35 Kezia Road	2 Ha
Lot 5 DP 248331	29 Kezia Road	2 Ha
Lot 1 DP 562346	502 Oakhampton Road	2 Ha
Lot 2 DP 562346	486 Oakhampton Road	2 Ha
Lot 3 DP 562346	478 Oakhampton Road	2 Ha
Lot 4 DP 248331	25 Kezia Road	2 Ha
Lot 1 DP 1086271	487 Oakhampton Road	7.2 Ha
Lot 1 DP 826919	473 Oakhampton Road	15.6 Ha*
Lot 66 DP 810466	461 Oakhampton Road	4.7 Ha
Lot 7 DP 998430	355 Oakhampton Road	13.5 Ha*
Lot 8 DP 998430	355 Oakhampton Road	12.7 Ha*



Figure 2: site map (Walker Corp. Scoping Proposal Report)



Figure 3: proposed masterplan (Urbanco, 25/5/2022)



3 BUSHFIRE STRATEGIC STUDY

3.1 Bushfire 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.

Some of the information provided below has been extracted from the Hunter Bushfire Risk Management Plan (HBRMP). The aim of the HBRMP is to minimise the risk of adverse impact of bushfires on life, property and the environment. The objectives of the HBRMP are to:

- reduce the number of human-induced bush fire ignitions that cause damage to life, property and the environment;
- manage fuel to reduce the rate of spread and intensity of bush fires, while minimising environmental/ecological impacts;
- reduce the community's vulnerability to bush fires by improving its preparedness; and
- effectively contain fires with a potential to cause damage to life, property and the environment.

Chapter 4 of the HBRMP states that the Plan must be reviewed and updated within each successive five-year period from the constitution of the Bush Fire Management Committee. The BFMC will also review this plan as necessary to account for any changes in context or risk. This may be triggered by a range of circumstances, including but not limited to:

- changes to the BFMC area, organisational responsibilities or legislation;
- changes to the bushfire risk in the area; or
- following a major wildfire event.

The current Plan was signed by the Chairperson of the BFMC on 29/4/2009 (some 13 years ago), and then 'signed off' by the Bush Fire Coordinating Committee on 16/9/2009, meaning that the HBRMP is out-of-date at the time of preparing this Study.

3.1.1 The bush fire hazard in the surrounding area, including: Vegetation; Topography; Weather

3.1.1.1 Vegetation

The site is located on the north-eastern interface of the City of Maitland. Oakhampton is one of several suburbs of Maitland, with the predominant landuse being either residential (as in the Aberglasslyn urban release area) large-lot residential, or agriculture.

Due to the continual agricultural landuse around the developed residential areas, the predominant vegetation is grasslands, generally as improved pasture. This is generally



consistent with all exposures to the site except for the urban development to the immediate west of the site. The improved pasture areas generally occupy all of the areas that are not frequently inundated with flood waters.

The risk posed by grassfires is different to that of fires in most other vegetation types. Grassfires burn at a higher intensity and spread more rapidly with a shorter residence time. Embers produced by grassfires are smaller and fewer in number than those produced from forest fires.

In recognition of the reduced risk present in the grassland environment, *PBP-2019* cites the "Grassland Deeming Provisions (7.9) which imposes minimal *Bushfire Protection Measures* on an arbitrary basis. This will be discussed in further detail at section 4.1.1 of this Report.

3.1.1.2 Topography

Slopes on the development site and on the neighbouring lands are generally within the slope ranges of $0^{\circ} - 5^{\circ}$ or $5^{\circ} - 10^{\circ}$. Any areas where slopes are steeper are generally due to flood erosion, as is the case with the northern lots of the subject site.

A detailed slope analysis of the site, including 100 m beyond the site boundaries, has been undertaken. This slope analysis has been conducted perpendicular to the site boundaries using the Maitland City Council's contour mapping, and has been used to determine the effective slopes constraining the site. This approach was used due to access problems with most of the properties within the Study area.

Wildfires occurring in these areas have less potential to be high intensity fire events due mainly to the moderate slopes across the localised landscape. Unpredictable localised fire weather is also less likely than in areas such as gorge country.

A vegetation and slope summary is provided below.

Table 2: vegetation and slope summary

ASPECT	VEGETATION CLASSIFICATION	EFFECTIVE SLOPE
North	Managed land within the existing Environmental Zone on the site. Beyond the river is generally grasslands.	Varies between: <ul style="list-style-type: none"> $> 0^{\circ} - 5^{\circ}$ downslope, and $> 10^{\circ} - 15^{\circ}$ downslope
East	Grasslands.	Varies between: <ul style="list-style-type: none"> upslope, and $> 0^{\circ} - 5^{\circ}$ downslope
South	Generally Grasslands, and Freshwater grasslands within the watercourses.	Varies between: <ul style="list-style-type: none"> $> 0^{\circ} - 5^{\circ}$ downslope and $> 5^{\circ} - 10^{\circ}$ downslope



West	Managed land for approximately 95 m from the north-western corner of the site, then Grasslands.	Upslope
------	---	---------

NOTE

The results of the vegetation and slope assessment are based on a site assessment that was carried out generally in accordance with the site assessment methodology found in Appendix 1 of PBP-2019. With respect to the Environmental Zoned lands within the site to the north, south and south-west, the assessment area did not extend beyond the site boundaries. The setbacks from the Environmental Zoned land within the site have been used to determine the required setbacks for the residential footprint. Any constraint imposed by land beyond the site boundaries in these areas is less than the constraint imposed by the land within the site boundaries, and is therefore disregarded with respect for determining minimum APZs / setbacks.

3.1.1.3 Weather

The HBFMC area is 18 km from the coast and stretches from the south-west section of Cessnock LGA for 86 km to the north-east section of Maitland LGA and is on average 32 km wide.

The climate varies significantly, though the temperatures are not much different. The area from the west tends to be a lot drier than the coast and cooler at night and the bushfire season generally runs from September to March.

Prevailing weather conditions associated with the bushfire season in the HBFMC area are north-westerly winds accompanied by high daytime temperatures and low relative humidity. There are also frequently dry lightning storms in the western areas occurring during the bush fire season.

Hazard reduction burning is usually conducted during the cooler months, between March - October, but may be extended beyond this period if desirable conditions exist. Desirable weather conditions for prescribed burning include high humidity and low temperatures which are common to this period in the year.

Smoke attributed to bushfire can have a major impact on various infrastructures, facilities and the environment. These include major transportation routes for road and rail, ventilation shafts for mines, tourism operations, urban interface areas and the hospitals, Wind direction, fuel moisture contents and lighting techniques are considered and managed to reduce the likelihood of smoke issues.



3.1.2 Potential Bushfire Behaviour (based on vegetation, topography, weather)

Refer to 2.1.4 below.

3.1.3 Bushfire History in the Area

Requests have been made to the NSW Rural Fire Service (24/3/22 and 5/5/22) for the supply of any relevant wildfire history for the general vicinity of the subject site. The information requested has not been provided before the completion of this Study.

The following information has been obtained from the Hunter Bushfire Risk Management Plan.

The HBFMC area has on average 207 bush fires per year, of which 5 on average can be considered to be major fires.

The major ignition causes in the Hunter area are:

- *Arson- is on the increase and is common mainly in high visitation areas, and during school holidays. During summer months the population increases due to tourism and this, combined with significant urban growth, is a possible contributing factor.*
- *Car dumping- dumping of cars and setting them alight is one of the major ignition sources in the Hunter particularly in urban interface and bushland areas.*
- *Electrical power lines- arcing of high voltage electrical power lines in high winds, can result in the ignition of fire.*
- *Escapes from legal burning- mainly in rural areas of the BFM, occurring in similar areas to illegal burning activity. This activity is also largely in mid to late spring.*
- *Illegal burning activities- mainly concentrated, but not limited to, rural areas and occur generally from mid to late spring.*

3.1.4 Potential Fire Runs and their Intensities

Fires generally travel in an easterly direction under the influence of westerly winds. Southerly and/or easterly weather changes also have the potential to intensify wildfire.

Preventing the ignition of wildfires by human activities, particularly on days when severe weather conditions prevail, is an important strategy for managing wildfires. To put effective ignition management programs in place, it is important to understand the patterns and major sources of ignition in the area.

Potentially the most credible wildfire scenarios likely to impact the site are listed below:



From the north – through the grasslands on the northern side of the Hunter River, in the vicinity of Campbells Road and Maitland Vale Road. These lands are pasture lands rather than unmanaged grasslands. Fires from this direction can only impact the site as spot fires, having to jump the river to impact on the site.

From the east – through the existing paddocks. Fires from this direction could impact the site as a fire-line. These lands are generally pasture and grazed paddocks rather than unmanaged grasslands.

From the south – from the rural-residential housing estate at Oakhampton Heights, of through the existing paddocks. These lands are either managed APZs around the existing homes or pasture along North Willards Lane. Although fuel loads within Oakhampton Heights is low, regular fires are burnt here under the guidance of permits issued by FRNSW. As "escapes from legal burning" is listed as a significant cause of wildfire within the HBRMP area, it is worth mentioning here as a risk.

From the west – through the existing rural lands to the west of the site, and to the north of the neighbouring urban development. This area is all pasture, grazed paddocks or APZs within the rural small-holding area either side of Aberglasslyn Road.

There is a narrow "window" of potential wildfire impact from the south-west, however this area is also subject to planned urban development so the threat may be short-lived.

Potential fire runs through consistent vegetation forms are listed above. Slopes from these exposures are generally $< 10^\circ$. Wildfires from these directions could impact on the site with intensities commensurate with those modelled by PBP-2019.

3.1.5 The difficulty in Accessing and Suppressing a Fire, the Continuity of Bushfire Hazards or the Fragmentation of Landscape Fuels and the Complexity of the Associated Terrain

As the vegetation form threatening the site is grasslands, the continuity of the bushfire hazards does not pose any specific substantial difficulty in suppressing wildfires in the vicinity. The adjacent hazard areas are accessible by 4x4 firefighting vehicles during dry periods. A direct attack on the backing-fire and flank-fires would be achievable during almost all wildfire events, and even on the head-fire during the majority of wildfire events.

Due to the arrangement of the land tenure in the area, there are a lot of property owners / managers for the given area, compared with more rural landscapes where larger properties results in less occupant-density. Given this density, there are numerous access points (driveways and farm tracks) where 2x4 and 4x4 firefighting vehicles can access and carry out firefighting or property-protection activities.



The terrain in the areas around the site does not pose any significant challenges in relation to access for firefighting activities.



3.2 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.

3.2.1 The risk profile of different areas of the development layout based on the above landscape study

The following comment is provided by the project Planner.

the proposal will make a valuable contribution to the diversity and quality of housing in Maitland and will assist in meeting projected housing demand in the region.

The following plans (Figure 6, Figure 7, Figure 8) show the development footprint in relation to boundaries and proposed road infrastructure. The bushfire attack level (BAL) across the site has been shown on the plans as Figure 6 and Figure 7, based on the assessment methodology. All of the indicative DEs are shown to be located within either BAL-29, BAL-19, BAL-12.5 or BAL-Low areas.

As discussed elsewhere in this Study, the site is constrained primarily from a grassland environment. The NSW Rural Fire Service provides clarity on the threat from these landscapes, and cited this in 7.9 of PBP-2019 – "Grassland Deeming Provisions".

7.9 Grassland Deeming Provisions

The risk posed by grass fires is different to that of fires in other vegetation types. Grass fires burn at a higher intensity and spread more rapidly with a shorter residence time. Embers produced by grass fires are smaller and fewer in number than those produced from forest fires.

