LANDSCAPE MANAGEMENT PLAN
FOR:
JINDABYNE EDUCATION CAMPUS
207 BARRY WAY JINDABYNE NSW 2627

PREPARED FOR:

HARDLINE LANDSCAPING
p: 0417 446 717
e: jason@hardlinelandscaping.com.au

ABN: 70 208 825 532
Structural landscaping license number: 345104C

TO BE READ IN CONJUNCTION WITH

- **BLACKASH BUSHFIRE CONSULTING: BUSH HAZARD ASSESSMENT**
- **NSW RFS PLANNING FOR BUSHFIRE PROTECTION 2019**
- **TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY 2023**

Document Status:

Item	Description	Date
1.0	Final Issue	6th May 2024
1.1	Updated Mod 3 Approval Conditions	25th January 2025

This document has been prepared by:

Organisation	Name/Position	Date	Revision Notes
Ann Maree O'Brien Landscape Architect p: 0439 317 282 e: landscapearchitectjindabyne@gmail.com ABN: 50 009 586 878	**PRINCIPAL LANDSCAPE ARCHITECT**	**06.05.2024**	**Final Issue**

Table of contents

7.0 Asset Protection Fire Specific

7.1 General
7.2 Asset Protection Zone On-Going Maintenance
7.3 Asset Protection Fire Season Preparation

8.0 Monitoring and Reporting

8.1 Log Book Records
8.2 Visual Diary
8.3 Bush Fire Preparation Records

9.0 Appendices and References

9.1 Scope of Works: Built Landscape
- Appendix A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY
- Appendix B - Maintenance Schedule
- Appendix C - Australian Standard References

9.2 Environmental References for Fire Prevention and Protection
- 9.2.1 BLACKASH BUSHFIRE CONSULTING: BUSH HAZARD ASSESSMENT (SSD-15788005) v1.1 - 11 January 2021
- 9.2.2 BLACKASH BUSHFIRE CONSULTING: Asset Protection Zone (APZ) Management Plan v1.1 - 14 January 2025
- 9.2.3 BLACKASH BUSHFIRE CONSULTING: Bushfire Hazard Assessment s4.55 Modification Special Fire Protection Purpose Development v1.2 - 15 October 2024
- 9.2.4 BLACKASH BUSHFIRE CONSULTING: Supplementary Letter - APZ to the southwest of Jindabyne Education Campus - 25 November 2024
- 9.2.5 Standards for Asset Protection Zones – NSW Rural Website www.rfs.nsw.gov.au
- 9.2.6 NSW RFS PLANNING FOR BUSHFIRE PROTECTION 2019
- 9.2.7 Mecone: Environmental Impact Assessment, Jindabyne Education Campus (SSD 15788005)

9.3 Environmental References for Weed/Pest Identification & Control
- 9.3.1 Weeds of the Monaro – Booklet
- 9.3.2 Control of Weeds NSW Weed Control Handbook
- 9.3.3 Sustainable Solutions and Identification for Weeds and Garden Pests

9.4 Local Site Soil Identification and Health

1.0 Introduction

1.1 Project Background

This Landscape Management Plan (LMP) has been prepared to best manage the landscape works for the Jindabyne Education Campus (JEC) located at 207 Barry Way, Jindabyne NSW 2627.
Refer 9.1 Scope of Works: Built Landscape
Appendix A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY

The LMP lists provides a detailed plant species list as planted on site.
Refer 3.6 Plant Schedule
The new planting is a mixture of endemic, native and exotic ground covers, low to tall shrubs and trees. Exotic species of ground covers, shrubs and trees are generally planted in the internal courtyards, and of the external perimeter planting to the buildings and the car park, kiss & ride areas, and ingress/egress roads tend to be native and endemic plantings.

Landscape maintenance - Monitoring and Maintenance Measures need to comply to the Bal 12.5 Standards for Asset Protection Refer 7.0 Asset Protection Fire Specific & 9.2 Environmental References for Fire Prevention and Protection

The LMP becomes effective at the point of Handover from the Landscape Contractor (LC) – HARDLINE Landscaping - for the duration of the maintenance. The LC will be undertaking 12 months of a landscape maintenance, after the point of implementation and completion of hard and soft landscape works, inclusive of the Contract of Works.

The expectation is that this LMP should be effective for a minimum of five years and reviewed every 5 years there-after.

1.2 This Report and Author

This LMP was commissioned by HARDLINE Landscaping, Jindabyne for the above-mentioned development. This LMP has been written by Ann Maree O'Brien Principal Landscape Architect, Jindabyne NSW 2627.
Ann Maree O'Brien Landscape Architect works in the Snowy Monaro region on numerous landscape projects, often with HARDLINE landscaping.

1.3 Extent of Proposed Landscape Works

Refer Landscape Architectural Drawing, as Appendix 6:

Drawing No.	Drawing Title:	Scale	Sheet Size	Sheet Orientation
JEC-LA-CON-L400 REV 1	TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY 2023	1:200	A1	Landscape

This LMP applies to the landscape areas within the site boundary of JEC as indicated on the landscape planting plan drawing.
Refer 9.1 Scope of Works: Built Landscape Appendix A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23.02.2023
The address is defined as 207 Barry Way Jindabyne NSW 2627.
The boundary extends from Barry Way, on the northern edge of the site, incorporating the ingress road, with large lawns and isolated tree plants, extending to the proposed TAFE campus at the southern end of JEC, with an egress road.

Summary: extent of LMP Landscape:

- Maintaining all new and existing soft landscape areas associated with the internal and external grounds of JEC
- Watering of all new plants and lawns to ensure healthy establishment of all plants and new lawns (lawns only to be watered during establishment period) and maintain healthy plant vigour
- Maintain landscape grounds as a presentable and safe environment
- Maintain landscape areas to meet requirements for BAL 12.5 and Bushfire Asset Protection Zone (APZ) to IPA Standards, as per Table 1: IPA Standards from Blackash's APZ Management Plan
- Be consistent with the Applicant's Management and Mitigation Measures at Section 9 Table 9-2 in the EIS; - "Environmental Impact Statement Jindabyne Education Campus (SSD 15788005)"

1.4 The Role of this Landscape Management Plan (LMP)

The LMP is an important extension of the landscape works contract. The LMP provides a guide for the ongoing management of the JEC landscape, to achieve optimum plant growth and a quality visual appearance of the new JEC zone, using sustainable and environmentally sensitive horticultural practices.
With the introduction of endemic and native planting it is hoped that regeneration of some outer areas with endemic plants will provide an extended landscape and habitat for endemic/native birds and animals.
It is assumed that the new landscape works of planting and lawn will integrate with the existing landscape of endemic trees and endemic grasses.

1.5 Landscape Maintenance Responsibilities

The Landscape Contractor, HARDLINE Landscaping Pty Ltd, will hold the first stage of responsibility for the implementation of the LMP in all aspects of the required work, to fulfil the maintenance agreement as part of the Proposed Landscape Works Contract. The LMP provides a structure for ongoing day-to-day and annual implementation, monitoring, and reviewing being undertaken by an engaged landscape contractor or landscape horticulturalist for the duration of the LMP.

1.6 Landscape Management Principles

The following landscape management principles have been identified as consistent with the approved landscape drawings.
Refer 9.1 Scope of Works: Built Landscape Appendix A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23.02.2023

- Minimise environmental impacts that may result from the landscape management activities and utilise environmentally sustainable practises. Minimise disturbance to site and extended landscape.
- Control dust and use best management practises.
- Stockpile of materials: e.g.: mulches, compost or topsoils should be covered, particularly during adverse weather conditions to minimise dust generation.
- Ensure there is no unnecessary removal of endemic vegetation.
- Proposed planting should strengthen, enhance and promote local character with the use of endemic planting in all landscape areas for their replacement plantings or adhere to proposed planting palate of the TAYLOR BRAMMER Landscape Planting Plan.

Refer 9.2 Environmental References for Fire Prevention and Protection

- Manage bush fire risk in accordance with the principles and guidelines of planning for bush fire, in NSW RFS Bush Fire Protection Report 2019 and the Bush Fire Consultants Report by BLACKASH Consultants.
- Trees in the Inner Protection Areas (IPA) for the APZ should be clear trunked to 2.0m height and have canopy separation of between 2-5m, and canopy distance from fenestration of building is 10 metres as per Bushfire Protection recommendations. APZ to IPA Standards, as per Table 1: IPA Standards from Blackash's APZ Management Plan

1.6 Landscape Management Principles, continued:

- Prune shrubs or ground covers under trees to allow a clear trunk tree of min 2m; avoid native grass clumps under trees.

Refer 5.0 Irrigation and Hand Watering

- Promote a long-term low water use, low maintenance approach with the use of endemic and native species.
- Provide clear sightlines for all vehicle users.
- Provide a safe environment minimising potential risk to people, buildings and property.
- Always use sustainable best practise horticultural maintenance methods; avoid use of chemicals on site.
- Target noxious weeds and feral animals by using integrated pest management approaches; avoid use of chemicals.
- Protect all new plantings from feral animal destruction, such as deer and rabbits; this may require temporary fencing.

Other:

- Appropriately budget, plan and manage the landscape maintenance to provide sufficient resource to achieve a long-term quality landscape as intended by Landscape Architects Taylor Brammer, to Clients' satisfaction.

1.7 Site Storage

There will be no requirement for the storage of materials or equipment during the 12-month maintenance period.

1.8 Report Structure

Refer 9.0 Appendices and References
This report is to be read in conjunction with the following documents:

- Landscape construction drawings capital JEC-LA-CON-L400 Rev 1, TAYLOR BRAMMER Landscape Planting Plan – Issued for Construction 23.02.2023
- BLACKASH BUSHFIRE CONSULTING: BUSH HAZARD ASSESSMENT
- NSW RFS PLANNING FOR BUSHFIRE PROTECTION 2019
- Weeds of the Monaro – Booklet

Refer 9.1 Scope of Works: Built Landscape
9.2 Environmental References for Fire Prevention and Protection
9.3 Environmental References for Weed and Pest Identification and Control
9.4 Local Soil Identification and Health

This LMP is structured in two main maintenance categories;

1. Specific landscape types - those maintenance activities that are specific to particular landscape types.

The specific landscape types are:
Massed Planting Beds in Internal Courtyards: plantings of endemic, native and exotic grasses, ground covers, shrubs, and trees;
Massed Planting Beds of External/Perimeter Building Areas: plantings of endemic, native and exotic grasses, ground covers, shrubs, and trees;
Isolated Planting of trees: endemic, native and exotic tree plantings in new lawn areas;
Conservation Zone: retention of Existing Endemic Trees in new lawn areas;

2. All areas of the site - those maintenance activities that apply to all areas of across the site.

These activities include:

a) Disease and insect control
b) Feral animal soft landscape damage and control
c) Irrigation and hand-watering

1.9 Intensity of Use

A key factor in the frequency and types of landscape maintenance activities required, for specific areas, is the intensity of their use.

There are areas which will have high frequency use and potential trampling, such as the Internal Courtyard massed planting areas; and External/Perimeter planting to the building and carpark areas. It is anticipated that there will be low frequency use and risk of trampling for the Conservation Zone/Extended Landscape of isolated tree plantings and new lawn areas.

Internal courtyard planting areas and car park access areas will be susceptible to compaction from high pedestrian usage and therefore planting will be susceptible to trampling damage, soil compaction, mulch compaction and death of plants.

1.10 Weeds Prevention and Suppression

Refer 4.9 Weeding
Minimise disturbance to site. Maintenance Contractor to make good to any disturbed areas (exposed topsoil) immediately, with use of 100mm depth of site topsoil or clean imported topsoil, and for planting areas 100mm depth of pine bark mulch as a weed suppressant. This includes all cut and fill areas, using suppressing methods of site topsoil and imported pine bark mulch.

2.0 General Site Conditions

2.1 Existing Site Soil

Refer 9.4 Local Soil Identification and Health
The JEC site was previously used for rural agricultural purposes and retains some remnant bushland. The soil is typical of the region derived from granite rock, has high gravel content, is highly porous, and of poor humus quality.

Australian Soil Classification: Site Topsoil for 207 Barry Way, Jindabyne NSW is: Kurosols
Kurosols are soils: with a high clay content between topsoil and subsoil; and has a strongly acidic subsoil. This inherent acidity can result in other chemical issues such as high magnesium, sodium and aluminium concentrations that can inhibit plant growth.

Existing Soil pH: Kurosols generally have very low agricultural potential with high acidity pH less than 5.5 and low chemical fertility commonly have low water holding capacity and often sodic; i.e: the presence of a high proportion of sodium ions.
These soils are conducive to planting of endemic Alpine plants and cool climate Australian natives.
The topsoil pH should be retested as part of general soil testing monitoring during the maintenance period, particularly if issues are evident in poor plant growth, invasion of pests or diseases, or plant deaths.

2.2 Existing Vegetation

Refer 4.8 Pruning; 7.0 Asset Protection Fire Specific; 9.1 Scope of Works: Built Landscape Appendix B - Maintenance Schedule
Isolated endemic mature trees were retained as part of the proposed landscape works.
Existing endemic trees to be retained and protected during any site works. Unauthorised clearing of endemic vegetation should not occur.
Fire preparation maintenance of existing endemic trees to meet the NSW RFS Bushfire Protection 2019 – IPA requirements is acceptable.

Refer 4.10.2 Removal of Dead Trees or Dead Limbs
Old tree growth of trunks and limbs of existing endemic trees provide excellent habitat opportunities as nesting hollows for threatened alpine species. Endangered ecological communities of alpine breeding birds, insects, micro bats and small mammals seek shelter in these habitat trees.
Removal of dead limbs to be approved by Client. Dead limbs removed should be retained on site, wherever possible, as elements in the extended landscape for conservation rehabilitation areas to provide habitat for threatened species.

3.0 Proposed Planting and Design Compliance

3.1 General

The LMP refers to all soft landscape areas; mass planted areas with trees, shrubs, ground covers and grasses; isolated trees and new lawn areas. Due to the entire JEC site being classified as an inner protection area (IPA) the landscape planting is required to be separated, to not form continuous canopies, as in accordance with the Bush Fire Protection Requirements.
Refer 7.0 Asset Protection Fire Specific; 9.1 Scope of Works: Built Landscape Appendix B - Maintenance Schedule

3.2 Internal Courtyards Massed Planting Beds

The Internal Courtyard Planting is intended to create layered planting palettes to visually break up the dominance of the built form and provide horticultural interest to the students; a soft green environment with seasonal variations and provide a cooling microclimate for relief from building heat in summer. The density of the planting should ensure that once established, water irrigation can be reduced. The Internal Courtyards Massed Planting areas are fully irrigated.

3.3 External and Carpark Zones Massed Planting Beds

The External and Carpark Zones Massed Planting Beds is intended to create a visually attractive landscape for visitors and students alike. The use of trees and shrubs with massed planting of ground covers provides a visual break from the dominance of the built form. The density of planting should ensure that once it established water irrigation can be reduced. These massed planting areas are fully irrigated. These massed planting areas, particularly the car park areas, are very susceptible to trampling and destruction from humans.

3.4 Isolated Tree Planting

The isolated tree planting is a combination of endemic, native, and exotic species. The tree locations, species and mature canopy span were considered to meet the requirements of a BAL 12.5 rating for the entire site.
The variety of tree species designed by TAYLOR BRAMMER is intended to create a visually inviting landscape for visitors and students in an otherwise carpark dominated landscape. The retention of existing mature endemic snow gums provides an instant landscape and an important identity of place.

3.4 Isolated Tree Planting, continued:

Refer 5.3 Hand Watering for Isolated Tree Plantings

New isolated trees require thorough maintenance/monitoring for watering and weed control to ensure vigorous growth. The new trees require deep soaking watering around the entire root system/perimeter of the tree.

Existing endemic mature trees do not require the same watering regime, however, in extreme heat or an extremely dry period additional watering would be beneficial.

3.5 New Lawn Areas

Refer 5.4 Hand Watering for New Lawn

New lawn areas will not be automatically irrigated. All new lawn areas require hand watering during establishment period and for long-term maintenance, particularly during dry seasons and periods of extreme heat.