In recognition of the characteristics of grassland fire behaviour, the NSW RFS has developed a simplified set of Deeming Provisions for residential infill development. This process provides another acceptable set of simple requirements for infill development located in a grassland hazard area. A site assessment as detailed in Appendix 1 is not required, nor is referral to the NSW RFS.

Where an APZ of 50m can be provided, no further BPMs are required. Where an APZ of 20-49m can be provided, the set of provisions shown in Table 7.9a apply. However where the Grassland Deeming Provisions cannot be achieved or a merit based approach is desired, the standard assessment process outlined in Appendix 1 must be adopted. The maximum slope for the Deeming Provisions is restricted to 15 degrees downslope.

Note: Please note that GFDI and not FFDI values apply to grassland areas. The GFDI values shown in Table 5.1.4a have been used to calculate the APZ distances for grassland areas in Appendix 1 and shall also be used for relevant performance based solutions.

For developments in grassland hazard areas where the deeming provisions are applied, compliance with Table 7.9a is prescribed as a variation for the purposes of NSW G5.2(a)(i) of Volume One and NSW 3.10.5.0(c)(i) of Volume Two of the NCC.

The deeming provisions and the residential infill development APZ tables are derived from different methodologies, however both are considered compliant outcomes.



BUSH FIRE PROTECTION MEASURE	GRASSLAND DEEMING PROVISIONS
APZ	<ul style="list-style-type: none"> limited to a maximum of 15 degrees downslope; minimum APZ of 20m is provided between the building and the hazard; the APZ is wholly within the boundaries of the development site; and the APZ is maintained as a mown area with grass heights less than 100mm.
Construction	construction in accordance with BAL-12.5 of AS 3959 and section 7.5 of PBP.
Access	comply with the property access provisions in Table 5.3b.
Water supply	comply with the water supply provisions in Table 7.4a.
Landscaping	comply with the relevant provisions in Appendix 4, noting that other vegetation bush fire hazards cannot be present if these provisions are to apply.

Figure 4: Table 7.9a of PBP-2019

From the provisions of Chapter 7 of PBP-2019, the proponent has the option of deciding which approach to take to determining BALs and other *Bushfire Protection Measures* across the site: either using the usual approach provided in Appendix 1 of PBP-2019; or using the Grassland Deeming Provisions.

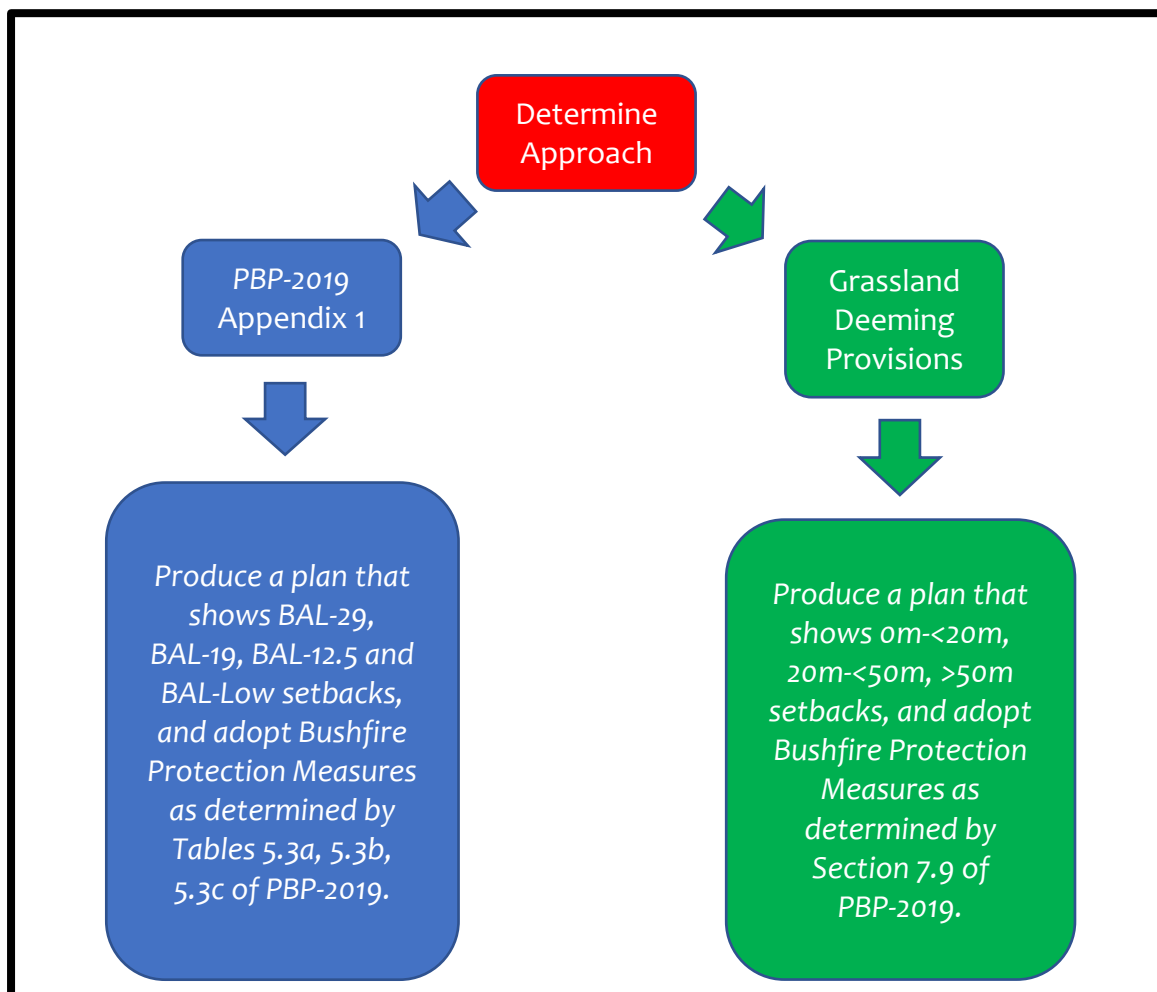


Figure 5: schematic of different approaches to providing APZs / separation

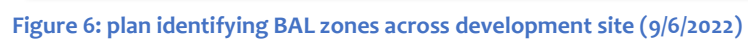


Furthermore, *PBP-2019* sets out the setback requirements for *Special Fire Protection Purpose* developments. *Special Fire Protection Purpose* developments are defined in s.100B of the *Rural Fires Act 1997* as:

- (a) a school,
- (b) a child care centre,
- (c) a hospital (including a hospital for the mentally ill or mentally disordered),
- (d) a hotel, motel or other tourist accommodation,
- (e) a building wholly or principally used as a home or other establishment for mentally incapacitated persons,
- (f) seniors housing within the meaning of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*,
- (g) a group home within the meaning of *State Environmental Planning Policy No 9—Group Homes*,
- (h) a retirement village,
- (i) any other purpose prescribed by the *Rural Fires Regulation*.

Due to the specific risks associated with these types of developments, *PBP-2019* applies specific APZ / setback requirements that are different to the usual residential setbacks discussed elsewhere within this Study.

The following plans as Figure 6, Figure 7 and Figure 8 identify the areas on the site that are unsuitable for certain types of development.



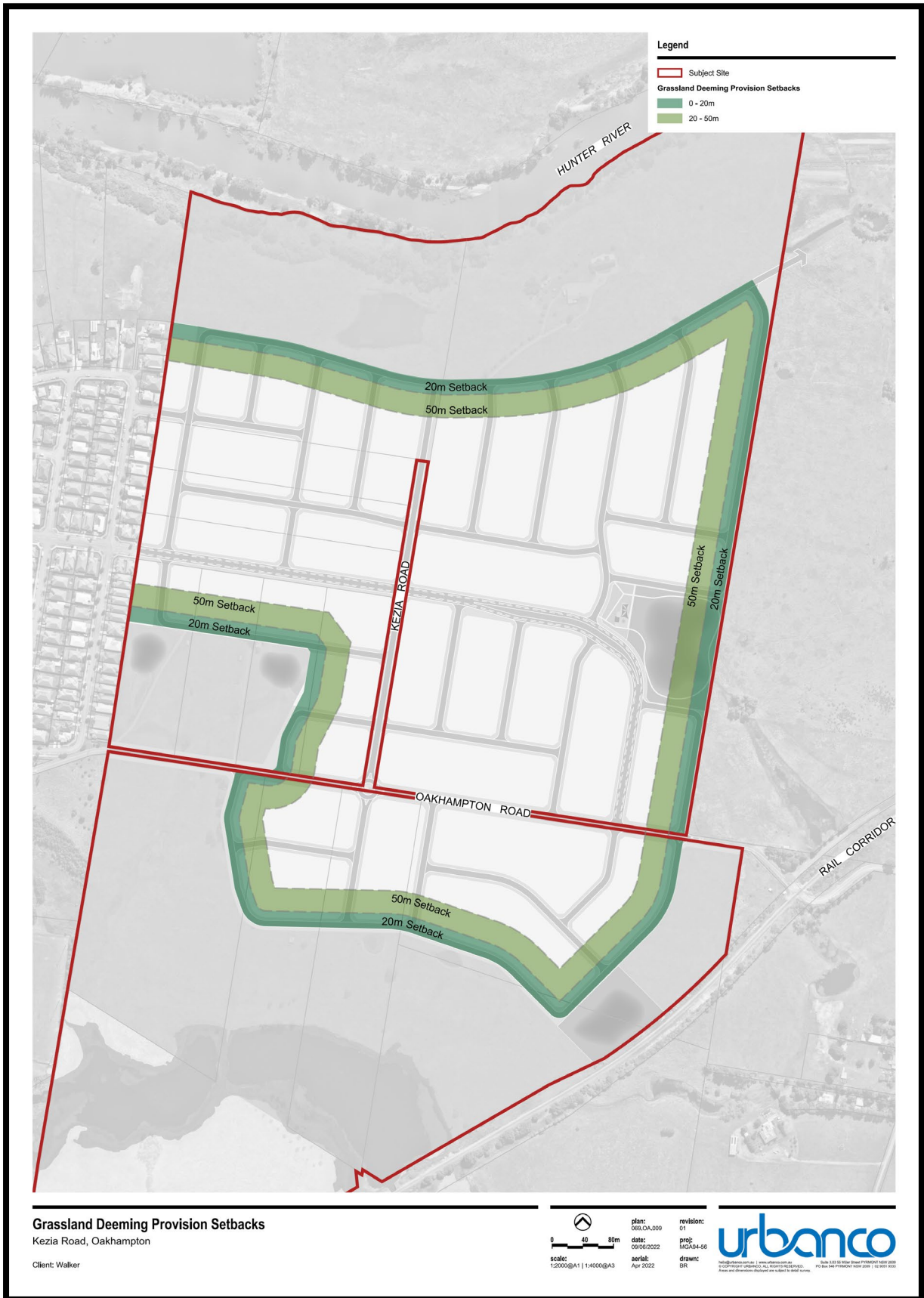


Figure 7: plan identifying GDP zones across development site (9/6/2022)

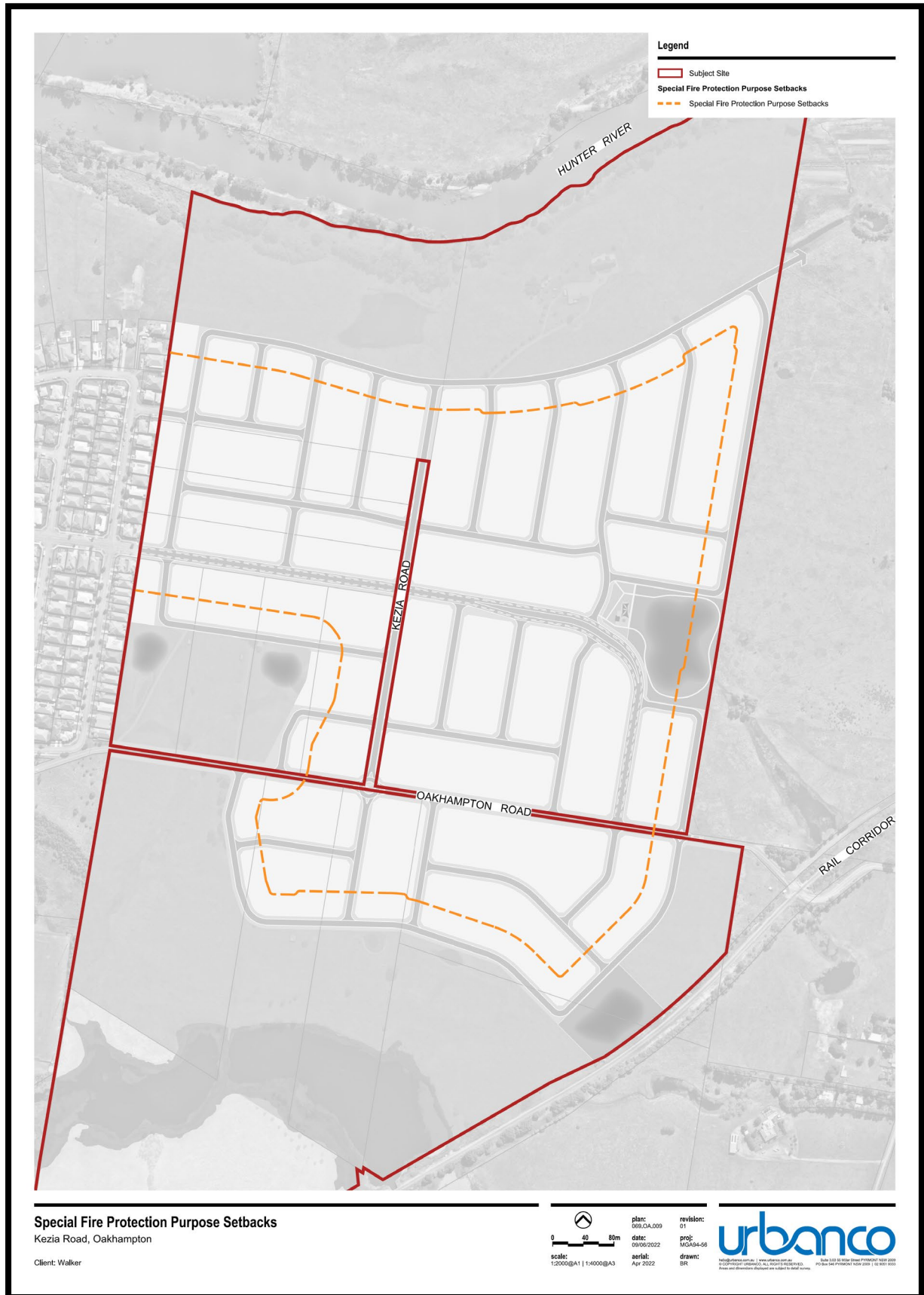


Figure 8: plan identifying Special Fire Protection Purpose setbacks across development site (9/6/2022)



3.2.2 The proposed land use zones and permitted uses

The following comments are extracted from the project Planner's *Scoping Proposal Report*.

1.0 Executive Summary

- 1.1 This Planning Proposal Scoping Report has been prepared by Walker Corporation on behalf of Bremer Park Pty Limited in accordance with the *NSW Local Environmental Plan Making Guideline 2021*.
- 1.2 This report is submitted to the Planning Proposal Authority (i.e. Maitland City Council) requesting it to exercise its functions under Division 3.4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to amend the *Maitland Local Environmental Plan 2011* (MLEP 2011) and rezone land within the Aberglasslyn Urban Release Area at Oakhampton.
- 1.3 The proposal aims to:
 - Rezone land from RU1 Primary Production and RU2 Rural Landscape to R1 General Residential and C3 Environmental Management whilst retaining the existing C2 Environmental Zoned area,
 - Amend the minimum lot size from 40 ha to 450m² for R1 General Residential land and 10 ha for E3 Environmental Management land, and
 - Expand the boundary of the Aberglasslyn URA to accommodate the development.
- 1.4 All proposed R1 General Residential land is located above the flood planning area and future residential development will rely upon flood free access from an extension of McKeachie Drive and Goshawk Street.
- 1.5 The rezoning demonstrates strategic merit as outlined in Section 4, by facilitating the delivery of the Government's vision for the Maitland area as outlined in the:
 - Greater Newcastle Metropolitan Plan (the District Plan)
 - Hunter Region Plan 2036 (the Region Plan)
 - Draft Hunter Regional Plan 2041
 - Maitland Local Strategic Planning Statement (LSPS)
 - Maitland Urban Settlement Strategy (MUSS)
- 1.6 Preliminary site-specific investigations have been undertaken, and the Planning Proposal Scoping Report is accompanied by the following supporting documents:
 - Desktop Biodiversity Assessment
 - Traffic Scoping for Planning Proposal – Desktop Analysis
 - Aboriginal Cultural Heritage Due Diligence Assessment Report
 - Hunter Water Preliminary Servicing Advice – Letter and Figure (only for Lot 1 DP1012258)
- 1.7 The proposal will make a valuable contribution to the diversity and quality of housing in Maitland and will assist in meeting projected housing demand in the region.

Figure 9: extract from "Scoping Proposal Report" (Walker Corporation P/L, March 2022)



Council's LEP provides:

Zone R1 General Residential

1 Objectives of zone

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

2 Permitted without consent

Home occupations

3 Permitted with consent

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dwelling houses; Group homes; Home-based child care; Home industries; Hostels; Hotel or motel accommodation; Multi dwelling housing; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Serviced apartments; Shop top housing; Tank-based aquaculture; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Biosolids treatment facilities; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Entertainment facilities; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Information and education facilities; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Research stations; Restricted premises; Rural industries; Rural workers' dwellings; Service stations; Sewage treatment plants; Sex services premises; Signage; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Water recycling facilities; Wharf or boating facilities; Wholesale supplies

Zone C3 Environmental Management

1 Objectives of zone

- To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- To provide for a limited range of development that does not have an adverse effect on those values.
- To maintain and improve the connectivity of habitat between remnant areas of native vegetation.

2 Permitted without consent

Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Building identification signs; Business identification signs; Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Extensive agriculture; Home-based child care; Home businesses; Oyster aquaculture; Pond-based aquaculture; Recreation areas; Roads; Tank-based aquaculture; Water reticulation systems

4 Prohibited



Dairies (pasture-based); Industries; Multi dwelling housing; Residential flat buildings; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

3.2.3 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)

Refer to 3.2.1 and 3.2.2 above.

The site is not constrained topographically, that is to say that the gradients of the site, and adjacent to the site, are slight to moderate. As discussed at section 3.1, the local topography would not generate unpredictable fire behaviour. Likewise, the local topography does not present obvious areas unsuitable for different development landuses.

The BPMs from PBP-2019 that are applied to home-based child care are commensurate with the "residential" requirements rather than the *Special Fire Protection Purpose* requirements. Therefore, the fact that home-based child care can occur on the lots without consent, the NSW Rural Fire Service views this type of occupancy in the same light as normal single-dwelling residential use (with the exception that a *Bushfire Emergency Response Plan* needs to be prepared for home-based child care premises).

The plans provided above as Figure 6 and Figure 8 demonstrate that that this D-t-S provision of PBP-2019 has been satisfied. This is discussed in further detail in Section 4.1.1 of this Report.

3.2.4 The impact of the siting of these uses on APZ provision

As a residential subdivision, only residential-sized APZs will be provided between the proposed dwelling envelopes (DE) and the site boundaries. The plans provided above as Figure 6 and Figure 8 and demonstrate that that this D-t-S provisions of PBP-2019 have been satisfied. This is discussed in further detail in Section 4.1.1 of this Report.

The wildfire hazard to the site is grasslands (generally improved pasture or grazed paddocks), resulting in relatively small APZs (or setbacks) from the site boundaries. In most instances the minimum required APZs will be 13 m or less (refer to Figure 6). Setbacks of this size are easily able to be accommodated within the perimeter road reserve.

3.3 Access and Egress

A study of the existing and proposed road networks both within and external to the masterplan area or site layout

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

The proposed internal road network will comply with all of the D-t-S provisions (Acceptable Solutions) of PBP-2019.

The development site adjoins an existing urban estate at its western boundary. Several of the roads within the adjoining estate terminate at the western boundary of the subject site (McKeachie Drive and Goshawk Street), while Oakhampton Road transects the site from east to west. Whilst Oakhampton Road is flood-affected, this will not pose a concern during wildfire events.

McKeachie Drive is a major urban link road that services traffic from the existing urban development through to the round-about at Aberglasslyn Road. From here, access to the New England Highway is available in two (2) directions (Aberglasslyn Road and Denton Park Drive). Combined, these routes provide five (5) separate access points onto the New England Highway. McKeachie Drive is a line-marked major urban street with a width of 13 m, accommodating cycle lanes on both sides of the street.



Figure 10: McKeachie Drive terminates at site boundary



Figure 11: McKeachie Drive, looking west from Dunnart Street



Figure 12: Dunnart Street, looking south from Goshawk Street



Figure 13: Goshawk Street terminates at site boundary

Oakhampton Road traverses the site from east to west and forms a loop-road from McKeachie Drive at Aberglasslyn to Sempill Street in the city centre. It services the rural community east of the site, and west of the Hunter River. Oakhampton Road intersects with Kezia Road within the development site, which is a minor rural road servicing only several rural or rural-residential properties. Oakhampton Road is a minor rural road, flood-affected, which is of little concern during wildfire events.



Figure 14: looking east along Oakhampton Road



Figure 15: looking west along Oakhampton Road

A "Traffic Scoping for Planning Proposal" report has been prepared by Arcadis (18/3/2022). This report is a desktop assessment and forms part of the preliminary documentary support for the proposal. A final Traffic Study will be available at the time of submission.



3.3.2 The location of key access routes and direction of travel

Refer to 3.3.1 above.

The project Planner has provided the following comments.

McKeachie Dr will be the primary access and Goshawk Street will provide an additional flood free access. Oakhampton Drive will be treated as a secondary access as it is flood prone. The desktop analysis indicates: "The analysis shows that the proposed 500-550 dwellings would generate approximately 425 vehicle trips in both the AM and PM periods. The development would increase traffic along McKeachie Drive, Aberglasslyn Road and the New England Highway as well as impact traffic capacity at seven key intersections outlined in the report."

Oakhampton Road is not intended to be upgraded as part of this proposal as the primary and secondary access routes are McKeachie Drive and Goshawk Street respectively. During wildfire events in the vicinity of the site, Oakhampton Road will serve as an additional access / egress route.