3.6 Plant Schedule

FIND	PLANT LIST	COMMON NAME	QUANTITY
Trees			
ADE	*Acacia dealbata*	Silver Wattle	15
AVE	*Allocasuarina verticillata*	Drooping She-oak	1
EDA	*Eucalyptus dalrympleana subsp. dalrympleana*	Mountain gum	5
ELA	*Eucalyptus lacrimans*	Weeping Snow Gum	62
EOV	*Eucalyptus ovata*	Swamp gum	5
EPA	*Eucalyptus pauciflora*	Little Snow Gum	18
EPD	*Eucalyptus pauciflora dwarf*	Little Snow Gum	13
EPU	*Eucalyptus pulverulenta 'Baby Blue'*	Silver leaved Mountain Gum	1
ERU	*Eucalyptus rubida*	Candlebark	27
EST	*Eucalyptus stellulata*	Black Sally	28
PCA	*Pyrus calleryana*	Red Spire pear	5
POK	*Prunus okame*	Flowering Cherry	13
Shrubs			
ACA	*Acacia cardiophylla*	Wyalong Wattle	2
AHO	*Acacia howittii*	'Honey Bun'	5
BMA	*Banksia marginata*	Silver Banksia	3
BMM	*Banksia marginata 'mini marg'*	Silver Banksia dwarf	6
BSP	*Banksia spinulosa 'Birthday candles'*	Banksia Birthday Candles	24
CAL	*Correa alba*	White Correa	23
CIS	*Correa 'Isabell'*	native fuscia	5
CJE	*Correa 'Jezabell'*	native fuscia	5
CLJ	*Callistemon 'viminalis 'Little John'*	Dwarf Bottlebrush	7
COM	*Correa 'O.M.G'*	native fuscia big flowers	13
ENU	*Einadia nutans*	Nodding Saltbush	6
ETO	*Enchylaena tomentosa*	Ruby Saltbush	12
GLA	*Grevillea lanigera*	Woolly Grevillea	10
GOV	*Goodenia ovata*	Hop Goodenia	1
LPC	*Leptospermum 'Pink Cascade'*	Tea Tree	33
LPO	*leptospermum polygalifolium*	Tea Tree	12
OPH	*Olearia phlogopappa*	Daisy Bush	2

Refer Plant Schedule for Groundcovers and Grasses on Page 8.

3.6 Plant Schedule, continued:

CODE	PLANT LIST	COMMON NAME	QUANTITY
Groundcovers			
BAC	*Brachyscome aculeata*	Hill Daisy	685
BNI	*Braschyscome nivalis*	Native Snow Daisy	685
BRA	*Braschyscome radicans*	Marsh Daisy	685
CAP	*Chrysocephalum apiculatum*	yellow buttons	76
CCU	*Centipeda cunninghamii*	Old Man's Weed	45
CSE	*Chrysocephalum semipapposum*	yellow buttons	76
GMT	*Grevillea 'Mt Tamboritha'*	Grevillea 'Mt Tamboritha'	197
KMU	*Kunzea Muelleri*	Yellow Muelleri	197
MAU	*Mentha australis*	Native River Mint	230
MPA	*Myoporum parvifolum*	pink boobiala	238
SBI	*Scleranthus biflorus*	Canberra Grass, Two flowered Knawel	1883
SSE	*Swainsona sericea*	silky pea	119
Grasses			
AMI	*Arthropodium milleflorum*	Vanilla Lily	239
AST	*Arthropodium strictum*	Chocolate Lily	235
BBU	*Bulbine bulbosa*	Bulbine Lily	388
CBI	*Carex bichenoviana*	Curly Sedge	321
CGA	*Carex gaudichaudiana*	Fen Sedge	108
DCA	*Dianella caerulea*	Flax Lily	108
DRE	*Dianella revoluta 'Petite Marie*	Dianella 'Petite marie'	458
DTA	*Dianella tasmanica*	Tasman Flax lily	388
FNO	*Ficinia nodosa*	Knobby Club-rush	54
LLO	*Lomandra longifolia*	Honey Reed	54
PCO	*Poa costiniana*	Prickly snow grass	321
PFA	*Poa fawcettiae*	Blue Snow Grass	458
PHE	*Poa heimata*	Soft Snow Grass	321
TAU	*Thesium australe*	Toad flax	458
THA	*Themeda australis*	Kangaroo Grass	48

4.0 Specific Landscape Management Activities

4.1 Massed Planting Areas

Massed planting areas vary in appearance and plant compositions. Generally, all massed planting areas are a mixture of endemic, native and exotic plant species. These areas have a combination of different plant groups with some semi advanced trees, tall and medium shrubs, ground covers and grasses.

The key differences in management of new endemic and native plants are the requirement for low phosphorus fertilisers, at a lower rate than the exotic species generally. Natives and endemics generally have lower water requirements in comparison to exotics and are best adapted to the harsh Australian Alpine conditions.
Endemic plants will best tolerate the site soils and the extremities of the harsh Alpine environment.

Landscape Architects TAYLOR BRAMMER nominated all the exotic, native and endemic plants, having been assessed to withstand the extremities of the local Alpine environment. However, if any plant species consistently fails, a more sustainable/suitable option, in respect to the long-term landscape management, should replace the failed plant species with a similar form of endemic species deemed more suitable.

4.2 Isolated Tree Planting

New tree plantings of exotic, native and endemic tree species in massed planting areas, and as isolated trees in new lawn areas will generally be planted in site soil, with a mix of locally imported clean top soil and organic (compost) matter.

4.2 Isolated Tree Planting, continued:

The minimum recommended topsoil depth for new trees is 300mm with a minimum subsoil depth of 200mm. This will provide the tree with the minimum moisture nutrient reserve and anchorage capacity.

The various tree species nominated by TAYLOR BRAMMER have been assessed to withstand the extremities of the local Alpine environment. However, if any new trees species consistently fails, a more sustainable/suitable option, in respect to the long-term landscape management, should replace the failed plant species with an endemic tree species.

4.3 New Lawn Areas

New lawn areas will be Canberra Blend instant turf laid over prepared soil profiles of site subsoil and clean imported soil. New lawn areas will be hand watered for establishment only.
Any failed sections of new lawn areas to be reinstated with Canberra Blend turf, and lawn fertiliser, and thoroughly watered to establishment.
Refer 5.0 Irrigation and Hand Watering

4.4 Conservation Zone

The Conservation Zone Planting Areas (along the boundary of Barry Way, abutting the car park and drop off zones) consist of isolated tree plantings, in new lawn, amongst existing trees. These trees are primarily endemic species.

4.5 Soil Management for New Landscape Areas

4.5.1 General

All new landscape areas, that is; massed planting, isolated tree planting and new lawn areas will perform better when the soil conditions are healthy. Building healthy soils is the key to achieving excellent long-term maintenance of all new landscape areas. Soil health is primarily achieved with regular applications of organic soil conditioners such as animal manures, decomposed green waste and/or blends of compost, and fertilisers.
Fertilising and composting are not regular maintenance activities, except, where there are obviously plant deficiencies, with poor plant growth or diseases. Soil health should be assessed on an annual basis by observation and disease leaf analysis.

4.5.2 Soil Management for Massed Planting Areas

Wherever massed planting areas are, it is understood that a combination of soil profile is thus:
Site subgrade soil at nominally 200mm depth, then site topsoil to 100mm, with additional locally sourced imported topsoil to 100mm, mixed with 50mm compost and or soil conditioner as a combined top layer of 150mm nominal depth.

4.5.3 Soil Management for Isolated Tree Planting

Wherever trees have been planted it is understood that a combination of site subgrade soil, site topsoil has been used as backfill, mixed with additional locally sourced imported topsoil, compost and or soil conditioner in the top layers.
It is important that the minimum recommended topsoil depth for all trees is 300 millimetres which encourages good retention of moisture, nutrient reserve, and good anchorage of the tree root.
During maintenance, a physical inspection/assessment of the topsoil with the health of the tree to assess the soil health and structure and its drainage capability.

Ongoing analysis of the Soil pH:

- Salinity (electrical conductivity)
- Major and Minor Nutrients
- % of Organic Matter

The most common amendments used to bring local Jindabyne soils up to standard for good vigorous plant growth are, adding:

- Compost and/or manures to improve organic matter and nutrient levels
- Dynamic Lifter Product
- Seasol Product
- Complete fertilisers with Trace Elements to correct a particular deficiency or most multiple deficiencies.

Water Crystals: When planting out it may be useful to add water crystals to the subsoil layers to help retain soil moisture and provide slow-release moisture during extreme heat or prolonged dry periods.
Soil Profiles for Root Balls:
It is important that any removed backfill soil is returned in the layers in which it was excavated, so that topsoil with organic matter is placed back near the top 300mm of the root ball backfill. If this is not carried out correctly, anaerobic conditions can occur where the existing site soil backfill is unsuitable. Make up any shortfall of topsoil for new root balls with a mix of locally sourced clean imported topsoil 70%, with composted organic soil conditioner of 30%.

4.5.3 Soil Management for Isolated Tree Planting, continued:

Sandy loam soil or site won topsoil Composted soil conditioner conforming with AS 4454	70-100% by volume 0-30% by volume	e.g. 8 parts washed sand/2 parts sandy loam/1 part AS 4454 compost

4.5.4 Soil Management for New Lawn Areas

Wherever new lawn areas are, it is understood that a combination of soil profile is thus:
Site subgrade soil at nominally 200mm depth, then site topsoil to 100mm, with additional locally sourced imported topsoil to 100mm. Soil for new lawn areas, as soil depth and soil quality are to be maintained as a minimum soil profile, as mentioned above.

Fertiliser and Compost should be re-applied prior to re-mulching, to maintain healthy soil & plants.

4.6 Mulch Management for New Landscape Areas

4.6.1 General

Use only clean, pine bark mulch.
No weeds or off cuts from weed species.
Maintain minimum depths of 75mm to maximum depths of 100mm for all massed planting areas and isolated tree plantings.
Allow for seasonal and annual decomposition of mulch depths.
Allow for wind removal or trampling of mulches.

4.6.2 Mulching for Massed Planting Areas

Mulch all massed planting areas, for health and vigour of plants, should maintain a minimum depth of 100mm pine bark mulch. Allow for wind removal or trampling of mulches in high traffic areas.

4.6.3 Mulching for Isolated Tree Plantings

Mulch to base of all isolated tree plantings including existing trees to 1.0m – 1.5.m diameter around trunk. Maintain a 45-degree spade edge.
The mulch to base of all trees on site to ensure health, vigour, and longevity.
Mulch should be clear of trunk and extend to a depth of 100mm.

4.7 Fertilising and Composting

Refer 9.0 Appendices and References. 9.4 Local Soil Identification and Health
Fertilising and Composting are not critical as regular maintenance activities, except where there are obvious soil deficiencies, indicated by poor plant growth or poor plant health/disease/pests; or when opportunities arise, such as prior to additional mulching applications. The most common applications are required to bring local soils up to suitable plant growth and vigour.
Application of Fertilisers and Compost should be assessed at a minimum of 3-6 months or on an annual basis, by observation of plant growth, soil health and plant leaf analysis.

Compost:
Additional Compost and/or animal manures are used to improve organic matter and nutrient levels of the nutrient poor site Kurosols Soil.

Fertiliser:
Use Nominated Organic Fertiliser: Dynamic Lifter which is a Long-Life Complete Fertiliser. This product is an organic blended fertiliser comprising composted poultry manure, meat meal, fish meal, seaweed meal and zeolite.
Dynamic Lifter has a NPK ratio 3.5: 1: 1.6. It has a good level of key nutrients and is high in Nitrogen.
It is widely used in the Snowy Monaro region to improve soil health, and that of plants and lawn areas.

Additional Fertilisers:
Water with Seasol, new plantings or poor vigour plants:
Apply Product Seasol regularly for several months if plant vigour is poor before any nominated fertilising is done. Once the plant is starting to respond to the Seasol treatment, apply an organic fertiliser such as Dynamic Lifter, blood and bone or slow-release tree tablets.

Complete Fertilisers:
Sprinkle Complete Slow-Release Fertilisers at the base of new or poor vigour plants. This product contains trace elements to correct a particular mineral deficiency or most multiple deficiencies.

Water Crystals:
When planting replacement plants, it may be useful to add water crystals into the subsoil and topsoil mix to help the soil retain moisture and provide the plants a slow release of water during extreme heat or prolonged dry periods.

4.8 Pruning

Ground cover and shrubs should be maintained at a maximum height of 0.5m height along path edges for personal security. Remove dead or dying plant material from massed planting areas as required.
Refer 7.0 Asset Protection Fire Specific; 9.2.2 Standards for Asset Protection Zones – NSW Rural Website www.rfs.nsw.gov.au

Refer 9.2.3 NSW RFS PLANNING FOR BUSHFIRE PROTECTION 2019
Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service

Maintain plant pruning to meet the IPA requirements for APZ as per Bush Fire Protection 2019 NSW Rural Fire Service.
In summary, clear trunk trees up to 2m above finished surface level and maintain clear canopy 10m away from windows.
Maintain tree canopy distances of 2-5m apart.

Habitat Trees: Avoid removal of dead limbs from endemic mature 'habitat' trees. These trees provide important habitat opportunities, as nesting hollows for fauna, native birds, bats, and insect species.

4.9 Weeding

Refer 6.2 Monaro Invasive Weed Species; 9.3 Environmental References for Weed and Pest Identification and Control
9.3.1 Weeds of the Monaro – Booklet; 9.3.2 Control of Weeds

4.9.1 Terminology

A Noxious Weed is a plant declared to be noxious under the NSW Noxious Weeds Act 1993. Noxious weeds can be agricultural weeds, environmental weeds or have a direct impact on human health.

Environmental Weeds are non-local plants that invade and change natural areas and threaten the survival of endemic plants and animals. After land clearing, environmental weeds are the greatest threat to our indigenous endemic biological diversity. Environmental weeds have the potential to readily invade garden bed areas, and potentially impact on adjacent lands. In addition, to being an environmental hazard, weeds occurring in massed planted areas, at the base of trees or within paving areas can be unsightly and present an untidy appearance.

The Monaro Weed Species List provides a list of plants that are classified as weeds in the Snowy Monaro region, and those weeds which must be safely removed from site, and not planted in any new works.
https://www.snowymonaro.nsw.gov.au/files/assets/public/v/2/environment-and-waste/biosecurity/weeds-of-the-monaro-booklet_web.pdf

For Control of Weeds on the site, a refer to the NSW Weed Control Handbook which is a guide to weed control in non-crop, aquatic and bushlands situations NSW DPI Management Guide, 7th edition. A copy of the handbook can be downloaded at the link:

https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/123317/weed-control-handbook.pdf

4.9.2 General

Weeding is often a concern in newly exposed soils, in areas of massed planted, lawns and at the base of isolated trees. Maintaining depths of mulch and massed planting of ground covers will suppress weeds. Ensure that Environmental and Noxious Weeds do not reproduce within or spread into landscape or neighbouring areas. Weed control is a critical maintenance action.

Allow for natural regeneration of endemic plant species within massed garden beds and to the base of isolated tree. Example of endemic plants for natural regeneration are endemic grasses, tuft species and ground covers. Correct plant identification of these endemic species is vital, so not removed as weed species.
Do not plant out areas which have NOT been disturbed during construction period.
Do not disturb any intact endemic plant associations/landscapes beyond the No Go Zones or Extent Of Works.

4.9.3 Weeding Maintenance Schedule

Maintenance action required	Frequency
Environmentally Sustainable Weed Removal by Hand:	
Always consider non chemical control of weeds in favour of chemically invasive control. Prevent reproduction of Noxious and Environmental Weeds by destroying seedlings and any established weeds before seed set. Remove by hand in the first instance (where infections are low). Ensure that the entire weed, including all roots and seeds is removed. Dispose of the weeds offsite, to meet Snowy Monaro Regional Council and DPI Environmental Weed Control and disposal measures.	Two weeks or Monthly
Use of Herbicides:	
Use of Bio-Degradable Herbicide is MANDATORY. Use Bio-Degradable Herbicide application for weeds which cannot be controlled by hand removal. Herbicide application must occur before weed seed set. After spraying Herbicide to Manufacturers' Recommendations allow for active Herbicide to seep in, remove any dead weeds, finish flush with the ground surface and dispose of the cuttings. Avoid overspray. Non targeted species must be reinstated if damaged by Herbicide application. Herbicide use must comply with the requirements of the NSW Weed Control Handbook, NSW DPI Management Guide, 7th edition, as noted above.	Bi-Monthly or only as required

4.10 Removal and Replacement of Dead Plants and Lawn Areas

Refer 4.1 Massed Planting Areas, 4.2 Isolated Tree Planting; 4.3 New Lawn Areas, 4.4 Conservation Zone

4.10.1 General

Allow for potential re-use of clean dead plant material as site mulch, or hollow limbs as habitat in Conservation Zones, where not a fire hazard in IPA/APZ.
If consistent plant failure happens for a particular exotic or native plant species, a more suitable option such as an endemic plant species may be deemed more appropriate. Should any consistent plant failures be replaced by a nominated endemic species, it must be to the agreement of the Client and TAYLOR BRAMMER Landscape Architects.