Intersections on New England Highway

1. Denton Park Drive / New England Highway – Roundabout
2. Dunkley Street / New England Highway – 4 way Signalised Intersection
3. Alexandra Avenue / New England Highway – 3 way Signalised
4. Arthur Street / New England Highway – 4 way Signalised
5. Aberglasslyn Road / New England Highway – Signalised Left only

-  The Site – Proposed rezoning Site Boundary
-  Intersection – State Road
-  New England Highway (State Road)
-  Local Road network
-  Kezia Road – existing local road
-  Oakhampton Road – Local rural road (flood affected)
-  Proposed local road connections into existing local road network:
 - McKeachie Drive (Primary access)
 - Goshawk Road (Secondary access)

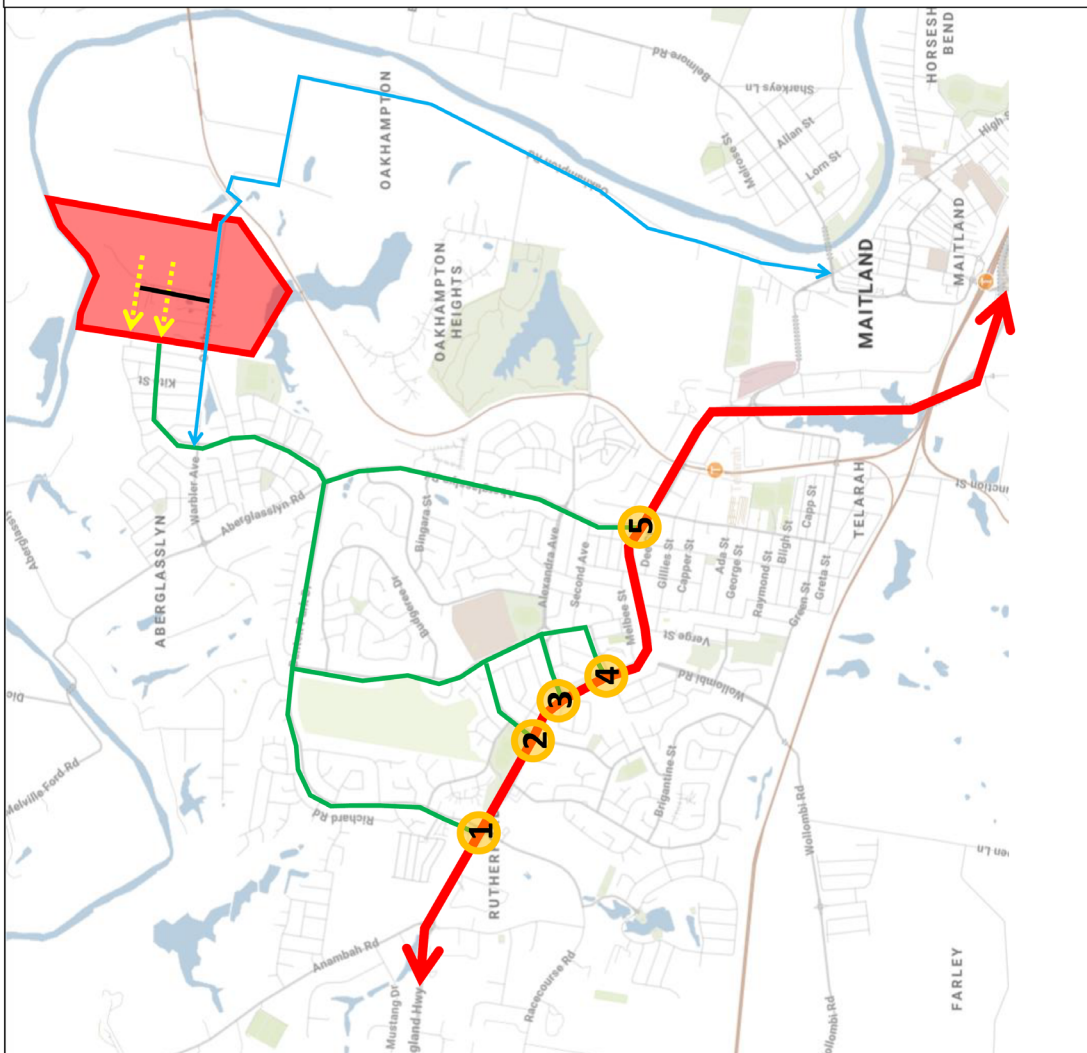


Figure 16: Oakhampton Road network



3.3.3 The potential for development to be isolated in the event of a bush fire

The proposed development is an extension of an existing urban precinct. It will be linked to the "safe refuge" of the greater urban development of Maitland via internal road networks (primarily McKeachie Drive).

McKeachie is a major urban traffic link established as part of the Aberglasslyn urban area development.



3.4 Emergency Services

An assessment of the future impact of new development on emergency services.

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

As more of the agricultural grasslands are developed, the amount of land able to support a wildfire is reduced. It could quite possibly be the case that developments such as these provide a benefit to surrounding areas. I would doubt that there would be a dataset available that quantifies this, however.

Developments such as this shift potential workloads from the volunteer-based NSW Rural Fire Service to the salaried and on-call based Fire and Rescue NSW. The amount of land falling under the jurisdiction of the NSW Rural Fire Service will be reduced as jurisdiction for these areas is passed on to FRNSW via the Fire Services Joint Standing Committee policies.

At present the Maitland area has three (3) salaried or on-call fire stations, generally staffed in the following manner:

Rutherford – 2 Mustang Drive Rutherford	Salaried Firefighters - Monday – Friday – 0800 – 1630 On-call Firefighters – Monday – Sunday – 0001 – 2400
Maitland – 14 Church Street Maitland	On-call Firefighters – Monday – Sunday – 0001 – 2400
East Maitland – 1 Chelmsford Drive Metford	Salaried Firefighters - Monday – Sunday – 0001 – 2400

At present, Maitland Fire Station staffing is often supplemented with salaried and/or on-call firefighters from other stations, in order to maintain staff levels for the firefighting vehicles at that station. This is primarily a reflection on the primary employment nature of the on-call firefighters at that station.

The salaried firefighting crew at Rutherford was put in place, in part, to deal with the traffic grid-lock problems often associated with on-call firefighters attending the Maitland station, and firefighting vehicles responding from the Maitland station.



There is little doubt the continual urban expansion of urban areas places an ever-increasing demand on emergency services. This is most clearly evidenced by the once volunteer-based fire stations in Sydney now being almost entirely staffed by salaried firefighters.

Funding of FRNSW

From

<https://www.fire.nsw.gov.au/page.php?id=48#:~:text=The%20core%20response%20activities%20of,certain%20community%20safety%20prevention%20programs>

How we are funded

The Treasurer sets the amount of the FRNSW budget each year.

There are three contributors to the total. The insurance industry contributes 73.7%. Local government contributes 11.7%. The State Government contributes 14.6%.

The insurance industry is required, as a condition of doing business in NSW, to remit its 73.7% from the insurance premiums it receives. The total premium income of the insurance companies is not subject to contribution. For instance, only half of a company's income from household insurance premiums is counted, and only 2.5% of motor vehicle premium income.

Local government councils only pay their 11.7% for FRNSW if FRNSW has a station in their "Fire Districts". All councils in the Sydney area are required to contribute because they are part of the "Sydney Fire District".

Outside Sydney, the Councils in many towns and cities from Albury to Young contribute 11.7% for the local FRNSW Fire Brigade.

Although FRNSW does hazmat everywhere and not just in Fire Districts, Councils that don't have a Fire Station of FRNSW in town do not contribute.

The State Government contributes the other 14.6% from the Consolidated Fund. While not everyone in the State contributes the same amount, we all contribute to some extent.

Through taking out insurance, many people contribute when they pay their insurance. The insurance company shows a separate amount on their invoice notice, which they call "fire service levy". This amount is only an estimate of what the insurance company itself will pay. Insurance companies are not required to do any reconciliation between what they show on your premium, and what they actually remit.

Local government (Councils) remit the amount FRNSW calculates as their share. When you pay rates, or pay rent to a landlord who pays rates, you contribute to the Council's contribution.

We all contribute to the State's 14.6% when we pay taxes.

Resilience NSW [external link] is the central billing and distribution agency for contributions from insurance companies and local government councils for FRNSW, NSW Rural Fire Service and NSW State Emergency Service.

The increase in the demand placed on the fire services due to the continued urban expansion of the Maitland area may result in additional funding being sought for firefighting staff enhancements. Part of this additional cost would be borne by the Maitland City Council under current funding arrangements.

FRNSW is seeking to implement station closures on a temporary basis via its program of TOL'd stations. "TOL" is "*taken off line*", a practice employed by FRNSW to temporarily close a station rather than maintain minimum staffing levels. It will be argued by FRNSW that TOLing does not reduce service to the public.



If the TOLing program expands within the Maitland City Council area, it will be quite possible that during most weekdays the Maitland Fire Station (Church Street, Maitland) will be taken off line – closed. This would leave only East Maitland and Rutherford Stations available to respond to fire and other emergencies on weekdays.

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

The expansion of the residential precinct onto the development site will not restrict emergency service access onto the adjacent grasslands. Whether the interface is established as a perimeter road, or private property rear yard fencing as is currently the case, access onto the adjacent lands will not be encumbered by this proposal.



3.5 Infrastructure

An assessment of the issues associated with infrastructure and utilities.

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

An application was submitted to Hunter Water for advice on servicing the site. In its response (14/12/2021) Hunter Water provides the following comments.

The proposed development site is located remote from Hunter Water's water servicing infrastructure, and therefore does not currently have water main frontage. The nearest possible water connection point to the site is the DN200 PVC-O (SER2) water main in McKeachie Drive to the west. This water main is supplied by Four Mile Creek 1 Reservoir, and there is sufficient capacity currently available in this local water network to cater for the proposed development.

Hunter Water advises that high water main pressures are prevalent in the area of the proposed development, and you will need to design your water servicing infrastructure accordingly. A local water pressure reduction valve (PRV) will be required to manage the water pressures delivered to the subject site and to the surrounding developments.

Due to the location and size of the proposed development, you will need to provide a developer funded local water servicing strategy. to investigate servicing both this site and any adjacent developments. The strategy will be required to confirm available network capacity and determine the optimal servicing arrangement for the development. As a minimum the strategy should include an assessment of:

- Available capacity in the existing network
- Connection points to the existing system
- Water network augmentations
- Security of Supply for the local water network, including provision of water services to neighbouring developments
- High pressure management for the proposed site and surrounding developments
- Staging and interim servicing options for the development
- Least community cost option

At the time of preparing this Study, the proponent is undertaking the scope of works outlined by Hunter Water.

Section 4.1.3 of this Report deals with the water supply in more detail.

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

There are no major infrastructure services affected, or likely to be affected, by the proposed development.

There are no (existing or proposed) major infrastructure services that are likely to affect life-safety.



The proponent has consulted with various service providers regarding the augmentation and extension of existing utility services. None of these are compromised by the proposed development.



3.6 Adjoining Land

The impact of new development on adjoining landowners and their ability to undertake bush fire management.

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

This proposed development does not pose any pressure on surrounding lands from a bushfire-perspective, than what is already the case with the residential development along Dunnart Street. The proposed development would replicate / replace the existing interface arrangement along the site's western boundary, and the other site boundaries will be provided with perimeter roads.

The proposed development increases the level of bushfire-protection to the adjoining lands, in the following manner:

- The residential estate to the west of the site will no longer interface with the grassland landscape.
- The lands to the east will interface with a residential estate rather than the grassland landscape.
- The threat to Oakhampton Heights will be lessened to a certain extent.

All of the BPMs required to be provided for the proposed development will be provided within the boundaries of the property being developed.



4 MINISTERIAL DIRECTIONS (SECTION 9.1(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979)

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.

The Ministerial Directions, and the preamble to PBP-2019, state that through the strategic planning process, a degree of certainty is required to ensure future development can meet the needs of PBP-2019. Whilst it may seem premature or even superfluous to assess a potential future subdivision against the requirements of PBP-2019 at the 'Planning Proposal' stage, it does ensure that the future lots are able to accommodate development with confidence.

4.1 A planning proposal must have regard to Planning for Bushfire Protection 2019

4.1.1 Asset Protection Zones

Below is a table setting out the *Performance Criteria* and *Acceptable Solutions* for residential and rural-residential subdivisions as required by Chapter 5 of *PBP-2019*, and a statement as to whether the proposal meets the *Acceptable Solution*.

Table 3

	Performance Criteria	Acceptable Solution	Complies / Does not comply
Asset Protection Zones	[1] Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m ² on each proposed lot.	[1.1] APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	Complies
	[2] APZs are managed and maintained to prevent the spread of a fire towards the building.	[2.1] APZs are managed in accordance with the requirements of Appendix 4.	Complies
	[3] The APZs is provided in perpetuity.	[3.1] APZs are wholly within the boundaries of the development site	Complies
	[4] APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	[4.1] APZs are located on lands with a slope less than 18 degrees.	Complies
Landscaping	[5] Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	[5.1] Landscaping is in accordance with Appendix 4; and [5.2] Fencing is constructed in accordance with section 7.6.	Complies Complies

In relation to *Acceptable Solution* [1.1], the minimum setbacks or APZ required by *PBP-2019* are determined by either the Appendix 1 of *PBP-2019* approach (Figure 17 below), or the Grassland Deeming Provisions approach (Figure 5 above). The plans as Figure 6 and Figure 8 above demonstrate that the required separation distances can be provided for the development.

**Table A1.12.2**Minimum distances for APZs – residential development, FFDI 100 areas ($\leq 29\text{kW/m}^2$, 1090K)

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

Figure 17: Table A1.12.2 of PBP-2019

In relation to *Acceptable Solutions* [2.1] & [5.1], the reference documents for APZ design and maintenance are provided as Appendix A of this Study. The APZ design and maintenance principles contained within Appendix A should be adopted for stormwater retention basins and open public space areas.

In relation to *Acceptable Solution* [5.2], PBP-2019 states:

7.6 Fences and gates

Fences and gates in bush fire prone areas may play a significant role in the vulnerability of structures during bush fires. In this regard, all fences in bush fire prone areas should be made of either hardwood or non-combustible material.

However, in circumstances where the fence is within 6m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

Where the future residential lots abut the adjacent grasslands, a non-combustible fencing system should be installed along the site boundary.



4.1.2 Access

Below is a table setting out the *Performance Criteria* and *Acceptable Solutions* for residential and rural-residential subdivisions as required by Chapter 5 of PBP-2019, and a statement as to whether the proposal meets the *Acceptable Solution*.

Table 4

	Performance Criteria	Acceptable Solution	Complies / Does not comply
General Access Requirements	[6] Firefighting vehicles are provided with safe, all-weather access to structures.	[6.1] Property access roads are two-wheel drive, all-weather roads;	Not applicable
		[6.2] Perimeter roads are provided for residential subdivisions of three or more allotments;	Complies
		[6.3] Subdivisions of three or more allotments have more than one access in and out of the development;	Complies
		[6.4] Traffic management devices are constructed to not prohibit access by emergency services vehicles;	Complies
		[6.5] Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;	Complies
		[6.6] All roads are through roads;	Complies
		[6.7] Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;	Complies
		[6.8] Where kerb and guttering is provided on perimeter roads, roll top kerbing should be	Complies



		used to the hazard side of the road;	
		<p>[6.9] Where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and</p> <p>[6.10] One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.</p>	<p>Not applicable</p> <p>Not applicable</p>
	[7] The capacity of access roads is adequate for firefighting vehicles.	[7.1] The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/ causeways are to clearly indicate load rating.	Complies
	[8] There is appropriate access to water supply.	[8.1] Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;	Complies
		[8.2] Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - <i>Fire hydrant installations System design, installation and commissioning</i> ; and	Not applicable
		[8.3] There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available	Not applicable



Perimeter Roads	<p>[9] Access roads are designed 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 during firefighting and emergency management on the interface</p>	<p>[9.1] Are two-way sealed roads;</p> <p>[9.2] Minimum 8m carriageway width kerb to kerb;</p> <p>[9.3] Parking is provided outside of the carriageway width;</p> <p>[9.4] Hydrants are located clear of parking areas;</p> <p>[9.5] Are through roads, and these are linked to the internal road system at an interval of no greater than 500m;</p> <p>[9.6] Curves of roads have a minimum inner radius of 6m;</p> <p>[9.7] The maximum grade road is 15 degrees and average grade of not more than 10 degrees;</p> <p>[9.8] The road crossfall does not exceed 3 degrees; and</p> <p>[9.9] A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.</p>	<p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p>
Non-Perimeter Roads	<p>[10] Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.</p>	<p>[10.1] Minimum 5.5m carriageway width kerb to kerb;</p> <p>[10.2] Parking is provided outside of the carriageway width;</p> <p>[10.3] Hydrants are located clear of parking areas;</p> <p>[10.4] Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;</p> <p>[10.5] Curves of roads have a minimum inner radius of 6m;</p> <p>[10.6] The road crossfall does not exceed 3 degrees; and</p>	<p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p>



		[10.7] A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Complies
Property Access Roads	[11] Firefighting vehicles can access the dwelling and exit the property safely.	<p>[11.1] There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.</p> <p>In circumstances where this cannot occur, the following requirements apply:</p> <p>[11.2] Minimum 4m carriageway width;</p> <p>[11.3] In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;</p> <p>[11.4] A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;</p> <p>[11.5] Provide a suitable turning area in accordance with Appendix 3;</p> <p>[11.6] Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;</p> <p>[11.7] The minimum distance between inner and outer curves is 6m;</p> <p>[11.8] The crossfall is not more than 10 degrees;</p>	<p>Complies</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p> <p>Not applicable</p>

In relation to *Acceptable Solution* [9.2] & [9.3], the eventual pavement width of perimeter roads will need to be 12 m (8 m + 2 m + 2 m) where parking will be permitted on both sides of the road.

Holiday Coast Bushfire Solutions P/L ©

4.1.3 Utility Services

Below is a table setting out the *Performance Criteria* and *Acceptable Solutions* for residential and rural-residential subdivisions as required by Chapter 5 of PBP-2019, and a statement as to whether the proposal meets the *Acceptable Solution*.

Table 5

	Performance Criteria	Acceptable Solution	Complies / Does not comply
Water Supplies	[12] Adequate water supplies is provided for firefighting purposes	<p>[12.1] Reticulated water is to be provided to the development where available;</p> <p>[12.2] A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and</p> <p>[12.3] Static water supplies shall comply with Table 5.3d of PBP-2019.</p>	<p>Complies</p> <p>Not applicable</p> <p>Not applicable</p>
	<p>[13a] Water supplies are located at regular intervals; and</p> <p>[13b] The water supply is accessible and reliable for firefighting operations.</p>	<p>[13.1] Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005;</p> <p>[13.2] Hydrants are not located within any road carriageway; and</p> <p>[13.3] Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.</p>	<p>Not applicable</p> <p>Complies</p> <p>Complies</p>
	[14] Flows and pressure are appropriate.	[14.1] Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005	Not applicable
	[15] The integrity of the water supply is maintained.	<p>[15.1] All above-ground water service pipes are metal, including and up to any taps; and</p> <p>[15.2] Above-ground water storage tanks shall be of concrete or metal</p>	<p>Complies</p> <p>Not applicable</p>



Electricity Services	<p>[16] Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.</p>	<p>[16.1] Where practicable, electrical transmission lines are underground;</p> <p>Where overhead, electrical transmission lines are proposed as follows:</p> <ul style="list-style-type: none"> * lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and * no part of a tree is closer to a power line than the distance set out in ISSC3 <i>Guideline for Managing Vegetation Near Power Lines</i>. 	Complies
Gas Services	<p>[17] Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.</p>	<p>[17.1] Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - <i>The storage and handling of LP Gas</i>, the requirements of relevant authorities, and metal piping is used;</p> <p>[17.2] All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;</p> <p>[17.3] Connections to and from gas cylinders are metal;</p> <p>[17.4] Polymer-sheathed flexible gas supply lines are not used; and</p> <p>[17.5] Above-ground gas service pipes are metal, including and up to any outlets.</p>	<p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p>

Consultation has occurred with Hunter Water, Ausgrid, Jemena and NBN Co. (refer also to the Scoping Proposal Report by the proponent) regarding the provision of utility services to the precinct. All of these services will be provided underground within the development site.



4.2 A planning proposal must introduce controls that avoid placing inappropriate developments in hazardous areas

PBP-2006 and PBP-2001, whilst no longer 'in force', provide lists of development types that are both suitable, and unsuitable, for bushfire-prone areas, summarised as follows:

Table 6

Not Desirable	Desirable
<ul style="list-style-type: none"> • Camping grounds • Assembly buildings • Land sharing communities • Commercial and retail premises • Education premises • Prisons • Premises for people with mental or physical incapacities • Hospitals • Flammable material bulk storage • Stock / sale yards • Timber yards • Factories / warehouses • Plantations • Waste disposal / landfill depots • Power generating works • Sawmills • Junk yards • Liquid fuel depots • Offensive and hazardous industries • Chemical industries • Service stations • Ammunition storage/manufacture • Fireworks manufacture/storage 	<ul style="list-style-type: none"> • Tennis courts • Golf courses • Swimming pools • Cemeteries • Airstrips • Cleared open space / recreation areas

The LEP should prohibit the listed undesirable developments within the bushfire-prone areas (land within 100m of identified bushfire hazard vegetation) of the subject site. Other types of development should be assessed on a case-by-case basis.

4.3 A planning proposal must ensure that bushfire hazard reduction is not prohibited within the APZ

The proposed residential development is able to provide all of the required APZs within the boundaries of the development site.



The Environmental Conservation Zoned land along the northern perimeter of the site (E2), and the Environmental Management Zoned land along the south-western edge of the proposed residential 'footprint' (E3), would not satisfy the definition of "excluded land" with respect to s.100C of the RF Act 1997.

There is the possibility to maintain APZ with a positive covenant at DA stage. This will shift the APZ from within the residential 'footprint' of the site, to outside the residential 'footprint' of the site, increasing the level of wildfire protection to the future urban development.

4.4 A planning proposal must, where development is proposed, comply with the following provisions, as appropriate - provide an Asset Protection Zone (APZ) incorporating at a minimum 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

This has been discussed in more detail at section 4.1.1 above.

4.5 A planning proposal must, where development is proposed, comply with the following provisions, as appropriate - provide an Asset Protection Zone (APZ) incorporating at a minimum an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road

This has been discussed in more detail at section 4.1.1 above.



4.6 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

Below is a list of the properties of the proposed development site. Of the 13 properties, one (1) is vacant, the other 12 are occupied by dwellings and other associated outbuildings. Each of the occupied properties has been assessed against the Grassland Deeming Provisions of *PBP-2019*, and summarised in the Table.

Table 7

Property Number	Lot // DP	Address	Subject to Upgrades?
1	Lot 1 DP 1012258	42 Kezia Road	Existing home located within a grassland area. A 50 m wide APZ can be provided around the home in all directions. Under the GDP of PBP-2019, no BPMs apply.
2	Lot 8 DP 248331	43 Kezia Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the north & east (managed land to south & west). Under the GDP of PBP-2019, no BPMs apply.
3	Lot 7 DP 248331	37 Kezia Road	More than 50 m from unmanaged land. Under the GDP of PBP-2019, no BPMs apply.
4	Lot 6 DP 248331	35 Kezia Road	More than 50 m from unmanaged land. Under the GDP of PBP-2019, no BPMs apply.
5	Lot 5 DP 248331	29 Kezia Road	Vacant
6	Lot 1 DP 562346	502 Oakhampton Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the south (managed land to north, east & west). Under the GDP of PBP-2019, no BPMs apply.
7	Lot 2 DP 562346	486 Oakhampton Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the south (managed land to north, east & west). Under the GDP of PBP-2019, no BPMs apply.
8	Lot 3 DP 562346	478 Oakhampton Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the south (managed land to north, east & west). Under the GDP of PBP-2019, no BPMs apply.