4.10.2 Removal of Dead Trees or Dead Limbs

If consistent tree failures happen for any exotic or native species, a successful endemic tree species replacement may be considered as a long-term suitable planting. Should any consistent plant failures be replaced by a nominated endemic species, it must be to the agreement of the Client and TAYLOR BRAMMER Landscape Architects.

Avoid removal of any dead hollow limbs from mature trees, i.e. habitat trees. Avoid removal unless a danger to human life, and as required by Client. These dead hollow limbs provide important habitat opportunities, in so far as nesting hollows for Vulnerable and Threatened endemic fauna, birds, micro-bats and Bogong Moth and other important endemic insect species.

4.10.3 Reinstatement of Dead Lawn Areas

Replace dead sections of new lawn during maintenance periods. Clean cut dead sections of lawn. Add nutrient rich soil, compost and fertilisers to soil profile.
Add clean imported top soil, compost, and appropriate fertilisers for good, seeded lawn reestablishment.
Add new Alpine Lawn Seed Mix, applied to surface.
Well-watered by hand until new lawn is established.
Install temporary fencing in high traffic areas to avoid trampling during establishment, to Client's Temporary Fencing standards.

5.0 Irrigation and Hand Watering

5.1 General Watering Regime

Watering of all new plants delivered to site, immediately upon arrival. Client/Clients' representative to undertake all responsibility for Watering of Plants immediately upon delivery of plants to site; and during planting out to reduce plant root shock; and during Plant Establishment assuming this is a minimum of 3 - 24 months, and during entire maintenance period.

5.2 Irrigation for Massed Planting Areas

All massed planting bed areas are to have subsurface irrigation system to minimise water use and evaporation. The irrigation system has been designed, supplied and installed by an experienced irrigation specialist/landscape contractor.

5.2 Irrigation for Massed Planting Areas, continued:

Refer to JEC detailed Irrigation Plans and Specification before commencement of maintenance period, provided by Contract Landscape Contractor (LC).

The Contract Landscape Contractor will ensure that the system is run through and operating correctly. Coordinate with site Landscape Contractor to ensure completion of the irrigation system is in correct location, is fully operational and readily provides available supply of water to all massed planting areas.
Manuals, warranties, and a minimum of two programmes, summer and winter are to be provided to the Clients' representative at the time of handover/completion.
At the completion of the installation the contract landscape contractor must provide complete dimension drawings, based on the approved design plan of the entire irrigation system as executed, clearly indicating the type and location of all the sprinkler lines, heads etc. This is essential to ensure that the irrigation lines and valve boxes can be located for repair and replacement. Works as executed irrigation drawings should be given to the Client/Clients' Representative.

The following principles for irrigation are:

- Maintain adequate soil moisture ie: match supplemental irrigation water needs to climate conditions & available soil water
- Water effectively ie: apply water so that it reaches the root systems with minimal evaporation losses
- Encourage extension of the root system ie: apply water to the extremity of the root system and beyond
- Remove competition for water ie: maintained mulch around the plants and remove all weeds

5.3 Hand Watering for Isolated Tree Plantings

All isolated new tree plantings and existing trees ie: within new lawn to be hand watered during establishment period and as required.

Hand watering of isolated trees: The new tree plantings require deep soaking water around the entire root system ie: the perimeter of the tree. This can be determined by the canopy width of the tree.
Deep root watering of all new trees required regularly, particularly in extreme heat, dry seasons from winter to water. Watering may be required during winter for the first 5 years if particularly dry winters.
New plantings of isolated trees require a thorough maintenance/monitoring of hand watering and weed control for vigorous plant growth during the establishment period, and during dry summers, dry winters, and/or extreme heat.
Hand watering of existing endemic snow gums: The snow gums, as established mature endemic trees, do not require regular watering, however in extreme heat or extreme dry seasons additional watering would be beneficial for the longevity and success of these trees.

5.4 Hand Watering for New Lawn

All new lawn areas to be hand watered during Establishment Period. Regular watering required particularly in extreme heat, dry summer seasons or dry winters.
Assume watering not required in winter unless it is a particularly dry winter. Lawn areas tend to remain dormant during harsh winters.

6.0 Protective Measures

6.1 Erosion, Contamination and Sedimentation Control

During maintenance or minor site works all precautions necessary should be undertaken to prevent erosion, contamination, and any sedimentation of the site soils into surrounding areas and all drainage systems, including but not limited to, the local catchment drains or temporary drains, diversion, and dispersal of concentrated flows to inlet points, where the water can pass through the site without detrimental impacts.
If site works are planned, construction and maintenance of silt traps should be installed to prevent discharge of scoured material to downstream areas.
Undertake the following preventative measures:

- Ensure exposed soil surfaces are stabilised.
- Use environmental erosion and sediment controls.
- Construct of temporary fencing around disturb soil sites to prevent water and wind soil removal.
- Regularly monitor and maintain erosion and sediment control structures to ensure they are effective and functioning.

6.2 Monaro Invasive Weed Species

Refer 4.9 Weeding, 9.3 Environmental References for Weed and Pest Identification and Control
9.3.1 Weeds of the Monaro – Booklet; 9.3.2 Control of Weeds; 9.3.2 Control of Weeds
Ensure all Noxious and Environmental Weeds are removed from site, to meet the standards of Snowy Monaro Regional Council and DPI Environmental Weed Control, and disposal measures.

6.3 Disease and Insect Pest Control

Refer 9.3.3 Sustainable Solutions and Identification for Weeds and Garden Pests
Always consider safe biological and non-chemical controls, before and rather than chemical controls in the first instance, for disease and pest control, because the margin for error in use of chemicals is far greater with chemicals. For instance, most insecticide will also harm beneficial insects and amphibians as well as target the disease species.

For a comprehensive reference to the Identification, Diagnosis and Control of Pests and Diseases refer to:
'*What Garden Pest or Disease Is That?': Organic and Chemical Solutions for Every Garden Problem*
by Judy Mc Maugh. Published 2000 New Holland.

6.4 Trampling or Wind Damage to Plants

Refer 4.10 Removal and Replacement of Dead Plants and Lawn Areas
Landscapes particularly massed planting areas near car parks, drop off zones and internal courtyards are more prone to trampling damage.
Wind damage or wind pruning can be an issue in exposed areas e.g: the Conservation Zone and External Planting Areas.

7.0 Asset Protection Fire Specific

Refer 9.0 Appendices and References
9.1 Scope of Works: Built Landscape
APPENDIX A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY 2023
Landscape Drawings for Planting Zones and Planting Plans for specific species and layouts and mulches for each zone.

Refer 9.2 Environmental References for Fire Prevention and Protection
Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service
A4.1.1 Inner Protection Areas IPAs – Establishing and Maintaining an IPA

7.1 General

Asset Protection Zone Planting and Maintenance: The nominated plant species, plant layouts, and associated mulches have been carefully considered by TAYLOR BRAMMER Landscape Architects to reduce flammability in the IPA/APZ zone around the property. It is essential that the Client/Clients' Representative maintains the new landscape areas in preparation for any Bush Fire season.

7.2 Asset Protection Zone On-Going Maintenance

The entire JEC property must be managed as an Inner Protection Area (IPA) site.
The IPA requirements, in summary are:

- Minimal level of fuel on ground level
- Grass must be mowed and or grazed.
- Trees and shrubs must be retained as clumps or islands and do not take up more than 20% of the site area.
- Trees must be located far enough from buildings so that they will not ignite the building.
- Garden beds, with flammable shrubs, must not be located under trees or within 10 metres of any windows or doors.
- Minimal use of plant species that keep dead material or drop large quantities of ground fuel.
- Tree canopy cover must not cover more than 15% of the site area.
- Tree canopies must not be located within 10 metres of the building windows or doors.
- Tree canopies must be separated 2 - 5 metres, and do not provide a continuous canopy, from the hazard to the building.
- Lower limbs of trees removed up to the height of 2 metres above the ground.

Additional soft landscape works in the Conservation Zone and External Landscape Areas, which incorporate the existing landscape has been designed in accordance with the above and follows the principles of Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service.
Trees are spaced at distances to prevent canopies touching or overhanging buildings.
Shrub planting has been located between gaps in tree canopies and in isolated groups. Non-flammable exotic species has been used adjacent to buildings.

Ongoing Bush Fire management and maintenance is to be incorporated in these external zones, as per Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service.

Table 1: IPA Standards

Stratum	APZ Standard
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 ground • tree canopies should be separated by 2 to 5m • 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 • shrubs should not be located under trees • shrubs should not form more than 10% ground cover • 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) • leaves and vegetation debris should be removed.

7.3 Asset Protection Fire Season Preparation

In preparation for Bush Fire Season all maintenance requirements as per conditions and requirements as per Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service, need to be reviewed and implemented.

Prior to extreme dry and fire seasons or fire events, all native and endemic grasses should be pruned heavily, and lawn grass areas mown to a maximum 30mm height in preparation for preventative fire protection. All tree canopies and interlocking tree limbs assessed and removed as required.

8.0 Monitoring and Reporting

8.1 Log Book Records

Refer 9.0 Appendices and References APPENDIX B - Maintenance Schedule

Provide a current and active Log Book to record all maintenance tasks ie: an Active Maintenance Schedule, is required.
The Log Book should be used to record daily, weekly, monthly, annual activities and visits. All maintenance actions should be recorded in the Log Book, and this should be made available to the Client and all other relevant parties upon request.

Provide a Visual Diary for all Maintenance Issues, and Bush Fire Preparation Records.
Regular inspections of all landscape areas should be undertaken initially by the appointed maintenance contractor and the estate maintenance teams following handover. This is to ensure that maintenance is carried out according to the Landscape Plan(s). Inspections should include the ongoing protection of revegetation works during its establishment.
IPA maintenance should be carried out as per timings advised by the Bush Fire Consultant BLACKASH BUSHFIRE CONSULTING.

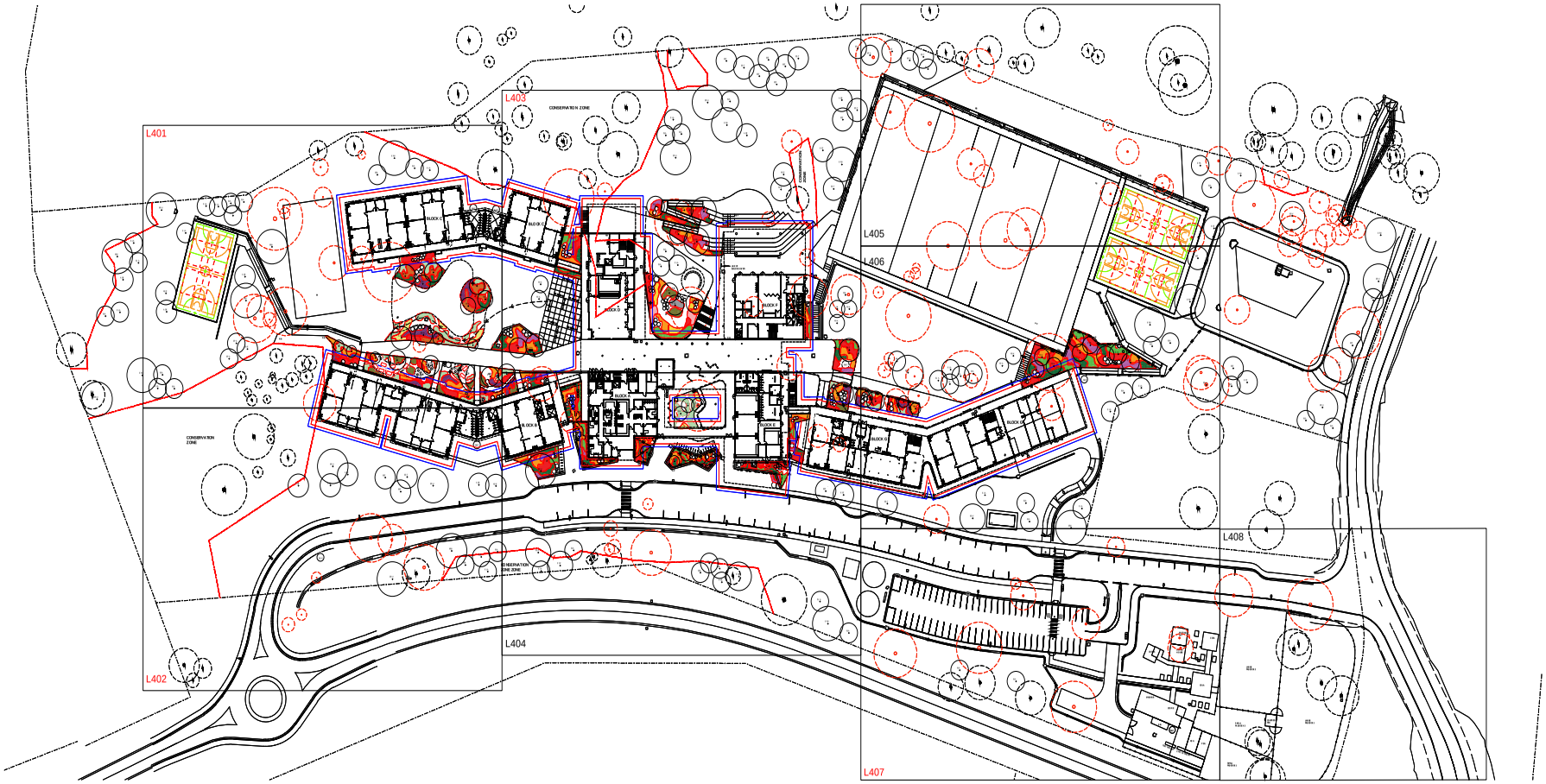
Refer 9.2 Environmental References for Fire Prevention and Protection
9.2.1 BLACKASH BUSHFIRE CONSULTING: BUSH HAZARD ASSESSMENT Bushfire Assessment (SSD-15788005)

9.0 Appendices and References

9.1 Scope of Works: Built Landscape

APPENDIX A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY 2023

Refer Page 16



PLANTING SCHEDULE

FIND	PLANT LIST	COMMON NAME	QUANTITY	SIZE	SPACING	HEIGHT X WIDTH
Trees						
ADE	*Acacia dealbata*	Silver Wattle	15	200mm	As shown	15 x 8
AVE	*Allocasuarina verticillata*	Drooping She-oak	1	150mm	As shown	10 x 6m
EDA	*Eucalyptus dalrympleana subsp. dalrympleana*	Mountain gum	5	150mm	As shown	40 x 15m
ELA	*Eucalyptus lacrimans*	Weeping Snow Gum	62	200mm	As shown	10 x 5m
EOV	*Eucalyptus ovata*	Swamp gum	5	200mm	As shown	20 x 10m
EPA	*Eucalyptus pauciflora*	Little Snow Gum	18	200mm	As shown	6-12x5-7
EPD	*Eucalyptus pauciflora dwarf*	Little Snow Gum	13	200mm	As shown	7 x 4m
EPU	*Eucalyptus pulverulenta 'Baby Blue'*	Silver leaved Mountain Gum	1	200mm	As shown	6-10m
ERU	*Eucalyptus rubida*	Candlebark	27	200mm	As shown	10-12m
EST	*Eucalyptus stellulata*	Black Sally	28	200mm	As shown	6-12 x 8m
PCA	*Pyrus calleryana*	Red Spire pear	5	200L	As shown	10 x 5m
POK	*Prunus okame*	Flowering Cherry	13	200L	As shown	10m x 5m-6m
Shrubs						
ACA	*Acacia cardiophylla*	Wyalong Wattle	2	150mm	As shown	0.5x1.5
AHO	*Acacia howittii*	'Honey Bun'	5	150mm	As shown	1.5 x 1.5
BMA	*Banksia marginata*	Silver Banksia	3	150mm	As shown	0.5 x 1.5
BMM	*Banksia marginata 'mini marg'*	Silver Banksia dwarf	6	150mm	As shown	0.3 x 3m
BSP	*Banksia spinulosa 'Birthday candles'*	Banksia Birthday Candles	24	150mm	As shown	0.5 X 1
CAL	*Correa alba*	White Correa	23	150mm	As shown	0.8 x 3m
CIS	*Correa 'Isabell'*	native fuscia	5	150mm	As shown	75cm x 1.5
CJE	*Correa 'Jezabell'*	native fuscia	5	150mm	As shown	1.3 x 0.75
CLI	*Callistemon 'viminalis 'Little John'*	Dwarf Bottlebrush	7	150mm	As shown	0.9 x 1.5m
COM	*Correa 'O.M.G'*	native fuscia big flowers	13	150mm	As shown	1.4 x 1.5
ENU	*Einadia nutans*	Nodding Saltbush	6	150mm	As shown	0.3 x 1.2m
ETO	*Enchylaena tomentosa*	Ruby Saltbush	12	150mm	As shown	0.5 x 0.6m
GLA	*Grevillea lanigera*	Woolly Grevillea	10	150mm	As shown	0.4X 1.5M
GOV	*Goodenia ovata*	Hop Goodenia	1	150mm	As shown	0.5 x 1.5m
LPC	*Leptospermum 'Pink Cascade'*	Tea Tree	33	150mm	As shown	0.8x1
LPO	*leptospermum polygalifolium*	Tea Tree	12	150mm	As shown	1x1m
OPH	*Olearia phlogopappa*	Daisy Bush	2	150mm	As shown	1.5-2m