9	Lot 4 DP 248331	25 Kezia Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the south (managed land to north, east & west). Under the GDP of PBP-2019, no BPMs apply.
10	Lot 1 DP 1086271	487 Oakhampton Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the west (managed land to north, east & south). Under the GDP of PBP-2019, no BPMs apply.
11	Lot 1 DP 826919	473 Oakhampton Road	Existing home located within a managed land and grassland area. A 50 m wide APZ can be provided around the home to the south (managed land to north, east & west). Under the GDP of PBP-2019, no BPMs apply.
12	Lot 66 DP 810466	461 Oakhampton Road	More than 50 m from unmanaged land. Under the GDP of PBP-2019, no BPMs apply.
13	Lot 7&8 DP 998430	355 Oakhampton Road	More than 50 m from unmanaged land. Under the GDP of PBP-2019, no BPMs apply.

4.7 Contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks

This has been discussed in more detail at section 4.1.2 above.

4.8 Contain provisions for adequate water supply for firefighting purposes

This has been discussed in more detail at section 4.1.3 above.



4.9 Minimise the perimeter of the area of land interfacing the hazard which may be developed

This is a criteria that is difficult to influence.

4.10 Introduce controls on the placement of combustible materials in the Inner Protection Area

This has been discussed in more detail at section 4.1.1 & 4.2 above.



5 CONCLUSION AND RECOMMENDATIONS

This Bushfire Strategic Study has been prepared for Bremer Park Pty Ltd in support of the rezoning and future subdivision of land for urban development. The subject land has been identified in the Aberglasslyn Urban Release Area at Oakhampton, north of Maitland.

This Bushfire Strategic Study addresses the criteria set out in Chapter 4 of *PBP-2019* (strategic planning), as well as Ministerial Directions 4.3 (section 9.1(2) of the *Environmental Planning and Assessment Act 1979*), incorporating an assessment against the provisions of Chapter 5 of *PBP-2019* (residential and rural-residential subdivisions).

From a landscape-perspective, the wildfire constraint on the site is relatively low due to factors such as neighbouring urban development to the west, grassland landscape with a lack of other vegetation types, and slight to moderate slopes.

The required setbacks / APZs between the surrounding grasslands and the development 'footprint' can be determined by various approaches; either:

- Using the usual approach set out in Appendix 1 of *PBP-2019*; or
- Using the Grassland Deeming Provisions from Chapter 7 of *PBP-2019*.

Both approaches have been explored as part of this Study, and either can be used at the subdivision stage of the proposal.

The urban 'footprint' of the site has been provided with perimeter roads. The main traffic links are to the west via McKeachie Drive and Goshawk Street. Both the primary and secondary access / egress routes are internal roads with no reasonable expectation of being cut-off by wildfire. Another traffic route is available via Oakhampton Road during wildfire events in the vicinity. The traffic study undertaken for the proposal does not rely on Oakhampton Road for normal traffic flows.

The proposed development, rather than impose a risk to adjoining lands, provides a level of wildfire protection that otherwise would not be provided. The remaining rural lands to the east of the site will have the risk of wildfires impacting them from the west significantly reduced, and the existing urban lots to the west of the site will no longer form the interface. From a landscape-perspective, the benefits of the development are passed on to land other than the land being developed.

There is also a flow-on effect to emergency services. The transfer of 'rural' land to 'urban' development reduces the impact and demand on the volunteer-based NSW Rural Fire Service. The transfer of jurisdiction from the NSW Rural Fire Service to Fire and Rescue NSW should occur through the Fire Services Joint Standing Committee without resistance.



5.1 Limitation

- 5.1.1 This Report and the subsequent recommendations reflect the reasonable and practical efforts of the author. It is important to note that the author (and State and Local Government authorities) cannot guarantee that bushfire ignition and subsequent bushfire damage will not occur.
- 5.1.2 Current legislation is essentially 'silent' in relation to the maintenance of bushfire protection measures. Maintenance is a major factor in the effectiveness of any BPM provided/installed. The extent to which the BPMs are implemented and maintained will affect the probability of achieving adequate bushfire safety margins.
- 5.1.3 Given the natural phenomenon of bushfires, and limitations in technology and research, a system to guarantee the survival of life and property cannot be made. This is reflected in the following statements of limitations:

The goal of 'absolute' or '100%' safety is not attainable and there will always be a finite risk of injury, death or property damage. (IFEG-2005)

No development in a bushfire prone area can be guaranteed to be entirely safe from bushfires. (PBP-2001)

Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains. (PBP-2001)

10/06/2022

Holiday Coast Bushfire Solutions
Grad. Dip. Design in Bushfire Prone Areas (UWS)



6 REFERENCES

NSW Bush Fire Coordinating Committee (2009), *Hunter Bushfire Risk Management Plan – 16/9/2009*, Sydney.

NSW Government, *Environmental Planning and Assessment Act 1979* (as amended), <http://www.legislation.nsw.gov.au>

NSW Government, *Rural Fires Act 1997*, <http://www.legislation.nsw.gov.au>

NSW Government, *Rural Fires Regulation 2022*, <http://www.legislation.nsw.gov.au>

NSW Government Geospatial Portal (2022), various images, <http://maps.six.nsw.gov.au/>

NSW Rural Fire Service (2019), *Planning for Bushfire Protection 2019*, Sydney.

NSW Rural Fire Service (2005), *Standards for asset protection zones*, Sydney.

NSW Rural Fire Service (2012), *Practice note 4/12 - 'In principle' masterplan agreements in bushfire prone areas*, Sydney.

NSW Rural Fire Service (2012), *Practice note 5/12 - Reuse of rezoning reports on bushfire prone land*, Sydney.

Standards Australia (2018), *Australian Standard 3959-2018 Construction of buildings in bushfire-prone areas*, Sydney.

7 APPENDICES

Appendix A - Standards for APZs (RFS 2005) and Appendix 4 of PBP-2019.

OAKHAMPTON-2022-22 APPENDIX A

STANDARDS FOR ASSET PROTECTION ZONES

PLANNING PROPOSAL AND SUBDIVISION

**ABERGLASSLYN URBAN RELEASE AREA,
OAKHAMPTON ROAD AND KEZIA ROAD,
OAKHAMPTON, MAITLAND.**

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMS, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

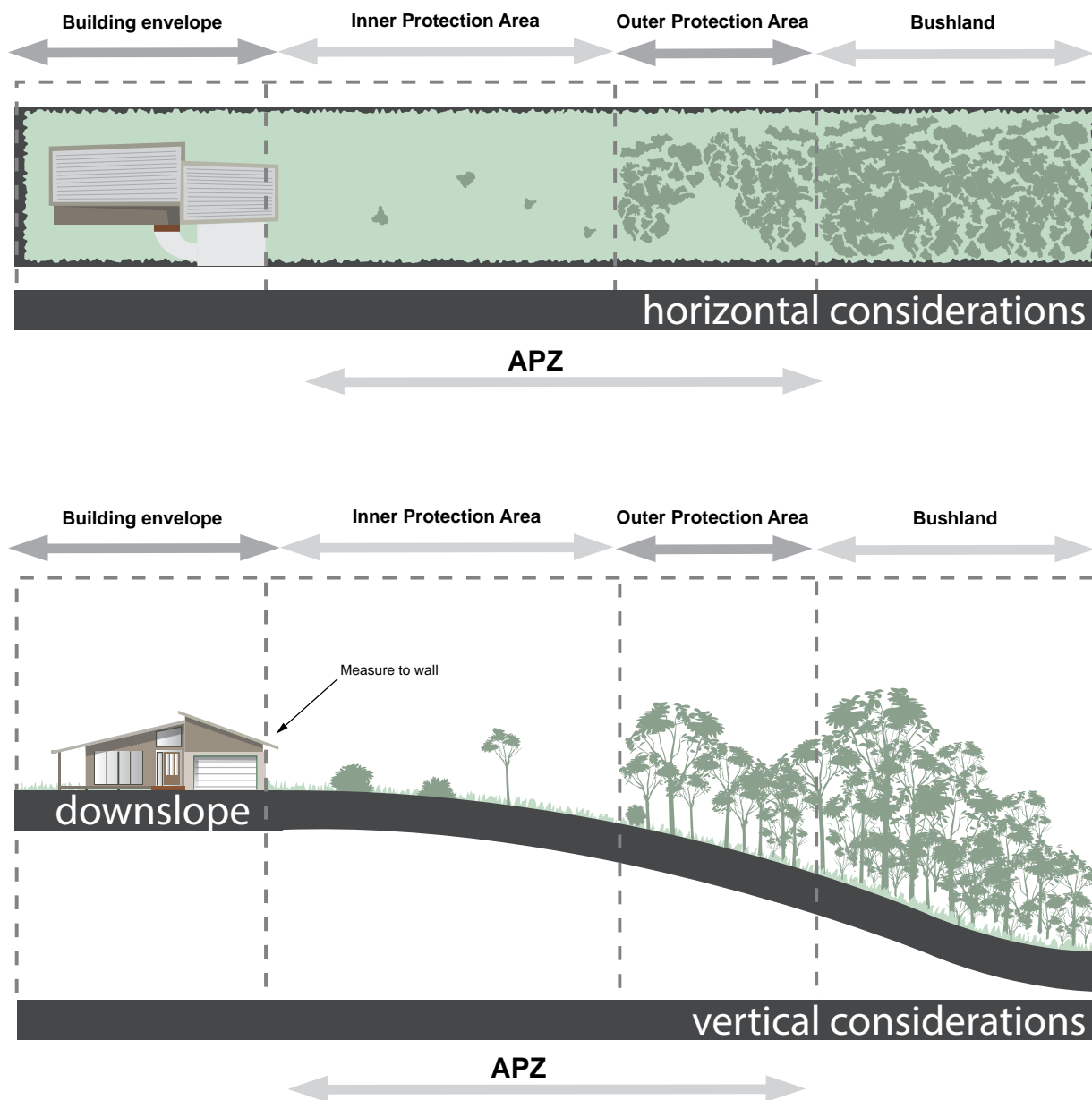
Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.



for asset protection zones

protection

[illegible]

NSW RURAL FIRE SERVICE



STANDARDS FOR ASSET PROTECTION ZONES

INTRODUCTION	3
WHAT IS AN ASSET PROTECTION ZONE?	3
WHAT WILL THE APZ DO?	3
WHERE SHOULD I PUT AN APZ?	4
STEP 1. DETERMINE IF AN APZ IS REQUIRED	4
STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ	5
STEP 3. DETERMINE ASSET PROTECTION ZONE WIDTH	5
STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ	6
STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION	9
STEP 6. ONGOING MANAGEMENT AND LANDSCAPING	10
PLANTS FOR BUSH FIRE PRONE GARDENS.....	10
WIND BREAKS.....	11

INTRODUCTION

For thousands of years bush fires have been a natural part of the Australian landscape. They are inevitable and essential, as many Australian plants and animals have adapted to fire as part of their life cycle.

In recent years developments in bushland areas have increased the risk of bush fires harming people and their homes and property. But landowners can significantly reduce the impact of bush fires on their property by identifying and minimising bush fire hazards. There are a number of ways to reduce the level of hazard to your property, but one of the most important is the creation and maintenance of an Asset Protection Zone (APZ).

A well located and maintained APZ should be used in conjunction with other preparations such as good property maintenance, appropriate building materials and developing a family action plan.

WHAT IS AN ASSET PROTECTION ZONE?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows suppression of fire;
- an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

WHAT WILL THE APZ DO?

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- ember attack on the asset.

WHERE SHOULD I PUT AN APZ?

An APZ is located between an asset and a bush fire hazard.

The APZ should be located wholly within your land. You cannot undertake any clearing of vegetation on a neighbour's property, including National Park estate, Crown land or land under the management of your local council, unless you have written approval.