CODE	PLANT LIST	COMMON NAME	QUANTITY	SIZE	SPACING	HEIGHT X WIDTH
Groundcovers						
BAC	*Brachyscome acuilenta*	Hill Daisy	685	150mm	4/m2	30cm
BNI	*Brachyscome nivalis*	Native Snow Daisy	685	150mm	4/m2	30x300cm
BRA	*Brachyscome radicans*	Marsh Daisy	685	150mm	4/m2	20 x 30cm
CAP	*Chrysocephalum apiculatum*	yellow buttons	76	150mm	2/m2	30x1cm
CCU	*Centipeda cunninghamii*	Old Man's Weed	45	150mm	4/m2	0.2m x 0.5m
CSE	*Chrysocephalum semipapposum*	yellow buttons	76	150mm	2/m2	40-60cm x 1m
GMT	*Grevillea 'Mt Tamboritha'*	Grevillea 'Mt Tamboritha'	197	150mm	2/m2	0.3 x 1.5
KMU	*Kunzea Muelleri*	Yellow Muelleri	197	150mm	2/m2	0.3 x 0.8m
MAU	*Mentha australis*	Native River Mint	230	150mm	2/m2	0.3 x1
MPA	*Myoporum parvifolium*	pink boobiala	238	150mm	2/m2	0.3 x 3m
SBI	*Scleranthus biflorus*	Canberra Grass, Two Flowered Knawel	1883	150mm	4/m²	0.05 x 0.4
SSE	*Swainsona sericea*	silky pea	119	150mm		0.1 x 0.1
Grasses						
AMI	*Arthropodium milleflorum*	Vanilla Lily	239	150mm	4/m2	0.3 x 0.3m
AST	*Arthropodium strictum*	Chocolate Lily	235	150mm	4/m2	0.3 x 0.3m
BBU	*Bulbine bulbosa*	Bulbine Lily	388	150mm	4/m2	40cm
CBI	*Carex bichenoviana*	Curly Sedge	321	150mm	4/m2	0.4 x 0.4
CGA	*Carex gaudichaudiana*	Fen Sedge	108	150mm	4/m2	0.6 x 0.5m
DCA	*Dianella caerulea*	Flax Lily	108	150mm	4/m2	0.5 x 0.5
DRE	*Dianella revoluta 'Petite Marie*	Dianella 'Petite marie'	458	150mm	4/m2	0.25 x 0.4m
DTA	*Dianella tasmanica*	Tasman Flax lily	388	150mm	4/m2	0.5 x 0.5m
FNO	*Ficinia nodosa*	Knobby Club-rush	54	150mm	2/m2	0 x 1m
LLO	*Lomandra longifolia*	Honey Reed	54	150mm	2/m2	1 x 1m
PCO	*Poa costiniana*	Prickly snow grass	321	150mm	4/m2	
PFA	*Poa fawcettiae*	Blue Snow Grass	458	150mm	4/m2	0.3m x 0.6m
PHE	*Poa helmata*	Soft Snow Grass	321	150mm	4/m2	0.6 x 0.4
TAU	*Thelium australe*	Toad flax	458	150mm	4/m2	0.3 x 0.4
THA	*Themeda australis*	Kangaroo Grass	48	150mm	2/m2	0.7 x 0.7m

PLANT SUPPLY NOTES

Taylor Brammer have contacted local plant nurseries to confirm all plants are available at the time of preparing IFC documention. The contractor is to order plants at commencement of the project to ensure plant supply.
Any potential substitutes for native plants should be endemic to the ecological community PCT1191 Candle Bark Woodland and Grassland. and are to be approved by the landscape architect.

The following nurseries have been contacted:

Wagtail Nursery
www.wagtailnativesnursery.com.au
Contact Kelly Stubbs
Mobile: 0474258463
contact@wagtailnativesnursery.com.au
Middlingbank Rd Cootralantra New South Wales 2628

Monaro Native Tree Nursery
http://monaronativetreenursery.com.au/
Contact Annie Plats
Phone: (02) 6458 4096
Mobile: 0409 584 096
Email: monarotrees@bigpond.com
168 Gunningrah Road Bombala NSW 2632

Tableland Trees and Shrubs
https://tablelandsnurseriesonline.com
Contact John Bowe
Phone: (02)64533241
Email: tabtree@snowy.net.au
3775 Badja Rd, Cooma NSW 2630

NOTE - TREE/ROOF CLEARANCE

THE COLOURED LINES BELOW INDICATE THE REQUIRED SETBACKS OF TREE CANOPIES TO SATISFY EFSG AND BUSHFIRE REQUIREMENTS.

- ROOF LINE
- 3m OFFSET FOR TREE TRUNKS
- 2m OFFSET FOR EDGE OF TREE CANOPY

NOTES:

1.REFER TO CIVIL ENGINEERS DRAWINGS FOR ALL EXTERNAL LEVELS +GRADING.

2.ALL DRAWINGS ARE DESIGNED TO BE PRINTED AND READ IN COLOUR.

IT IS THE CONSTRUCTORS RESPONSIBILITY TO PRINT DRAWINGS IN COLOUR TO AVOID ANY POTENTIAL DISCREPANCIES IF DRAWINGS ARE PRINTED IN BLACK AND WHITE.

AMENDMENTS

REV	BY	DATE	DESCRIPTION
0	YP	13.02.2023	ISSUED FOR CO-ORDINATION
1	YP	23.02.2023	ISSUED FOR CONSTRUCTION

HANSENYUNCKEN

NSW GOVERNMENT Education

TaylorBrammer

TAYLOR BRAMMER LANDSCAPE ARCHITECTS PTY LTD
AUSTRALIA STUDIO
Copyright of Taylor Brammer Landscape Architects Pty Ltd.

DRAWING NAME
LANDSCAPE: PLANTING PLAN

PROJECT
JINDABYNE EDUCATION CAMPUS
207 BARRY WAY, JINDABYNE

NORTH

2000 4000 6000 8000 10000 20000
SCALE 1 : 200 @ A1

23 FEBRUARY 2023

PROJECT	DISCIPLINE	PHASE	SERIES NUMBER	REVISION
JEC	LA	CON	L400	1

LANDSCAPE MANAGEMENT PLAN FOR JINDABYNE EDUCATION CAMPUS
06 MAY 2024

APPENDIX B - Maintenance Schedule

CATEGORY	TIMEFRAMES / FREQUENCY				NOTES
	Weekly or 2 Weeks	Monthly or Bi-Monthly	3 to 6 Months	Seasonal or as Required	
Weeding & Rubbish Removal		√		√	Weed all massed planting areas and at the base of trees and lawn areas by hand/manually as the preferred method. Prior approval required for use of Herbicide. **Refer 4.9 Weeding** **4.9.3 Weeding Maintenance Schedule** Approved Herbicide used to be in accordance with Regulations for Application Rates and Manufacturers Specification/Recommendations. Protect all plants from overspray and avoid spraying if rain is likely within a 12-hour period. Dispose of all weed waste material using the appropriate methods and at designated disposal sites. Maintain weed control over a continuous period with more frequent weeding in the Spring and Summer months.
Leaf Litter removal and re-use		√		√	Remove leaf litter from all pathways, particularly high-use paths to building exteriors, carparking areas and internal courtyards to maintain a neat appearance. Re-use leaf litter where not deemed as a Bush Fire Hazard as a mulch supplement in conservation areas or remote areas on site. Remove loose leaf litter as per Bushfire Asset Protection recommendations, particularly pre-Bush Fire Season or in an extreme dry summer season. **Refer 7.0 Asset Protection Fire Specific,** **9.2 Environmental References for Fire Prevention and Protection**
Mulching			√	√	Reapply nominated organic mulch to maintain a depth of 100mm in areas that are mulch deficient. Soil should be lightly aerated before placing new mulch. After 12 months, organic mulch would have broken down, so assume it will need to be topped up to ensure a consistent depth of 100mm. Fertiliser and Compost should be re-applied prior to re-mulching, to maintain healthy soil & plants. Regularly review mulch depths in exposed sites where trampling and wind is an issue for mulch movement. **Refer 4.6 Mulch Management for New Landscape Areas,** **6.4 Trampling or Wind Damage to Plants**
Plant Fertiliser and Composting			√	√	Fertilise all plants and lawn areas at specified rates based on soil testing results and specific plant genus/species requirements. **Refer 4.7 Fertilising and Composting** Note the different applications and requirements for endemic, native and exotic plant species, and new lawn areas. Summary of Fertilisers below: Nominated Organic Fertiliser: Dynamic Lifter Long Life Complete Slow-Release Fertiliser: (for poor plant vigour) Additional Fertiliser: Seasol. Water in Seasol to each poor plant prior to fertilising, as per recommendations. Compost: Use locally sourced clean Compost at the base of each plant or applied liberally over any exposed soil, prior to reapplication of mulch to maintain good soil nutrient levels for plant vigorous plant and lawn growth, and soil health. **Refer 4.5 Soil Management for New Landscape Areas** Reapply new Mulch over additional compost and fertilisers.
Pest & Disease Monitoring /Control		√		√	Check for incidents of fungal or insect attack. Avoid use of Chemical sprays. Apply appropriate treatment for fungal and insect attack, if necessary and subject to Client approval. Prior approval required for any Chemical to be applied to plants or lawn area. **Refer 6.0 Protective Measures,** **6.3 Disease and Insect Pest Control,**

					9.3.3 Sustainable Solutions and Identification for Weeds and Garden Pests - For all pest control and monitoring.
Pruning, Trimming, Staking and Ties		√			Pruning & Trimming: Remove minor deadwood. Improve plant shape and promote new growth. **Refer 4.8 Pruning** Notify in writing to Client/Management for any perceived need for structural tree work, prior to undertaking major tree or limb pruning works. Habitat Mature Trees: Avoid removal of dead hollow limbs from mature trees, i.e: Habitat trees. **Refer 4.10.2 Removal of Dead Trees or Dead Limbs** Staking and ties: Adjust ties and stakes as necessary. Tree Stakes can be removed once tree is self supporting.
Plant Removal & Replacements			√	√	**Refer 4.10 Removal and Replacement of Dead Plants and Lawn Areas** Inspect for failed or dying plants requiring replacement and record probable cause of poor health. Re-plant with plant of same genus/species after dead or failed plant is removed. Densities, pot sizes and plant species to be in accordance with the Landscape Planting Plan by TAYLOR BRAMMER. **Refer 9.1 Scope of Works: Built Landscape** Appendix A - TAYLOR BRAMMER LANDSCAPE: PLANTING PLAN 23 FEBRUARY Watering: Replacement plantings to be watered for establishment period, a minimum of 12 weeks after planting. Replacement Watering frequency should be reviewed to consider seasonal variations, such as extreme heat and low rainfall.
Urgent Works	√			√	Urgent Works to be actioned within 7 days. Some works may be subject to Client approval.
Watering	√	√		√	**Refer 5.0 Irrigation and Hand Watering** **5.2 Irrigation for Massed Planting Areas** Irrigation automated watering to all massed planting areas, as required for specific plant species, especially during periods of drought, dry weather, and extreme heat. Assume watering every second day. Close monitoring of plant species watering requirements based on plant growth, health and vigour until planting is fully established. **Refer 5.0 Irrigation and Hand Watering** **5.3 Hand Watering for Isolated Tree Plantings** **5.4 Hand Watering for New Lawn** Hand watering of isolated trees and lawn areas, as required, especially during periods of drought, dry weather, and extreme heat. Assume hand watering once or twice a week, or until tree planting and new lawn areas are both fully established. Best practise watering regime is for early morning or late afternoon to reduce evaporation.

APPENDIX C - Australian Standard References

The following Australian Standards referred to in this report:

AS 1319 Safety Signs for Occupational Environment
AS 4373 Pruning of Amenity Trees

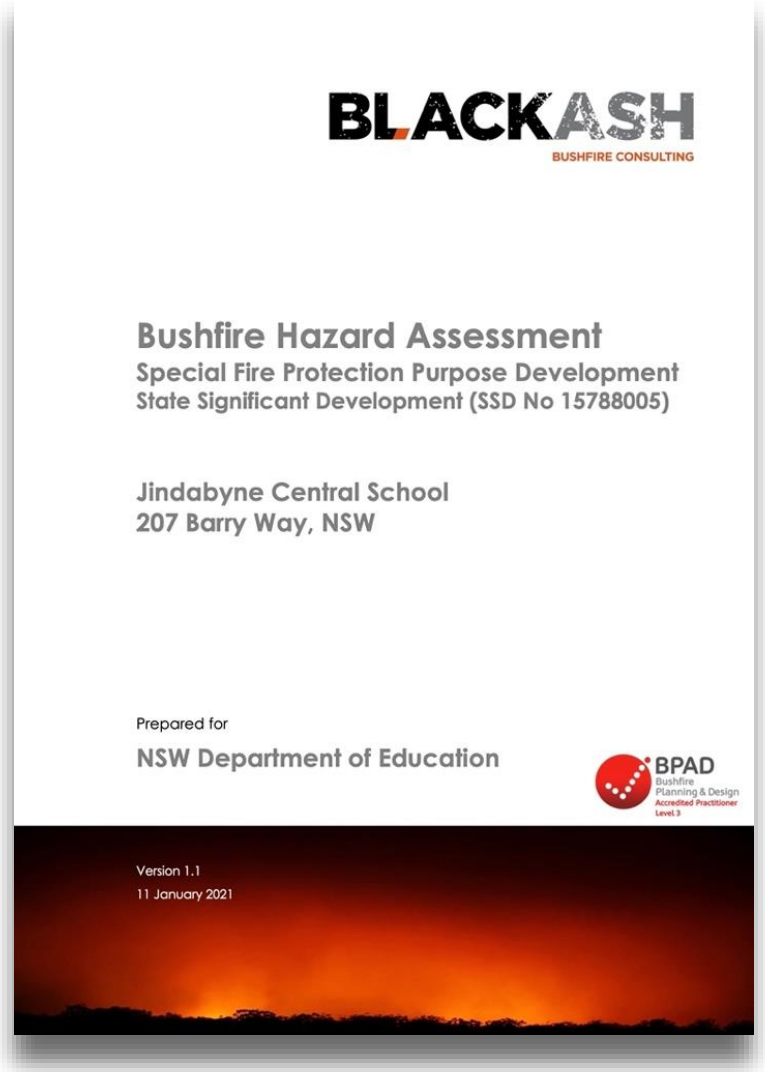
APPENDIX C - Australian Standard References, continued:

The following Australian Standards referred to in this report, continued:

AS 4454 Composts, Soil Conditioners and Mulches
AS 4687 Temporary Fencing and Hoardings
AS 4970 Protection of Trees on Development Sites

9.2 Environmental References for Fire Prevention and Protection

9.2.1 BLACKASH BUSHFIRE CONSULTING: BUSH HAZARD ASSESSMENT Bushfire Assessment (SSD-15788005) v1.1 - 11 January 2021



BLACKASH
BUSHFIRE CONSULTING

Bushfire Hazard Assessment

Special Fire Protection Purpose Development
State Significant Development (SSD No 15788005)

Jindabyne Central School
207 Barry Way, NSW

Prepared for

NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.1

11 January 2021

Document Tracking:

Project Name:	Jindabyne Central School
Client Details:	Mr. Cameron Hay Project Director Infrastructure Planning NSW Department of Education
Project Address:	Jindabyne Central School relocation to the Sport and Recreation site adjacent to Barry Way, Jindabyne Part Lot 101 DP 1019527

BlackAsh Contact Details

Lew Short	Principal
0419 203 853	lew.short@blackash.com.au

Document Control

Version	Primary Author(s)	Description	Date Completed
1.1	Lew Short	Final	11 January 2022

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Lew Short / Principal

Blackash Bushfire Consulting

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

Contents

Glossary of Terms

APZ	Asset protection zone
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2009*
BAL	*Bushfire attack level*
BCA	*Building Code of Australia*
BSA	Bushfire safety authority
EPA Act	*Environmental Planning & Assessment Act 1979*
FDI	Fire danger index
ha	Hectare
m	Metres
PBP 2006	*Planning for Bush Fire Protection 2006*
PBP 2019	*Planning for Bush Fire Protection 2019*
RF Act	*Rural Fires Act 1997*

1. Introduction

Blackash Bushfire Consulting has been engaged by the NSW Department of Education to provide a Bushfire Hazard Assessment in support of a proposed New Education Campus at Jindabyne (New Primary and High School) at 207 Barry Way, Jindabyne (Figure 1) which is legally known as Lot 101//DP1019527.

This Bushfire Hazard Assessment accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 15788005). The SSDA is for a new education campus at Jindabyne, comprising of a new primary and high school, located at the Jindabyne Sport and Recreation Centre (JSRC).

The Bushfire Hazard Assessment is in response to the Planning Secretary's Environmental Assessment Requirements (SEAR) Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EPA Act) Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (SSD-15788005). This report addresses the Secretary's Environmental Assessment Requirements (SEARs), Condition 20 of the SEAR requires that the Department of Education:

> *Provide a bushfire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection (NSW RFS, 2019).*

The NSW Rural Fire Service (RFS) letter of 1 April 2021 requires that:

> *The NSW Rural Fire Service has considered the information submitted and advises that the preparation of an environmental assessment for the proposed development should incorporate a bush fire hazard assessment prepared by a suitably qualified person.*
>
> *The bushfire hazard assessment must address the requirements detailed in Appendix 2 of Planning for Bush Fire Protection 2019 (PBP) and demonstrate the extent to which the proposed development conforms with, or deviates from, the specifications and requires for Special Fire Protection Purpose development detailed in Section 6 of PBP 2019.*

This report has been prepared to address these requirements. The application meets the deemed to satisfy (DTS) provisions of Planning for Bushfire Protection 2019 (PBP) as shown in Table 1.

This assessment has been prepared by Lew Short, Principal Blackash Bushfire Consulting (FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the RFS as qualified in bushfire risk assessment and has been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals. An inspection of the site and surrounds was completed on 25 May 2021.

Table 1 Bushfire Report Summary

Development Type	Integrated Development Special Fire Protection Purpose
Subtype	School
Bushfire Safety Authority required	Yes
Referral to NSW Rural Fire Service	Yes
Deemed to Satisfy or Performance	Deemed to satisfy
Performance aspects	Nil

2. Proposal

The proposed development is for the construction of the Jindabyne Education Campus comprising a new primary school and a new high school at Jindabyne (the proposal). The proposal is located within the JSRC located at 207 Barry Way (the site) and will accommodate approximately 925 students with the capacity for expansion in the future.

The new primary school will be located generally in the northern portion of the site whilst the new high school will to the south of the site. While the schools are inherently separate identities, with separate student entries, opportunities for integration are provided in a central shared plaza with co-located school administration facilities, as identified in Figure 1 below. This outdoor learning space is activated by the school canteen (shared) and separate core facilities including the primary school hall and library, and the high school gym and library, and provides opportunities for shared community use.

The new primary school will provide for a Core 21 school. This will comprise of 20 home base units and 2 support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, out of school care facilities, library and special programs. Landscaped areas include active and passive open space play areas, and a games court.

The new high school will provide for a stream 2 high school. This is to comprise of 20 general/specialised learning spaces and support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, library, an agricultural learning unit. Landscaped areas include active and passive open space play areas, a sports field and multipurpose games courts.

A new access driveway is proposed off Barry way Road along the western boundary of the site and includes car parking, bus and private vehicle drop-off zones, and delivery zones.

3. Site Description

The site of the proposed new education campus at Jindabyne is located within the western extent of the existing JSRC at 207 Barry Way (101 DP1019527). The site is located within the Snowy Monaro Regional Council local government area and is approximately 2.2km south of the Jindabyne town Centre. A site aerial is provided in Figure 1.

The site is approximately 9ha in size, containing a former golf course and three existing workers cottages which were occupied during the construction of the Snowy Hydro Scheme. The majority of the site is undeveloped and contains maintained grasslands and scattered trees. Much of the surrounding land comprises remnant grassland, woodland and agricultural land.

As identified above, the site is within the existing JSRC which is a high performance and community sport centre located directly east of the site. The JSRC has a range of sporting facilities including a synthetic running track, cycling track, netball and tennis courts, fitness and indoor sports centres, and sporting ovals, as well as other services and accommodation facilities. The newly constructed BMX track is located directly east of the site with the new ski jump currently under construction to the northeast.

TAFE NSW have recently lodged a development application for a Connected Learning Centre (CLC) and Mobile Training Unit (MTU) which is proposed to the south of the site. The CLC and MTU will utilise interactive, digitally enabled, flexible, and multipurposed learning environments to provide high-quality training and learning experiences accommodating a maximum of 20-25 students and 3 teachers.

The surrounding locality is generally rural in character with other land uses also including the Jindabyne Aero Club located to the west of the site on Tinworth Drive, an industrial area to the southwest and the Jindabyne Community recycling centre is located east of the JSRC.

4. Legislative Framework

The site is not on designated Bushfire Prone Land. However, the SEARS requires a Bushfire Hazard Assessment. Under the *Rural Fires Act 1997* (RF Act), a school is identified as being a Special Fire Protection Purpose Development (SFPP). A Bushfire Safety Authority (BSA) is required under s100B of the RF Act for buildings to be used for this purpose.

A BSA authorises development to the extent that it complies with standards regarding setbacks, provision of water supply and other matters considered by the RFS Commissioner to be necessary to protect persons, property or the environment from danger that may arise from a bushfire.

The bushfire assessment has been completed as a deemed to satisfy assessment. No alternate solutions or performance calculations have been completed. The school buildings (Figure 2) can be located in accordance with *Planning fir Bushfire Protection 2019* (PBP 2019) and the *Australian Standard for Construction of Buildings in Bushfire Prone Areas* (AS3959).

The NSW Government has introduced a new education-based State Environmental Planning Policy. The State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 (the SEPP) has provisions that will make it easier for child-care providers, schools, TAFEs and Universities to build new facilities and improve existing ones by streamlining approval processes to save time and money and deliver greater consistency across NSW. The SEPP balances the need to deliver additional educational infrastructure with a focus on good design.

The State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 (the SEPP) provides for the legislative planning framework for the NSW. Section 5 of the SEPP provides the definition of:

> *educational establishment means a building or place used for education (including teaching), being:*
>
> *(a) a school, or*
>
> *(b) a tertiary institution, including a university or a TAFE establishment, that provides formal education and is constituted by or under an Act.*

Figure 1 Site Location

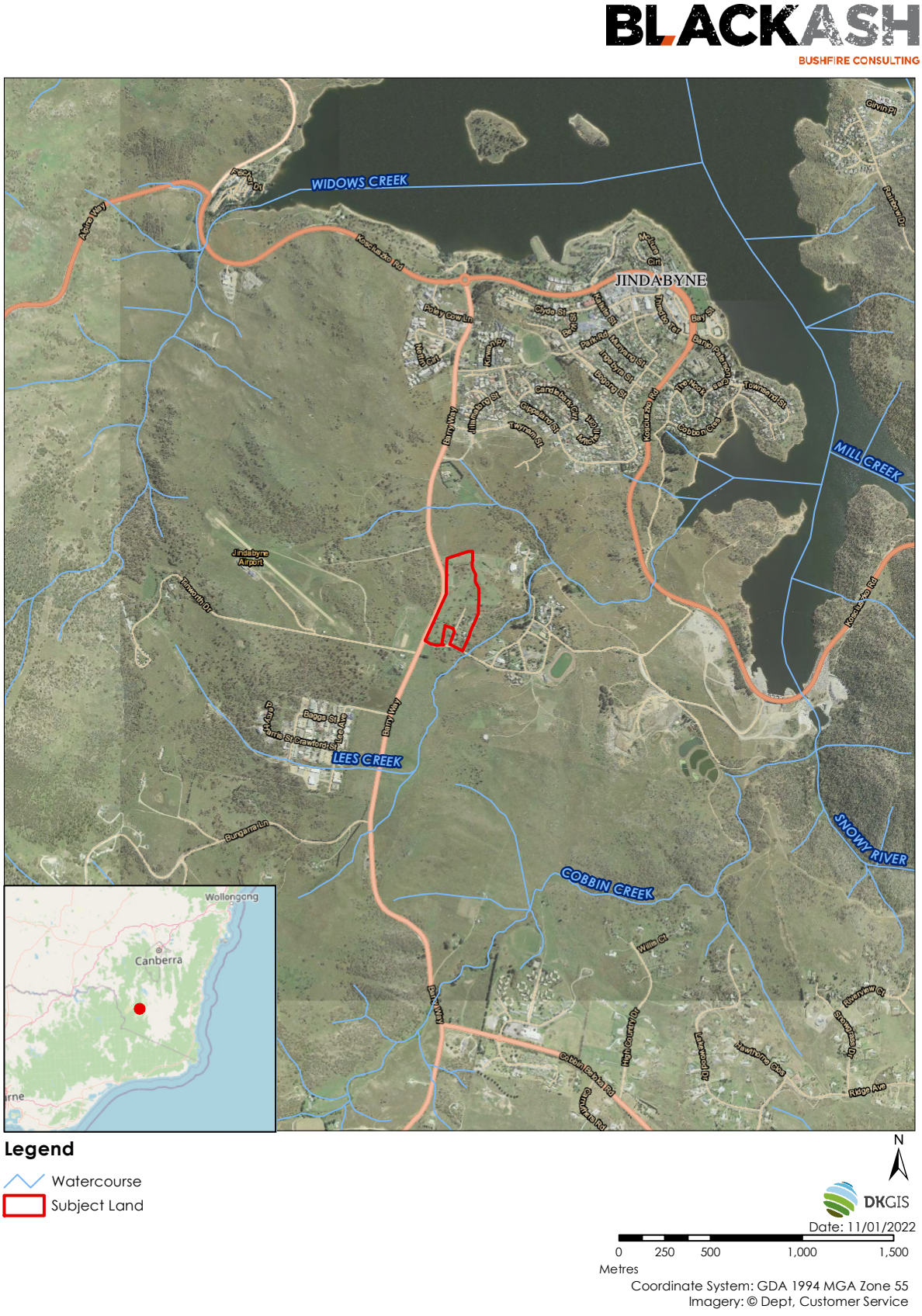


Figure 2 Proposed Site Plan

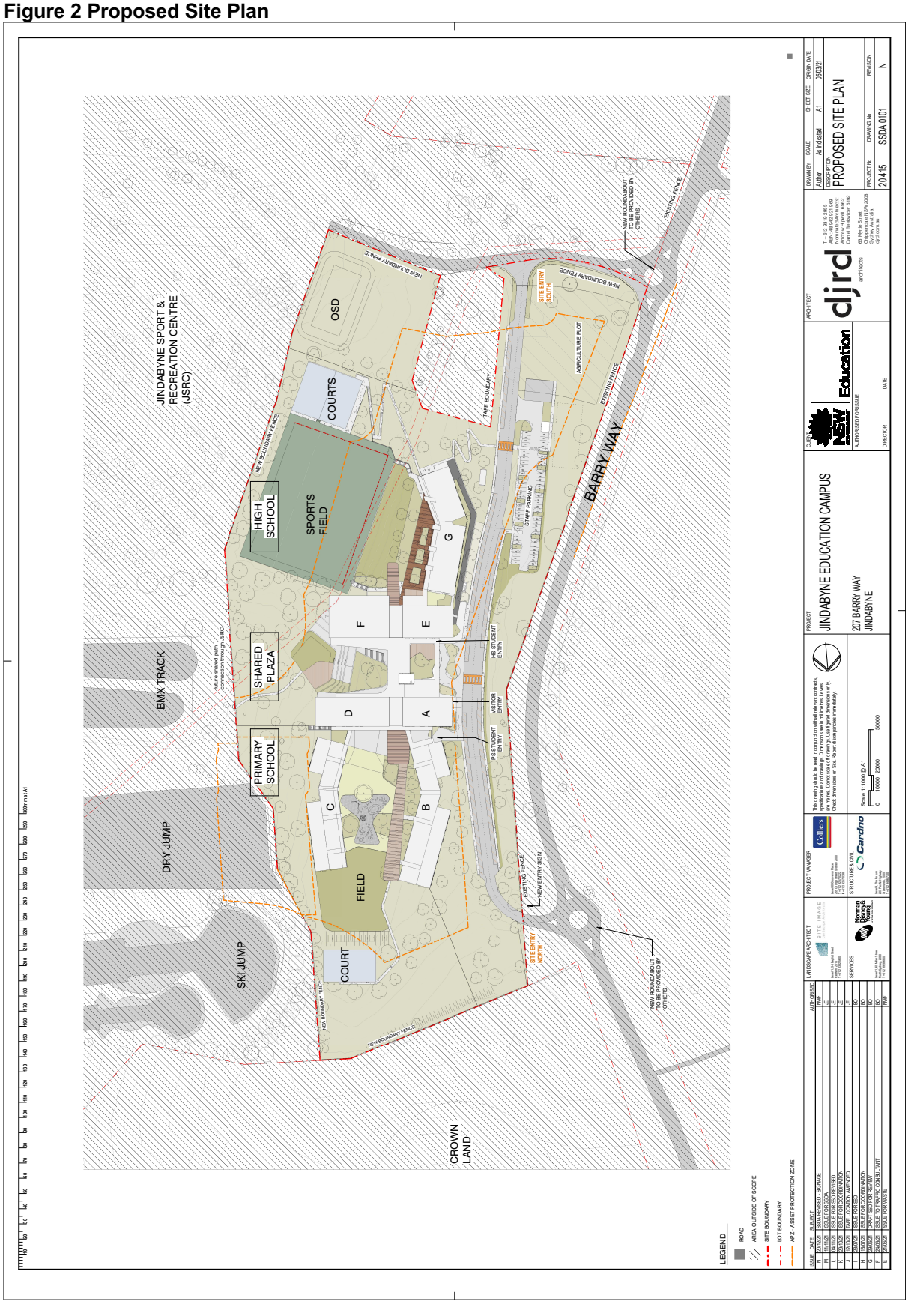
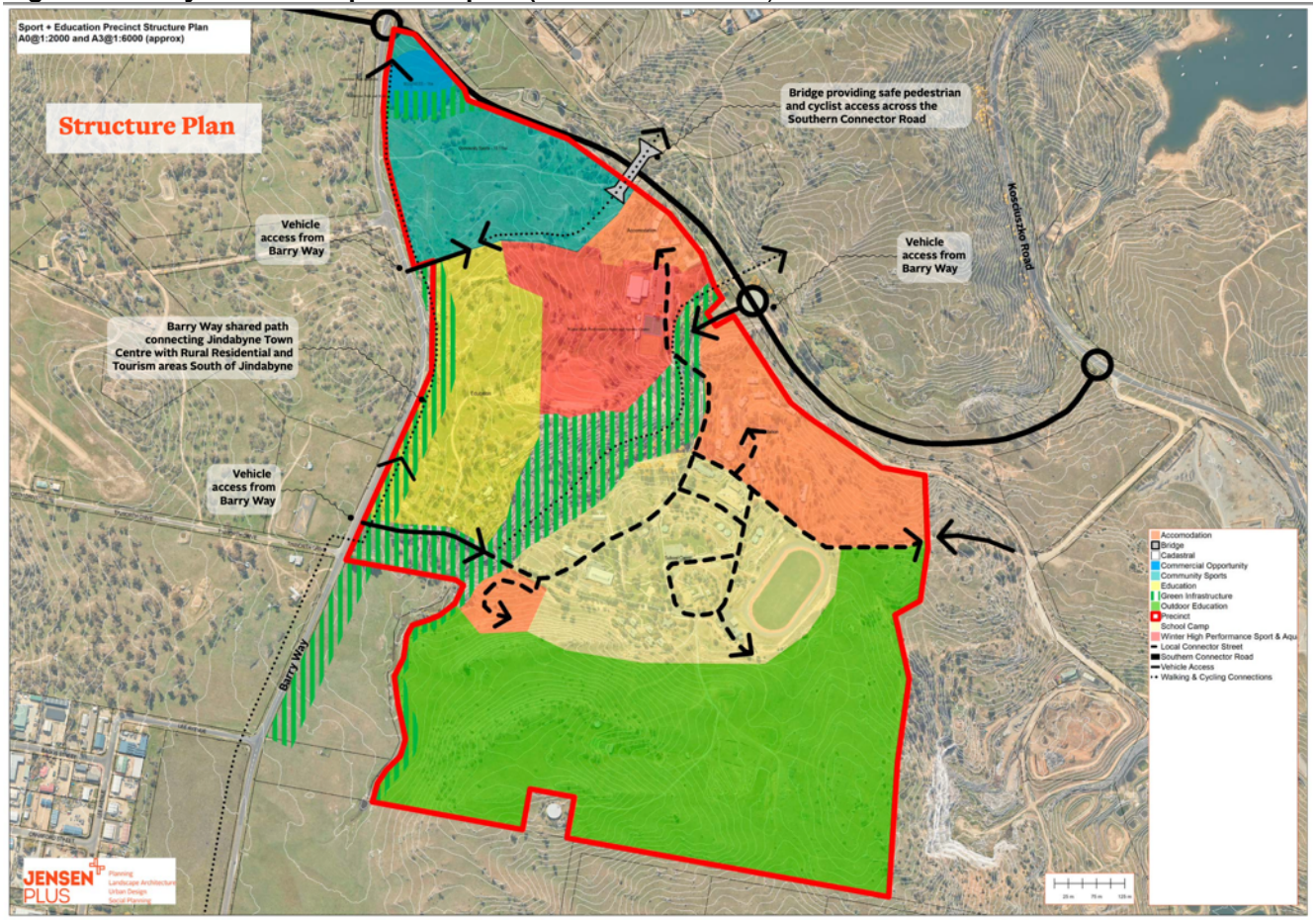