If you believe that the land adjacent to your property is a bush fire hazard and should be part of an APZ, you can have the matter investigated by contacting the NSW Rural Fire Service (RFS).

There are six steps to creating and maintaining an APZ. These are:

1. Determine if an APZ is required;
2. Determine what approvals are required for constructing your APZ;
3. Determine the APZ width required;
4. Determine what hazard reduction method is required to reduce bush fire fuel in your APZ;
5. Take measures to prevent soil erosion in your APZ; and
6. Landscape and regularly monitor in your APZ for fuel regrowth.

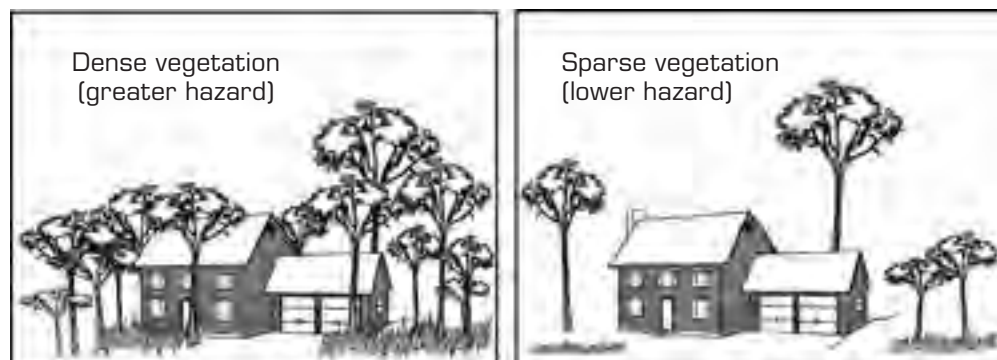
STEP 1. DETERMINE IF AN APZ IS REQUIRED

Recognising that a bush fire hazard exists is the first step in developing an APZ for your property.

If you have vegetation close to your asset and you live in a bush fire prone or high risk area, you should consider creating and maintaining an APZ.

Generally, the more flammable and dense the vegetation, the greater the hazard will be. However, the hazard potential is also influenced by factors such as slope.

- A large area of continuous vegetation on sloping land may increase the potential bush fire hazard.
- The amount of vegetation around a house will influence the intensity and severity of a bush fire.
- The higher the available fuel the more intense a fire will be.



Isolated areas of vegetation are generally not a bush fire hazard, as they are not large enough to produce fire of an intensity that will threaten dwellings.

This includes:

- bushland areas of less than one hectare that are isolated from large bushland areas; and
- narrow strips of vegetation along road and river corridors.

If you are not sure if there is a bush fire hazard in or around your property, contact your local NSW Rural Fire Service Fire Control Centre or your local council for advice.

STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ

If you intend to undertake bush fire hazard reduction works to create or maintain an APZ you must gain the written consent of the landowner.

Subdivided land or construction of a new dwelling

If you are constructing an APZ for a new dwelling you will need to comply with the requirements in *Planning for Bushfire Protection*. Any approvals required will have to be obtained as part of the Development Application process.

Existing asset

If you wish to create or maintain an APZ for an existing structure you may need to obtain an environmental approval. The RFS offers a free environmental assessment and certificate issuing service for essential hazard reduction works. For more information see the RFS document *Application Instructions for a Bush Fire Hazard Reduction Certificate* or contact your local RFS Fire Control Centre to determine if you can use this approval process.

Bear in mind that all work undertaken must be consistent with any existing land management agreements (e.g. a conservation agreement, or property vegetation plan) entered into by the property owner.

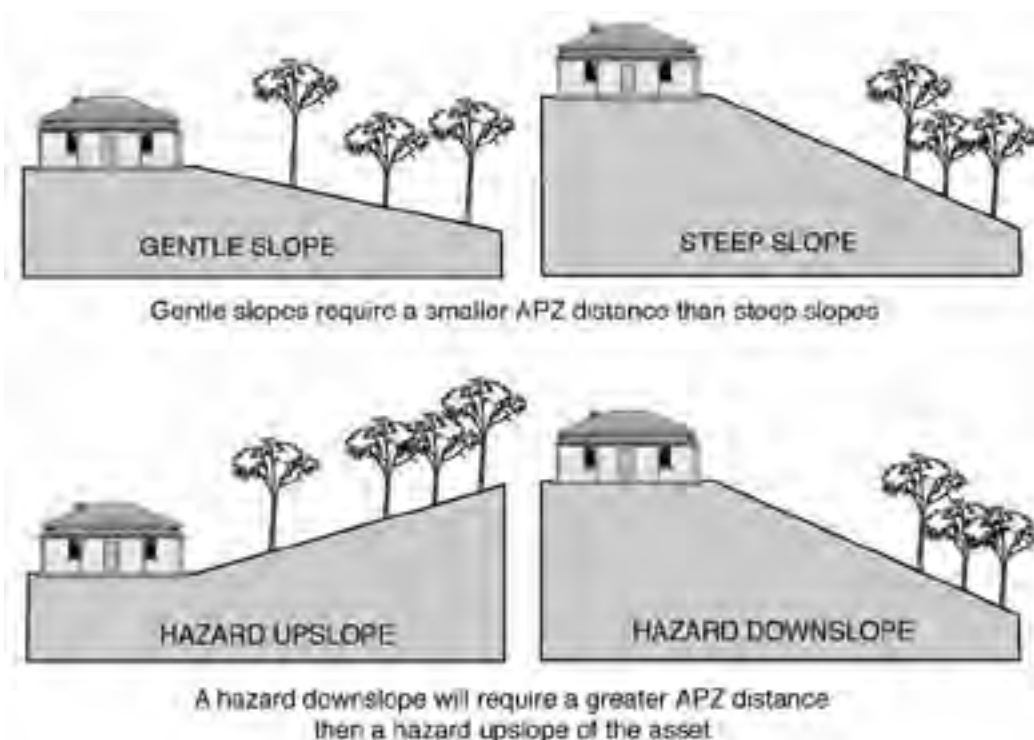
If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

If you intend to burn off to reduce fuel levels on your property you may also need to obtain a Fire Permit through the RFS or NSW Fire Brigades. See the RFS document *Before You Light That Fire* for an explanation of when a permit is required.

STEP 3. DETERMINE THE APZ WIDTH

The size of the APZ required around your asset depends on the nature of the asset, the slope of the area, the type and structure of nearby vegetation and whether the vegetation is managed.

Fires burn faster uphill than downhill, so the APZ will need to be larger if the hazard is downslope of the asset.



Different types of vegetation (for example, forests, rainforests, woodlands, grasslands) behave differently during a bush fire. For example, a forest with shrubby understorey is likely to result in a higher intensity fire than a woodland with a grassy understorey and would therefore require a greater APZ width.

A key benefit of an APZ is that it reduces radiant heat and the potential for direct flame contact on homes and other buildings. Residential dwellings require a wider APZ than sheds or stockyards because the dwelling is more likely to be used as a refuge during bush fire.

Subdivided land or construction of a new dwelling

If you are constructing a new asset, the principles of *Planning for Bushfire Protection* should be applied. Your Development Application approval will detail the exact APZ distance required.

Existing asset

If you wish to create an APZ around an existing asset and you require environmental approval, the Bush Fire Environmental Assessment Code provides a streamlined assessment process. Your Bush Fire Hazard Reduction Certificate (or alternate environmental approval) will specify the maximum APZ width allowed.

For further information on APZ widths see *Planning for Bushfire Protection* or the *Bush Fire Environmental Assessment Code* (available on the RFS website), or contact your local RFS Fire Control Centre.

STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. In order to control bush fire fuels you can reduce, remove or change the state of the fuel through several means.

Reduction of fuel does not require removal of all vegetation, which would cause environmental damage. Also, trees and plants can provide you with some bush fire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover is also needed to prevent soil erosion.

Fuels can be controlled by:

1. raking or manual removal of fine fuels

Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis. This is fuel that burns quickly and increases the intensity of a fire.

Fine fuels can be removed by hand or with tools such as rakes, hoes and shovels.

2. mowing or grazing of grass

Grass needs to be kept short and, where possible, green.

3. removal or pruning of trees, shrubs and understorey

The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.

Prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset. Separate tree crowns by two to five metres. A canopy should not overhang within two to five metres of a dwelling.

Native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

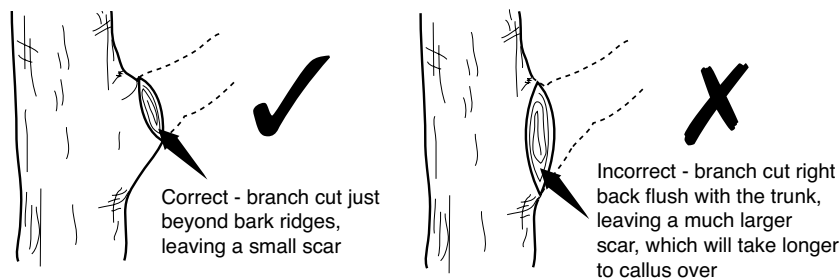
When choosing plants for removal, the following basic rules should be followed:

1. Remove noxious and environmental weeds first. Your local council can provide you with a list of environmental weeds or 'undesirable species'. Alternatively, a list of noxious weeds can be obtained at www.agric.nsw.gov.au/noxweed/;
2. Remove more flammable species such as those with rough, flaky or stringy bark; and
3. Remove or thin understorey plants, trees and shrubs less than three metres in height

The removal of significant native species should be avoided.

Prune in accordance with the following standards:

- Use sharp tools. These will enable clean cuts and will minimise damage to the tree.
- Decide which branches are to be removed before commencing work. Ensure that you maintain a balanced, natural distribution of foliage and branches.
- Remove only what is necessary.
- Cut branches just beyond bark ridges, leaving a small scar.
- Remove smaller branches and deadwood first.



There are three primary methods of pruning trees in APZs:

1. Crown lifting (skirting)

Remove the lowest branches (up to two metres from the ground). Crown lifting may inhibit the transfer of fire between the ground fuel and the tree canopy.

2. Thinning

Remove smaller secondary branches whilst retaining the main structural branches of the tree. Thinning may minimise the intensity of a fire.

3. Selective pruning

Remove branches that are specifically identified as creating a bush fire hazard (such as those overhanging assets or those which create a continuous tree canopy). Selective pruning can be used to prevent direct flame contact between trees and assets.

Your Bush Fire Hazard Reduction Certificate or local council may restrict the amount or method of pruning allowed in your APZ.

See the *Australian Standard 4373 (Pruning of Amenity Trees)* for more information on tree pruning.

4. Slashing and trittering

Slashing and trittering are economical methods of fuel reduction for large APZs that have good access. However, these methods may leave large amounts of slashed fuels (grass clippings etc) which, when dry, may become a fire hazard. For slashing or trittering to be effective, the cut material must be removed or allowed to decompose well before summer starts.

If clippings are removed, dispose of them in a green waste bin if available or compost on site (dumping clippings in the bush is illegal and it increases the bush fire hazard on your or your neighbour's property).

Although slashing and trittering are effective in inhibiting the growth of weeds, it is preferable that weeds are completely removed.

Care must be taken not to leave sharp stakes and stumps that may be a safety hazard.

5. Ploughing and grading

Ploughing and grading can produce effective firebreaks. However, in areas where this method is applied, frequent maintenance may be required to minimise the potential for erosion. Loose soil from ploughed or graded ground may erode in steep areas, particularly where there is high rainfall and strong winds.

6. Burning (hazard reduction burning)

Hazard reduction burning is a method of removing ground litter and fine fuels by fire. Hazard reduction burning of vegetation is often used by land management agencies for broad area bush fire control, or to provide a fuel reduced buffer around urban areas.