Figure 3 Snowy SAP Concept Masterplan (source Jensen Plus)



5. Planning for Bushfire Protection 2019

The PBP 2019 guidelines are performance-based, seeking to achieve a safe outcome based on innovation and the specific circumstances of the individual site and development proposal. PBP provides a planning framework for developments in rural and urban areas close to land, which is likely to be affected by bushfire. PBP 2019 (p. 49) identifies the vulnerable nature of occupants of SFPP developments:

> *"An SFPP development is one which is occupied by people who are identified as at-risk members of the community. In a bush fire event, these occupants may be more susceptible to the impacts of radiant heat and other bush fire effects. Evacuating at-risk members of the community is more challenging because they may be physically or psychologically less able to relocate themselves or are unfamiliar with their surroundings. Examples of SFPP developments are schools, hospitals, nursing homes and tourist accommodation."*

PBP sets out an overall framework consisting of an aim and objectives, specific objectives for defined development types, types of bushfire protection measures (**BPMs**), which may be employed in a development, and performance criteria for each BPM. In this regard, the structure of PBP 2019 is similar to the structure of the National Construction Code (NCC) and provides considerable flexibility for outcomes. However, the aim of PBP in terms of ensuring appropriate consideration of risk and protection is paramount.

The intent (aim) of PBP is:

> *to protect people and property from the impact of bushfires. It also helps ensure that the firefighters who come to their aid in an emergency are not placed in greater danger because of unsuitable or unsafe developments.*

The objectives are to:

i. *Afford buildings and their occupants protection from exposure to a bush fire*
ii. *Provide for a defendable space to be located around buildings*
iii. *Provide appropriate separation between a hazard and buildings which, in combination with other measures, minimises material ignition*
iv. *Ensure that appropriate operational access and egress for emergency service personnel and residents is available*
v. *Provide for ongoing management and maintenance of BPMs*
vi. *Ensure that utility services are adequate to meet the needs of firefighters.*

Due to the vulnerable nature of the occupants of SFPP developments, there is more reliance on the provision of an APZ and emergency management (PBP p. 50). For SFPP development, PBP 2019 provides a range of specific objectives (PBP p. 50)

- *minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;*
- *provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;*
- *ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and*
- *ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.*

PBP requires that a planning and development proposal satisfy:

- The broad aim and objectives of PBP 2019;
- The planning principles;
- Specific objectives for the development type under consideration;
- The intent of measures for the various (BPM's);
- The performance criteria for the various proposed BPMs, which can be achieved by providing either the "acceptable solutions" specified in PBP 2019 or alternative solutions, which fulfill the intent of the relevant performance criterion.
- Infill provisions for SFPP development

This report will demonstrate that these requirements have been met for this development.

6. Building Code of Australia

The Building Code of Australia (BCA) Performance Requirement GP5.1(NSW) relates to the protection of buildings on bushfire-prone land (applicable to Class 9 building that is a special fire protection purpose):

A building that is constructed in a designated bushfire prone area must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire appropriate to the:

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

6.1. Deemed-to-Satisfy Requirement

Deemed-to-Satisfy Clause G5.2 (NSW) States:

> In a designated bushfire prone area, a Class 2 building, a Class 3 building, a Class 4 part of a building or a Class 9 building that is a special fire protection purpose or a Class 10a building or deck associated with such a building or part, must comply with the following—
>
> > (a) AS 3959 except for Section 9 Construction for Bushfire Attack Level FZ (BAL-FZ). Buildings subject to BAL-FZ must comply with specific conditions of development consent for construction at this level; or
> >
> > (b) the requirements of (a) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 79BA of the Environmental Planning and Assessment Act 1979; or
> >
> > (c) the requirements of (a) above as modified by development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development.

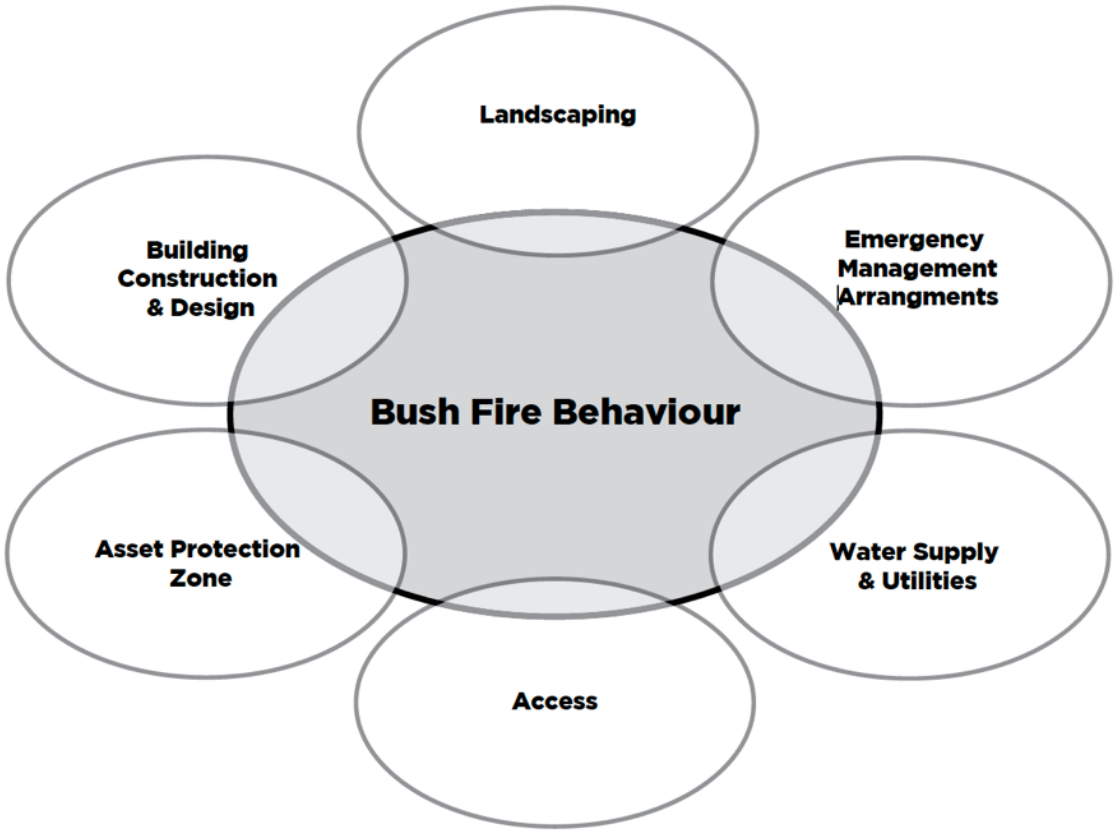
6.2. The Bushfire Protection Measures

PBP 2019 identifies that the Bushfire Protection Measures (BPMs) are general measures which are required to improve life safety, property protection and community resilience to bushfire attack.

The types of protection measures include APZs, access, landscaping, water supply, building design and construction and emergency management arrangements as shown in Figure 4. These measures assist building and occupant survival during a bushfire. They also contribute to the safety of firefighters and members of the community occupying buildings during the passage of a bushfire front.

Each of the BPMs have been assessed and applied separately and used in based upon the development type and the assessed level of bushfire risk. Specific strategies have been put into place for each of the BPMs that meet or exceed the requirements of PBP 2019. These will be discussed throughout the report.

Figure 4 Bushfire Protection Measures (source PBP 2019 p. 26)



7. Bushfire Hazard Analysis

7.1. Bushfire Prone Land

The site is identified as 'bushfire prone land' (See Figure 5) for the purposes of Section 10.3 of the EPA Act and the legislative requirements for developing bushfire prone lands are applicable.

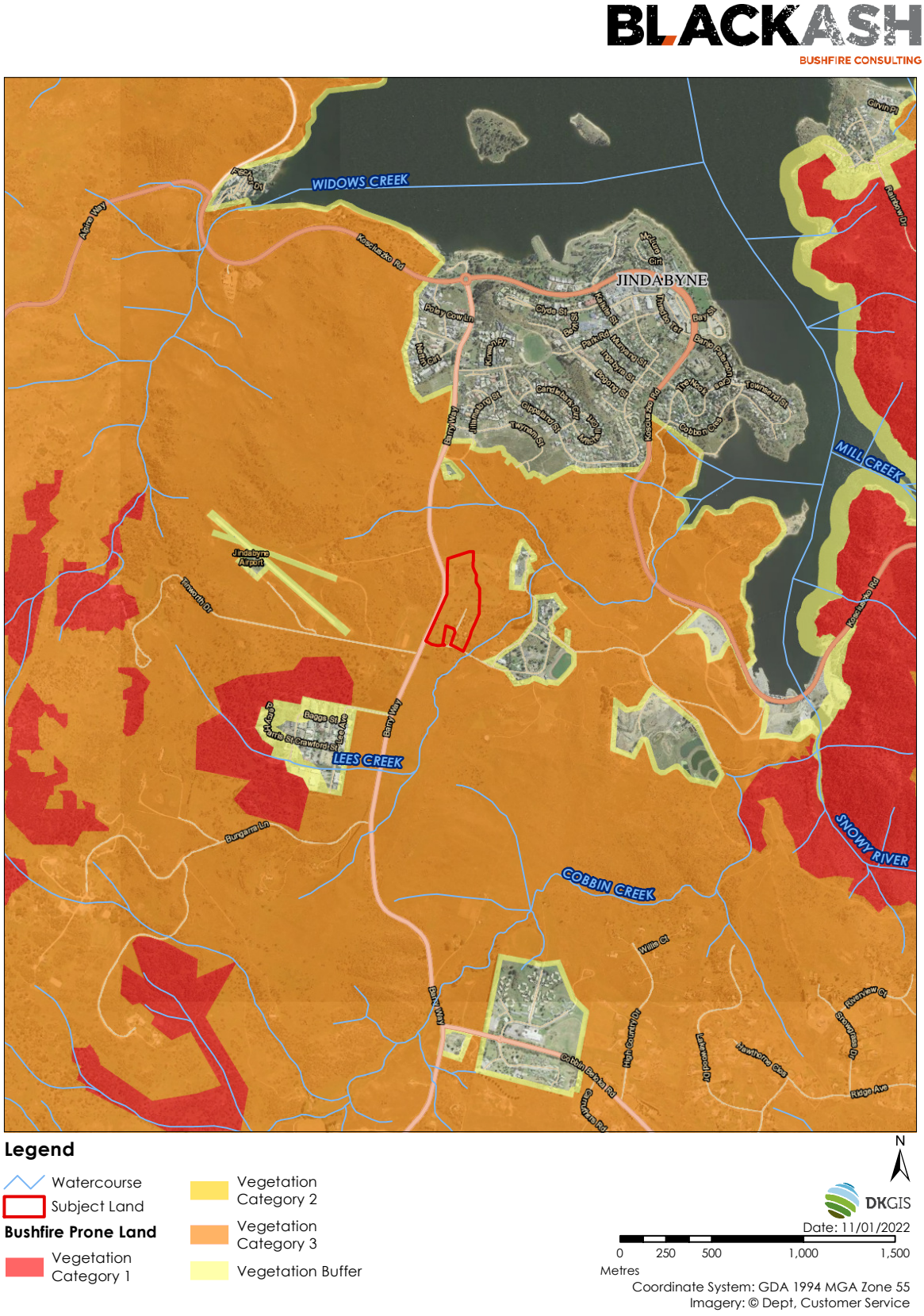
Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (BFPL) is land which can support a bushfire or is likely to be subject to bushfire attack (radiant heat, embers or flame). Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

While the site is not designated as being Bushfire Prone, the NSW RFS letter of 1 April 2021 states:

> *Although the subject site is not currently mapped as bush fire prone land, the vegetation on and surrounding the site constitutes a bushfire hazard.*

The land surrounding the site is predominantly unmanaged grassland. Scattered trees are to the north west of the site which is woodland vegetation.

Figure 5 Bushfire Prone Land Map



8. Bushfire Threat Assessment

8.1. Bushfire Hazard

An assessment of the Bushfire prone land is necessary to determine the application of bushfire protection measures such as APZ locations, risk and Bushfire Attack Levels (BAL).

The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site, and which determine the planning and building response of the bushfire planning framework and PBP 2019.

The bushfire hazard affecting the investigation area was assessed during site inspections and using recent aerial photographs for at least a distance of 140m from the perimeters of the investigation area (in line with PBP 2019).

This assessment identifies the potential bushfire threat from outside the site. The method used for this assessment is outlined in PBP 2019 and relies on consideration of vegetation and slope and is outlined below along with results.

8.2. Methodology

PBP 2019 provides a methodology to determine the size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP. This assessment is based on both a desktop assessment and numerous site inspections of the site assessment utilising the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2019)
- Council Bushfire Prone Land Map
- Aerial mapping
- Detailed GIS analysis
- Site inspection

The methodology used in this assessment is in accordance with PBP 2018 and is outlined in the following sections.

8.3. Fire Danger

For SFPP development, PBP has designated the appropriate fire areas and corresponding Forest Fire Danger Rating (**FDI**). The FDI within PBP 2019 is based on a historical fire weather assessment which assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds.

The 1:50 year fire weather scenario for most of the State was determined as FDI 80. However, a number of areas including the Greater Sydney, Greater Hunter, Illawarra, Far South Coast and Southern Ranges Fire Areas have higher FDIs which are set at 100 and does not take into account climate change.

The FDI for the Snowy Monaro is FFDI 80. However, PBP uses a DTS FFDI of 100 in Table A1.12.1. This approach has been used in this assessment.

8.4. Vegetation Assessment

PBP requires a classification of the vegetation on and surrounding the site out to a distance of 140 metres from the boundaries of the property in accordance with the system for classification of vegetation contained in PBP 2018.

The predominant vegetation is classified by structure or formation using the system adopted by *Ocean Shores to Desert Dunes* (Keith, 2004) and by the general description using PBP 2019. Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The vegetation is shown in Figure 6 and for assessment purposes has forest has been used as a basis to determine APZ and radiant heat loads within the site.

Figure 6 shows woodland vegetation to the north, north west and east of the site. A narrow band of remnant trees is within a gully to the south of the site. Grassland is to the south west and south east of the site. The grassland on the western side of Barry Way is within a hourse riding school and is managed. However, we have assumed a conservative position that this grassland is not managed.

A narrow band of grassland is between the site western boundary and Barry Way. This area is regularly mowed as part of the RMS service.

8.5. Slopes Influencing Bushfire Behavior

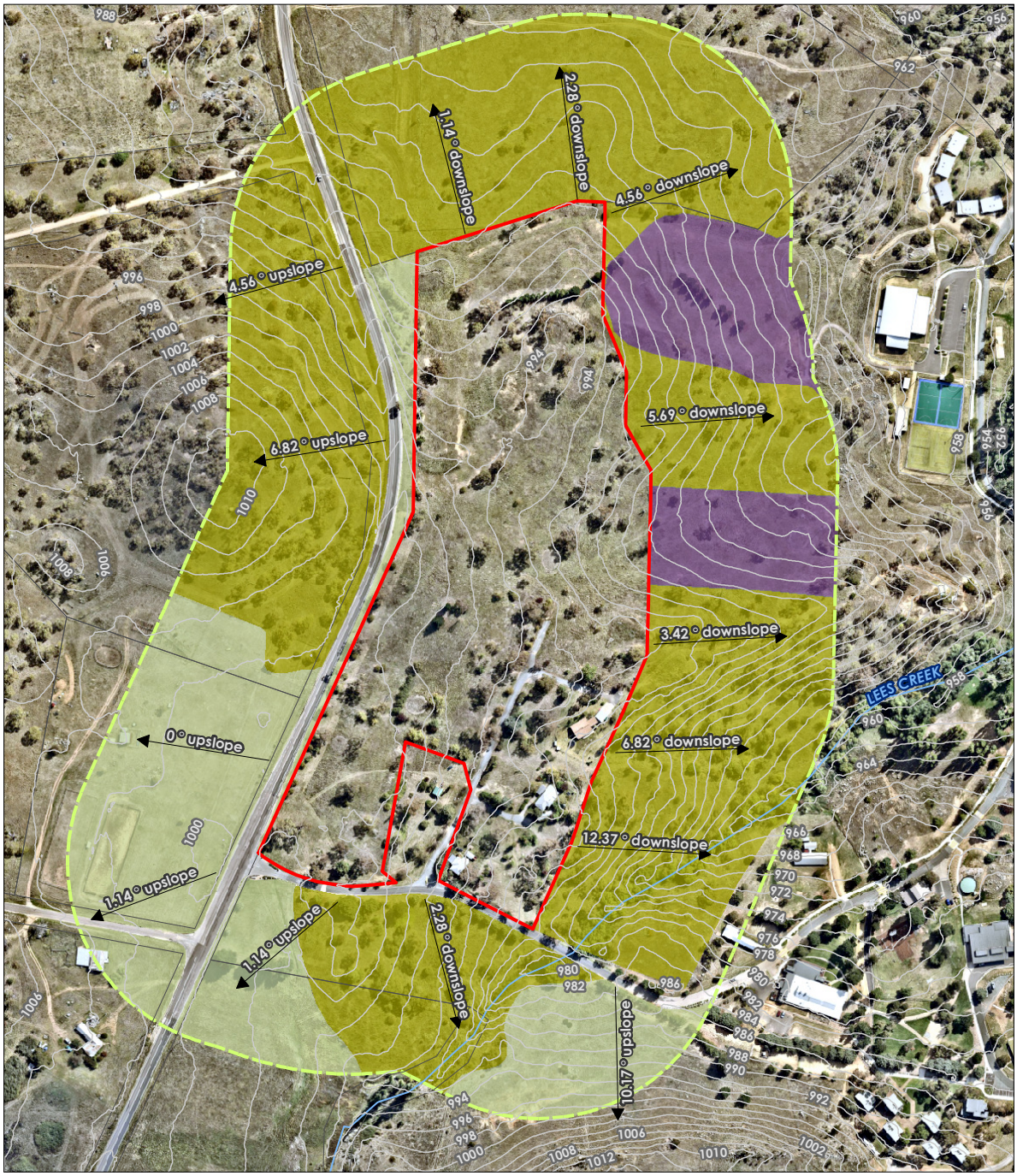
The RF Reg requires an assessment of the slope of the land on and surrounding the property out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint.

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP and is shown in Figure 6. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100 m transect measured outwards from the development boundary or the existing/ proposed buildings.

- Slopes to the west are upslope.
- Slopes to the east are in the 5 – 10 degree downslope range
- Slopes to the south are upslope. A narrow run of downslope falls toward the gully
- Slopes to the north are 0 – 5 degrees downslope.

Figure 6 Vegetation and Slope Assessment

BLACKASH
BUSHFIRE CONSULTING



Legend

- Contour - 2m
- Watercourse
- Subject Land
- Cadastre
- Vegetation Assessment Area - 140m

Vegetation Formation

- Grassland
- Woodland
- Managed Land

N

DKGIS
Date: 11/01/2022

0 25 50 100 150
Metres

Coordinate System: GDA 1994 MGA Zone 55
Imagery: © Nearmap

8.6. APZ and Construction Requirements

The site assessment identifies the potential bushfire threat from outside of the site area and provides an indication of required asset protection zones to meet the deemed to satisfy distances of PBP.

The area around the school and to the lease boundaries to the east and west is managed as an APZ.

An APZ is a buffer zone between a bushfire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. The appropriate APZ is based on vegetation type, slope and levels of construction (and for SFPPs the nature of development). The APZ can include managed areas, perimeter roads, existing roads, other buildings or managed properties can be considered as part of the APZ.

Figure 7 shows that all DTS APZs can be provided for the proposed school. The required APZs can be contained within the school site. A small area (approximately 3,232m^2) of APZ is proposed off site (Figure 7) as the High Performance ski jumps are being built. This area will be managed as part of the APZ by Sport and Recreation. All land within the site will be managed as an Inner Protection Area. The areas within the school site include built areas, sports fields and managed areas.

The road verge is maintained to the property boundary (Photo 1).

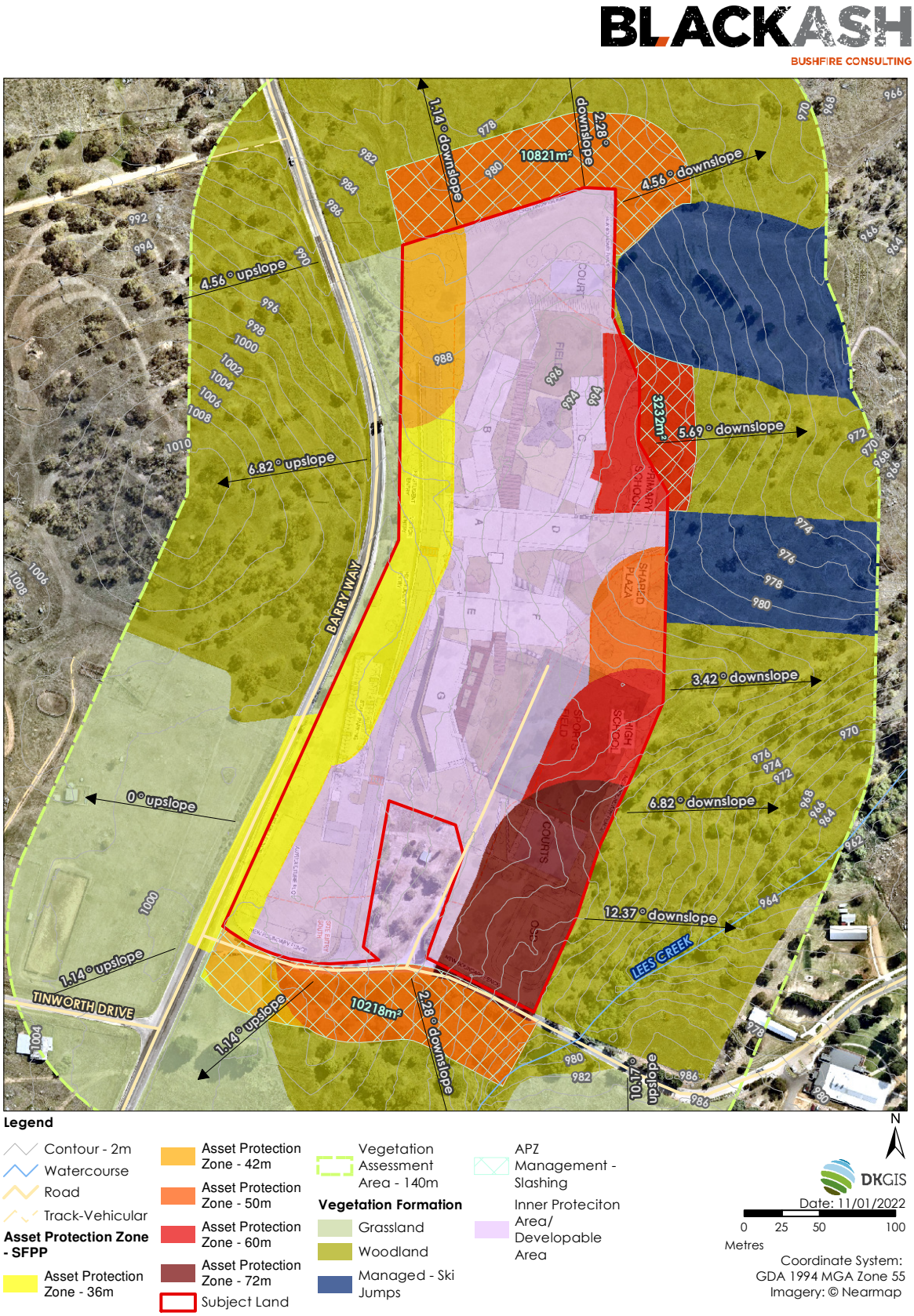
A small area of APZ is offsite to the northeast of the site. This area is currently being developed for the Alpine Winter Sports complex. Figure 2 shows the BMX Track which has been completed (Photo 2) and the construction of the Dry Jump and Ski Jump (Photo 3). The hazard in these areas has been removed and developed. A small area of grassland remains, which will be managed by Sport and Recreation.

All areas within the site will be managed as an Inner Protection Area (see Figure 7).

APZs to the north and south of the site are being explored to unencumber the school site. If these APZs are facilitated, they will be maintained for the life of the development. In determining the application, the RFS can condition APZs in accordance with Figure 7. The TAFE CLC site within the south of the site is currently managed and will be developed in the near future. This area will be maintained as an IPA or managed land.

Photo 1 **Managed Road Verge along Barry Way**	
Photo 2 **BMX Track**	
Photo 3 **Construction of the Dry Jump and Ski Jump**	

Figure 7 Asset Protection Zone



9. Water Supplies

The site is serviced by reticulated mains which will be extended throughout the development in accordance with PBP 2019. Water Supplies can comply with PBP 2019.

10. Gas and electrical supplies

Gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008). This complies with PBP.

11. Access

The design of public access roads and property access (within a site) should enable safe access, egress and defendable space for fire fighters and emergency services.

Access roads have been provided from Barry Way to provide through access.
Access will be provided that complies with PBP.

12. Evacuation and Emergency Management

Schools are particularly prone to traffic-generated congestion on roads at start and finish times. This is heightened when parents believe that their children are likely to be exposed to bushfire and in seeking to reach the school, cause road congestion and hamper the firefighting effort. A detailed *Bushfire Evacuation Plan* consistent with NSW RFS publication: A Guide to *Developing a Bush Fire Emergency Management and Evacuation Plan* will be completed prior to occupation.

13. Assessment Against the Aim and Objective of PBP

The RF Reg requires an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of PBP. All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. Table 2 shows the compliance with PBP.

Table 2 Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.	Yes	Areas around the school will meet APZ requirements.
Objectives	**Meets Criteria**	**Comment**
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	Built in accordance with AS3959.
Provide for defendable space to be located around buildings.	Yes	Defendable space and APZs are provided on all sides of the proposed development.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.	Yes	An asset protection zone is provided within the site.
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to public roads, and access and egress for emergency vehicles and evacuation is adequate. A detailed evacuation plan will be completed prior to occupation.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.	Yes	A bushfire management plan will be provided prior to completion of the building. A management plan is to be prepared that describes the maintenance measures required to maintain the APZ
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	

14. Significant Environmental Features

Separate ecological assessment.

15. Threatened Species

Separate ecological assessment.

16. Aboriginal Objects or Places

Separate assessment

17. Recommendations

The following recommendations are made for the bushfire protection measures for the site.

1. Buildings within the site are built to BAL 12.5 in accordance with the *Australian Standard for Construction of Buildings in Bushfire Prone Areas.*
2. Prior to the issue of a Construction Certificate for the new building, the school shall update the *Bushfire Emergency Management and Evacuation Plan* that is locally relevant and tailored with key stakeholders to a range of scenarios.
3. APZs are provided in accordance with Figure 7 within this report.

18. Conclusion

The Bushfire Hazard Assessment is in response to the Planning Secretary's Environmental Assessment Requirements (SEAR) Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EPA Act) Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (SSD-15788005). This report has addresses the Secretary's Environmental Assessment Requirements (SEARs), Condition 20 of the SEAR requires that the Department of Education and demonstrated that the new school is able to comply with *Planning for Bush Fire Protection (NSW RFS, 2019).*

The proposed construction of the Jindabyne Education Campus comprising a new primary school and a new high school at Jindabyne. The proposal is located within the JSRC located at 207 Barry Way and will accommodate approximately 925 students with the capacity for expansion in the future.

This report has been completed in accordance with PBP 2019 and demonstrates that the proposal can be supported by the NSW Rural Fire Service.

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Lew Short | Principal
BlackAsh Bushfire Consulting
B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)
Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373

Appendix 1 References

Australian Building Codes Board *Building Code of Australia Volumes 1&2*

Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bushfire-prone areas*

International fire engineering guidelines (2005) ABCB for the Australian Government, State and Territories of Australia 2005

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change

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

NSW Rural Fire Service (2011) Practice Note 1/11 Telecommunication Towers in Bushfire Prone Areas

NSW Rural Fire Service (RFS). 2006. *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Australian Government Publishing Service, Canberra

NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer.

BLACKASH
BUSHFIRE CONSULTING

Asset Protection Zone (APZ) Management Plan

Jindabyne Public School & Jindabyne High School

207 Barry Way, Jindabyne NSW 2627

Prepared for

NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

BLACKASH
BUSHFIRE CONSULTING

Asset Protection Zone (APZ) Management Plan

Jindabyne Public School & Jindabyne High School

207 Barry Way, Jindabyne NSW 2627

Prepared for

NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.1

14 January 2025

Document Tracking

Project Name:	APZ Management Plan
Prepared by:	Scott Palin
Client Details:	NSW Department of Education C/o Ms. Emily Dzinkic Senior Design Manager Educational Projects Hansen Yuncken Pty Ltd Sydney Corporate Park Building 1, L3, 75-85 O'Riordan Street, Alexandria NSW 2015
Project Address	207 Barry Way, Jindabyne NSW 2627

Contact Details

Name	Position	Contact No	Email
Scott Palin	Bushfire Specialist	0448 190 766	scott.palin@blackash.com.au

Document Control

Version	Primary Author(s)	Reviewed By	Description	Date Completed
1.0	Scott Palin	Lew Short	Final Issue	11 June 2024
1.1	Scott Palin	Lew Short	Revised APZ map	14 January 2025

Scott Palin | Bushfire Specialist
Blackash Bushfire Consulting
B.EnvScMan | Grad. Cert. in Bushfire Protection (UWS)
Fire Protection Association of Australia BPAD Level 2 BPAD-60359

Contents

PO BOX 715 WAHROONGA NSW 2076 AUSTRALIA
M 0419 203 853 | E lew.short@blackash.com.au
W blackash.com.au

EXECUTIVE SUMMARY

This Asset Protection Zone Management Plan (APZMP) has been prepared for the new Jindabyne Public School and Jindabyne High School located at Lot 101//DP1019527 (the Site), in the Snowy Monaro Regional Local Government Area.

The Site has areas of both Woodland and Grassland vegetation which are mapped as bushfire prone vegetation that interface with the site. As a development on a bushfire prone site, careful consideration, planning and implementation of an appropriate suite of bushfire protection measures is crucial.

The APZMP focuses on the Asset Protection Zones (APZs) and Landscaping across the site, which form an integral part of the suite of protection measures for the site and school occupants.

Given the nature of the site, the development and the bushfire risk, the establishment of suitable APZs and appropriate landscaping are the key focus of the APZMP.

To provide direction and timing for mitigation works, the APZMP is presented as a Map and Works Plan. The identified APZ must be inspected at least annually to ensure appropriate fuel loads and compliance with the Conditions of Consent.

To ensure that regular reviews are undertaken, this APZMP and works plan has an operational life span of three (3) years. At the completion of this time period, the plan should be formally reviewed. Formal monitoring will be undertaken on an annual basis with an audit and certification of the works, in particular the condition of the APZ. This APZMP will enable the management of the Site, provide an understanding of the vegetated landscape, and manage fuels in accordance with the Conditions of Consent.

1. Introduction

This APZMP has been prepared by Blackash Bushfire Consulting Pty Ltd (Blackash) on behalf of the NSW Department of Education for the establishment and ongoing management of the APZs for the new Jindabyne Public School and Jindabyne High School located on the Site.

The addresses of the schools are as follows:

- Jindabyne Public School – 163A Barry Way, Jindabyne NSW 2627; and
- Jindabyne High School – 163B Barry Way, Jindabyne NSW 2627.