Any hazard reduction burning, including pile burns, must be planned carefully and carried out with extreme caution under correct weather conditions. Otherwise there is a real danger that the fire will become out of control. More bush fires result from escaped burning off work than from any other single cause.

It is YOUR responsibility to contain any fire lit on your property. If the fire escapes your property boundaries you may be liable for the damage it causes.

Hazard reduction burns must therefore be carefully planned to ensure that they are safe, controlled, effective and environmentally sound. There are many factors that need to be considered in a burn plan. These include smoke control, scorch height, frequency of burning and cut off points (or control lines) for the fire. For further information see the RFS document *Standards for Low Intensity Bush Fire Hazard Reduction Burning*, or contact your local RFS for advice.

7. Burning (pile burning)

In some cases, where fuel removal is impractical due to the terrain, or where material cannot be disposed of by the normal garbage collection or composted on site, you may use pile burning to dispose of material that has been removed in creating or maintaining an APZ.

For further information on pile burning, see the RFS document *Standards for Pile Burning*.

In areas where smoke regulations control burning in the open, you will need to obtain a Bush Fire Hazard Reduction Certificate or written approval from Council for burning. During the bush fire danger period a Fire Permit will also be required. See the RFS document *Before You Light that Fire* for further details.

STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION

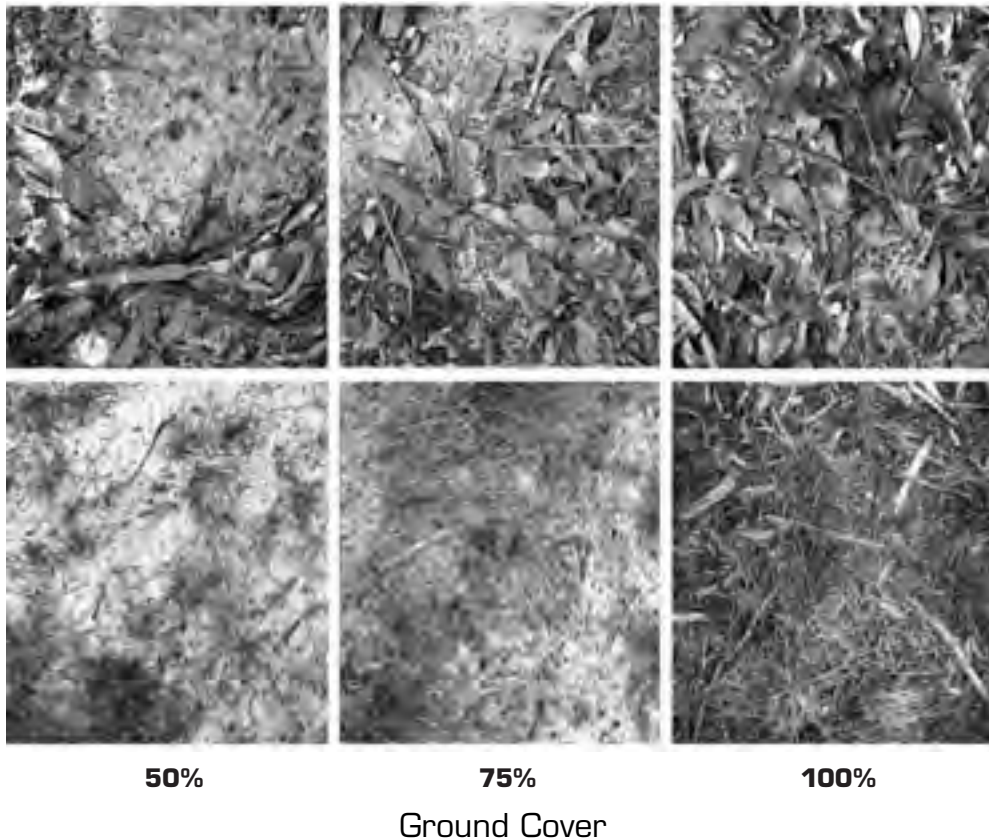
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

Soil erosion can greatly reduce the quality of your land through:

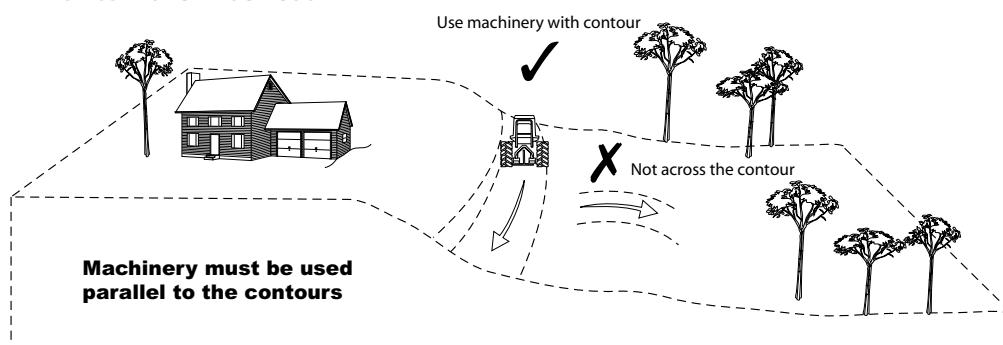
- loss of top soil, nutrients, vegetation and seeds
- reduced soil structure, stability and quality
- blocking and polluting water courses and drainage lines

A small amount of ground cover can greatly improve soil stability and does not constitute a significant bush fire hazard. Ground cover includes any material which directly covers the soil surface such as vegetation, twigs, leaf litter, clippings or rocks. A permanent ground cover should be established (for example, short grass). This will provide an area that is easy to maintain and prevent soil erosion.

When using mechanical hazard reduction methods, you should retain a ground cover of at least 75% to prevent soil erosion. However, if your area is particularly susceptible to soil erosion, your Hazard Reduction Certificate may require that 90% ground cover be retained.



To reduce the incidence of soil erosion caused by the use of heavy machinery such as ploughs, dozers and graders, machinery must be used parallel to the contours. Vegetation should be allowed to regenerate, but be managed to maintain a low fuel load.



STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

Your home and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time. To provide an effective APZ, you need to plan the layout of your garden to include features such as fire resistant plants, radiant heat barriers and windbreaks.

Layout of gardens in an APZ

When creating and maintaining a garden that is part of an APZ you should:

- ensure that vegetation does not provide a continuous path to the house;
- remove all noxious and environmental weeds;
- plant or clear vegetation into clumps rather than continuous rows;
- prune low branches two metres from the ground to prevent a ground fire from spreading into trees;
- locate vegetation far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission;
- plant and maintain short green grass around the house as this will slow the fire and reduce fire intensity. Alternatively, provide non-flammable pathways directly around the dwelling;
- ensure that shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non flammable ground cover such as pebbles and crush tile; and
- avoid erecting brush type fencing and planting “pencil pine” type trees next to buildings, as these are highly flammable.



Removal of other materials

Woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. should be located away from the house. These items should preferably be located in a designated cleared location with no direct contact with bush fire hazard vegetation.

Other protective features

You can also take advantage of existing or proposed protective features such as fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tennis courts and vegetable gardens as part of the property's APZ.

PLANTS FOR BUSH FIRE PRONE GARDENS

When designing your garden it is important to consider the type of plant species and their flammability as well as their placement and arrangement.

Given the right conditions, all plants will burn. However, some plants are less flammable than others.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage the ground fire to spread up to, and then through, the crown of the trees.

Plants that are less flammable, have the following features:

- high moisture content
- high levels of salt
- low volatile oil content of leaves
- smooth barks without “ribbons” hanging from branches or trunks; and
- dense crown and elevated branches.

When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into your garden that can cause greater long-term environmental damage.

For further information on appropriate plant species for your locality, contact your local council, plant nurseries or plant society.

If you require information on how to care for fire damaged trees, refer to the Firewise brochure *Trees and Fire Resistance; Regeneration and care of fire damaged trees*.

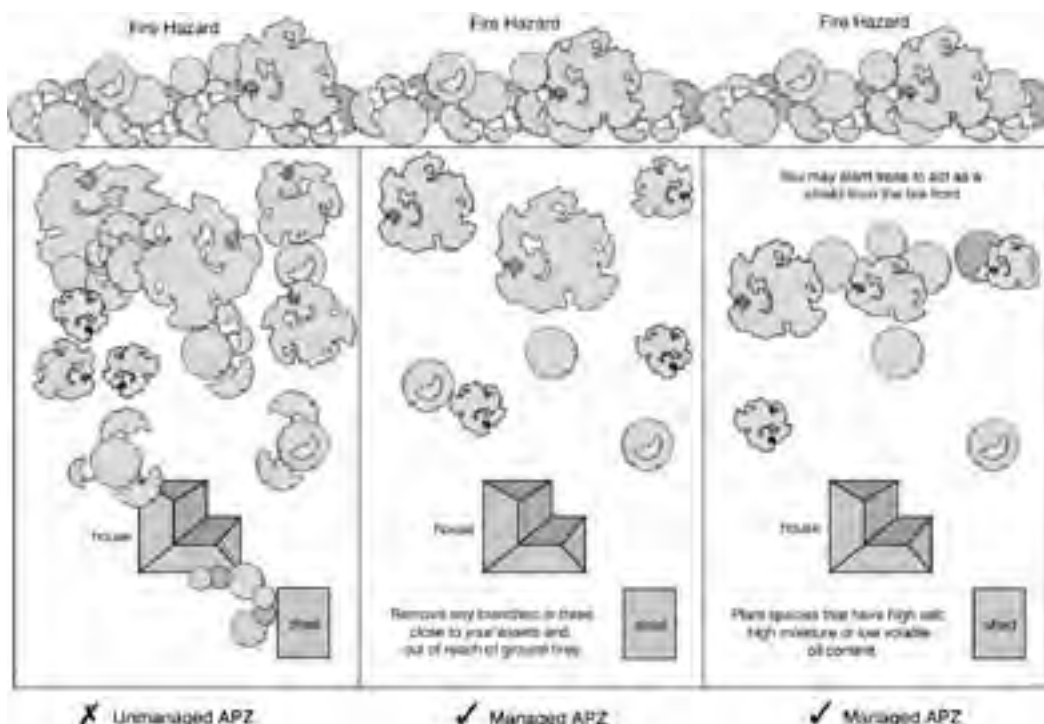
WIND BREAKS

Rows of trees can provide a wind break to trap embers and flying debris that could otherwise reach the house or asset.

You need to be aware of local wind conditions associated with bush fires and position the wind break accordingly. Your local RFS Fire Control Centre can provide you with further advice.

When choosing trees and shrubs, make sure you seek advice as to their maximum height. Their height may vary depending on location of planting and local conditions. As a general rule, plant trees at the same distance away from the asset as their maximum height.

When creating a wind break, remember that the object is to slow the wind and to catch embers rather than trying to block the wind. In trying to block the wind, turbulence is created on both sides of the wind break making fire behaviour erratic.



HOW CAN I FIND OUT MORE?

The following documents are available from your local Fire Control Centre and from the NSW RFS website at **www.rfs.nsw.gov.au**.

- Before You Light That Fire
- Standards for Low Intensity Bush Fire Hazard Reduction Burning
- Standards for Pile Burning
- Application Instructions for a Bush Fire Hazard Reduction Certificate

If you require any further information please contact:

- your local NSW Rural Fire Service Fire Control Centre.
Location details are available on the RFS website or
- call the NSW RFS Enquiry Line 1800 679 737
(Monday to Friday, 9am to 5pm), or
- the NSW RFS website at **www.rfs.nsw.gov.au**.

**Produced by the NSW Rural Fire Service, Locked Mail Bag 17,
GRANVILLE, NSW 2142. Ph. 1800 679 737**

www.rfs.nsw.gov.au