A school is recognised within the Rural Fires Act, 1997 (RF Act) and the NSW Rural Fire Service (RFS) document *Planning for Bushfire Protection 2019* (PBP) as a Special Fire Protection Purpose (SFPP) development and a vulnerable community. PBP identifies an SFPP development is one which is occupied by people who are considered to be at-risk members of the community. In a bushfire event, these occupants may be more susceptible to the impacts of bushfire.

In accordance with PBP, the APZ approved as part of the development application relied on the provision of APZs of sufficient size to provide 10kW of radiant heat at the future school buildings. The radiant heat and other forms of bushfire attack (ember and direct flame contact) is reduced by establishing and maintaining managed areas of APZs.

PBP defines an APZ as an APZ is a fuel-reduced area surrounding a building or structure (asset). It is located between the asset and the bushfire hazard vegetation. The APZ provides:

- a buffer zone between a bushfire hazard and an asset.
- an area of reduced bushfire 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 to defend the property.

The bushfire fuels are reduced or removed 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 buildings.
- damage to the building asset from intense radiant heat; and
- ember attack.

This APZMP provides the new Jindabyne Public School and Jindabyne High School with a framework and guidance for the continued vegetation management within the site and the adjoining APZ. It is designed to clearly outline the areas of management, required management works and a plan of implementation for the next 3 years.

2. Background

Blackash were engaged by the NSW Department of Education to prepare a Bushfire Hazard Assessment report for the new school development, with the latest report identifying the applicable off-site APZ being Version 1.2 and dated 15th of October 2024. A letter prepared by Mr. Lew Short of Blackash and dated 25th of November 2024 was provided following an RFI from the NSW Rural Fire Service (RFS), which provided clarification for the APZ to the southwest (adjacent the Pony Club). Following consultation with the NSW RFS a revised 33.5m APZ was deemed supported. The revised 33.5m APZ to the southwest resulted in the APZ being reduced by 2.5m, and as a result no APZ or easement within the Pony Club land was required. The revised and current APZ map applicable to the development is included at Figure 3.

The Development Consent for the approved new schools states the following Conditions of Consent relevant to this APZMP (**D34**, **D35** and **A22**):

Condition **D35** of the Development Consent states:

> "***Asset Protection Zones***
> ***D35****: Prior to the commencement of operation or other timeframe agreed by the Planning Secretary, landscaping of the site must be completed in accordance with landscape plan(s) listed in condition* ***A2(d)*** *and the property must be managed in accordance with the requirements in condition* ***A22****."*

Condition ***A22*** *of the Development Consent states:*

> "***Asset Protection Zones***
> ***A22:*** *From the commencement of building works and for the duration of the educational land-use, the entire leasehold area must be managed as an inner protection area in accordance with the following requirements of Appendix 4 of Planning for Bush Fire Protection 2019:*
> *(a) tree canopy cover should be less than 15% at maturity;*
> *(b) trees at maturity should not touch or overhang the building;*
> *(c) lower limbs should be removed up to a height of 2 m above the ground;*
> *(d) tree canopies should be separated by 2 to 5 m;*
> *(e) preference should be given to smooth-barked and evergreen trees;*
> *(f) large discontinuities or gaps in the shrubs layer should be provided to slow down or break the progress of fire towards buildings;*
> *(g) shrubs should not be located under trees;*

(h) shrubs should not form more than 10% ground cover;

(i) clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation;

(j) grass should be kept mown (as a guide, grass should be kept to no more than 100mm in height); and

(k) leaves and vegetation debris should be removed regularly.

*This must form part of a Landscaping Management Plan to ensure ongoing management of these APZs as required by condition **D34**."*

*Condition **D34** of the Development Consent states:*

*" **Asset Protection Zones***

***D34**: Prior to the commencement of operation, the Applicant must prepare a Landscape Management Plan to manage the revegetation and landscaping on-site and submit it to the Certifier. The plan must:*

a) describe the ongoing monitoring and maintenance measures to manage revegetation and landscaping; and

b) describe the measures to ensure the site is managed as an Inner Protection Area in accordance with the Bushfire Report in the EIS, prepared by BlackAsh Bushfire Consulting dated 11 January 2021, and updated by BlackAsh Bushfire Consulting dated 30 October 2022. Note: Where any inconsistency occurs between these reports, the report dated 30 October 2022 will prevail; and

c) be consistent with the Applicant's Management and Mitigation Measures at Section 9 Table 9-2 in the EIS;

*d) address the requirements of condition **A22.***

*~~e) be consistent with condition B40".~~ (**Deleted**)*

This APZMP has been determined having regard to the requirements as specified in PBP for the provision of APZs, the revised APZ map (Figure 3) and the development's Conditions of Consent (D34, D35 and A22).

In addition to the above, the NSW Department of Education as owners and managers of land have obligations under section 63 of the *Rural Fires Act, 1997 (RF Act)* to prevent the occurrence and spread of bushfire on or from their land. The NSW Department of Education also has broader management obligations to reduce the bushfire risk to adjoining properties.

2.1. Purpose of the APZ Plan

This APZMP has been prepared to provide the NSW Department of Education with clarity on the required APZs and associated works to establish and maintain the required APZs.

This APZMP has been prepared in accordance with the following published guidelines and standards:

- NSW Rural Fire Service (RFS) *Standards for Asset Protection Zones* (2005); and
- NSW RFS *Planning for Bushfire Protection* (2019).

This APZMP is the baseline plan for the implementation, ongoing management, monitoring and maintenance of the new Jindabyne Public School and Jindabyne High School APZs.

2.2. Management Aim & Objectives

The primary aim of the APZMP is to provide a working document that will outline the actions and procedures for the implementation and ongoing management of the APZs. This aim will be achieved through meeting the following objectives:

- To establish and maintain the approved APZs as per Figure 3;
- To ensure the APZ achieves the performance criteria set out under NSW RFS published documentation for APZ management (Standards for Asset Protection Zones, 2005);
- Provide a maintenance framework to ensure the APZ and Site vegetation management meets its performance criteria in perpetuity;
- Address the Site and APZ vegetation management requirements specified in the Conditions of Consent;
- Reduce the community's vulnerability to bushfires by improving its preparedness; and
- Manage fuels within the Site and on adjacent APZs to reduce the rate of spread and intensity of bushfires impacting on the Site.

3. Site Context & Description

The new Jindabyne Public School and Jindabyne High School are located within the area managed by Jindabyne Sport and Recreation Centre (JSRC), on independent Department of Education (DoE) land. The site is within the area designated by the Snowy Special Activation Precinct (Snowy SAP) as an area identified for growth and development.

The Jindabyne Public School will be located generally in the northern portion of the site whilst the new Jindabyne High School will generally be located in the south of the site. The primary school and high school will share a common visitor entry point to co-located school administration facilities. While the schools are inherently separate identities, with separate student entries, opportunities for integration are provided in a central shared plaza. This outdoor learning space is activated by the school canteen (shared) and separate core facilities including the primary school hall and library, and the high school gym and library, and provides opportunities for shared community use.

The Jindabyne Public School will provide for a Core 21 school. This will comprise of 20 home base units and 2 support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, out of school care facilities, library and special programs. Landscaped areas include active and passive open space play areas, and a games court.

The new Jindabyne High School will provide for a stream 2 high school. This is to comprise of general/specialised learning spaces and support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, library, an agricultural learning unit. Landscaped areas include active and passive open space play areas, a sports field and multipurpose games courts.

A dual access driveway is provided off Barry way Road along the western boundary of the site and through the private access road associated with the JSRC to the southern boundary of the site. The project also includes car parking, bus and private vehicle drop-off zones, and delivery zones.

The Jindabyne Public School will support the following maximum number of occupants:

- 415 students; and
- 43 staff.

The Jindabyne High School will support the following maximum number of occupants:

- 510 students; and
- 68 staff.

The site is approximately 9.5 ha in size, containing a former golf course and three existing workers cottages which were occupied during the construction of the Snowy Hydro Scheme. The site is undeveloped and contains scattered trees. Much of the surrounding land comprises remnant grassland, woodland and agricultural land.

The site is impacted on by Category 3 Bushfire Vegetation both internal and external the subject site (refer to Figure 2).

The new Jindabyne Public School and Jindabyne High School are located within the existing JSRC, which is a high performance and community sport centre located directly east of the site. The JSRC has a range of sporting facilities including a synthetic running track, cycling track, netball and tennis courts, fitness and indoor sports centres, and sporting ovals, as well as other services and accommodation facilities. The newly constructed BMX track is located directly east of the site and a new ski jump to the northeast.

The surrounding locality is generally rural in character with other land uses also including the Jindabyne Aero Club located to the west of the site on Tinworth Drive, an industrial area to the southwest and the Jindabyne Community recycling centre is located east of the JSRC.

3.1. APZs on Adjoining Lands

The APZMP provides for actions and responsibilities both within the Site and on the adjoining APZ to the north-east as shown in Figure 3. The proposed development and associated vegetation management within the Site and APZs reduces the bushfire risk to the adjoining properties. The appropriate management of the Site and adjoining APZ is therefore important to both to the Site occupants and also the properties adjoining the Site.

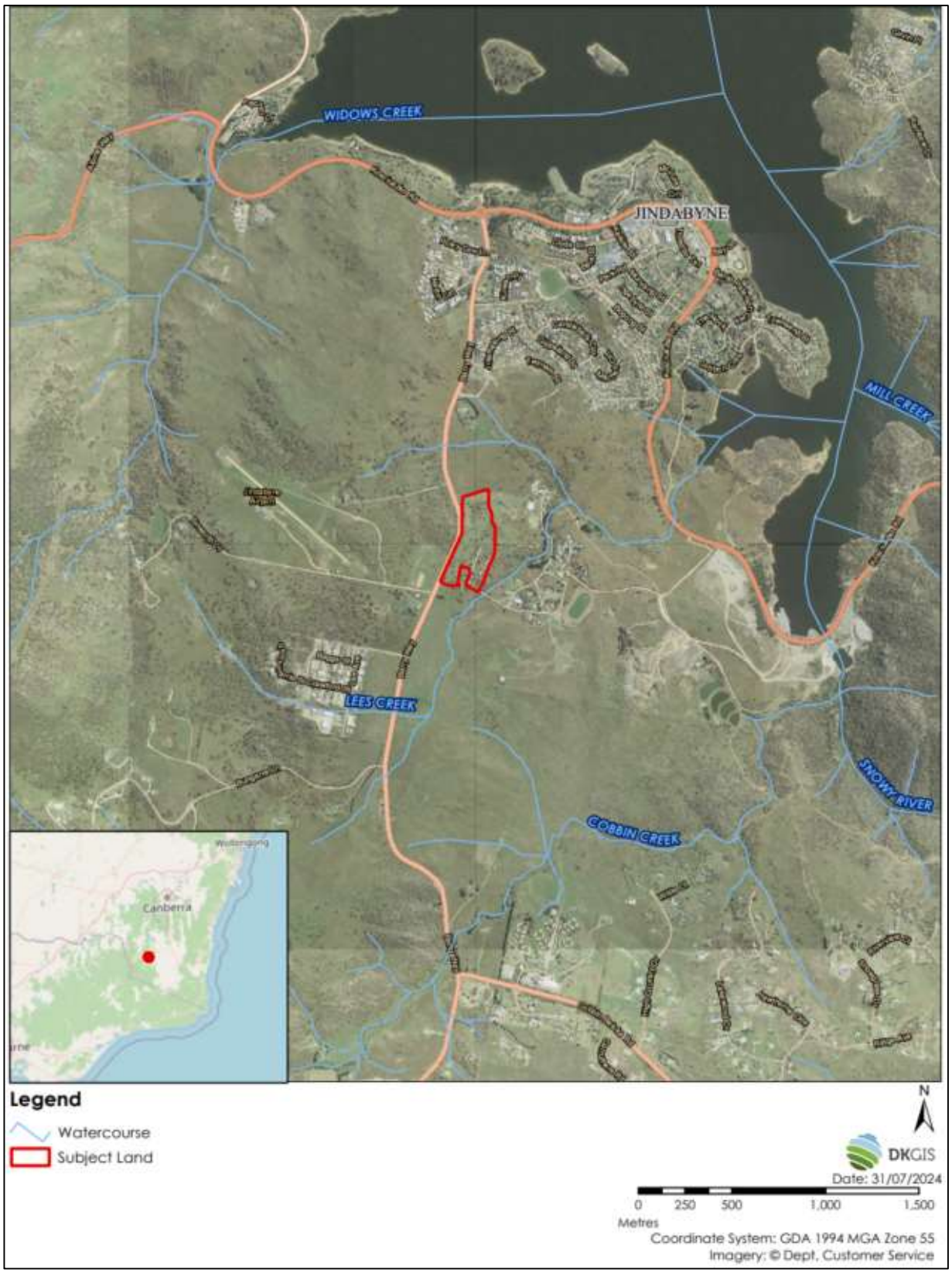


Figure 1: Site Location

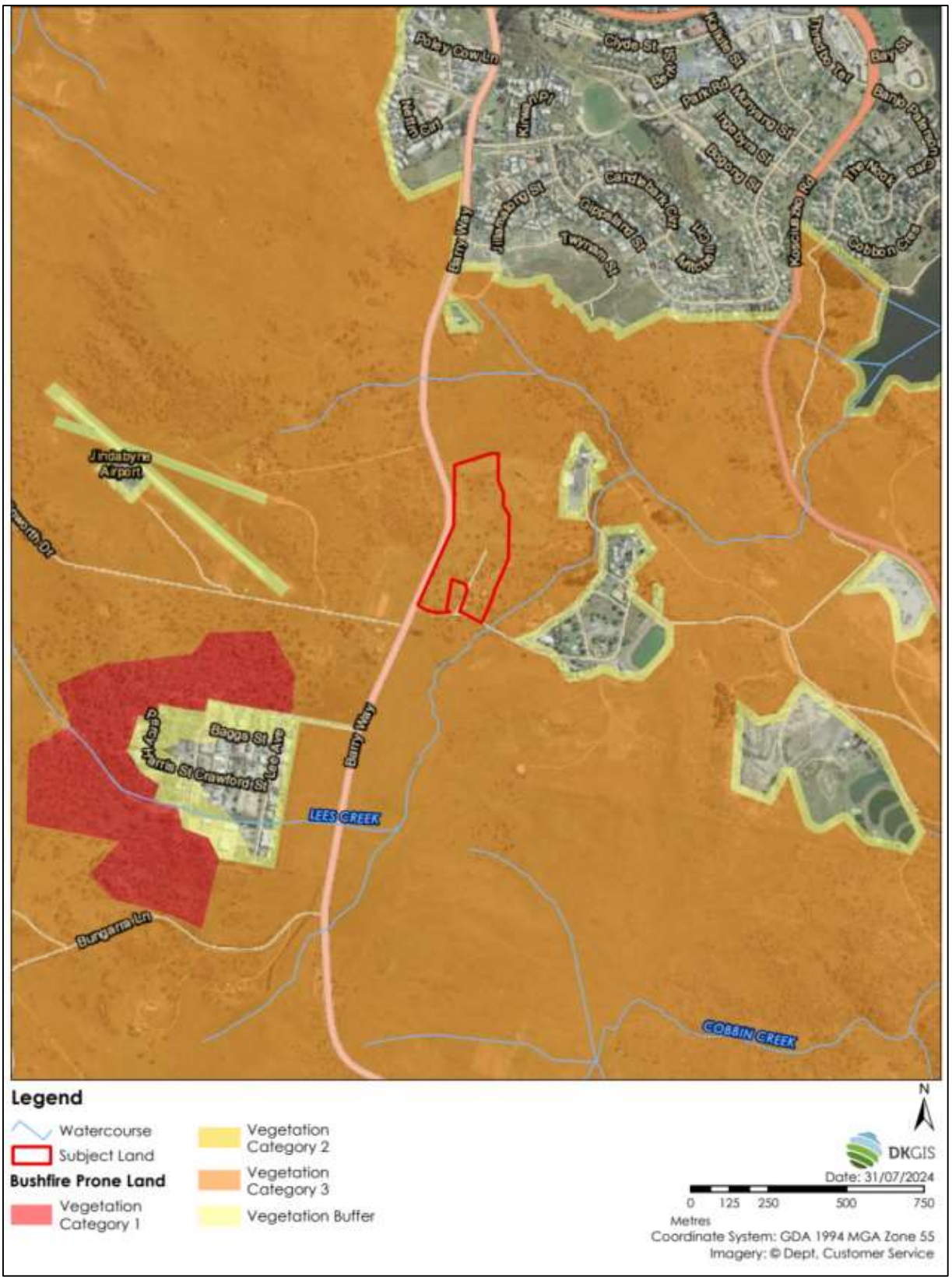


Figure 2: Bush Fire Prone Land

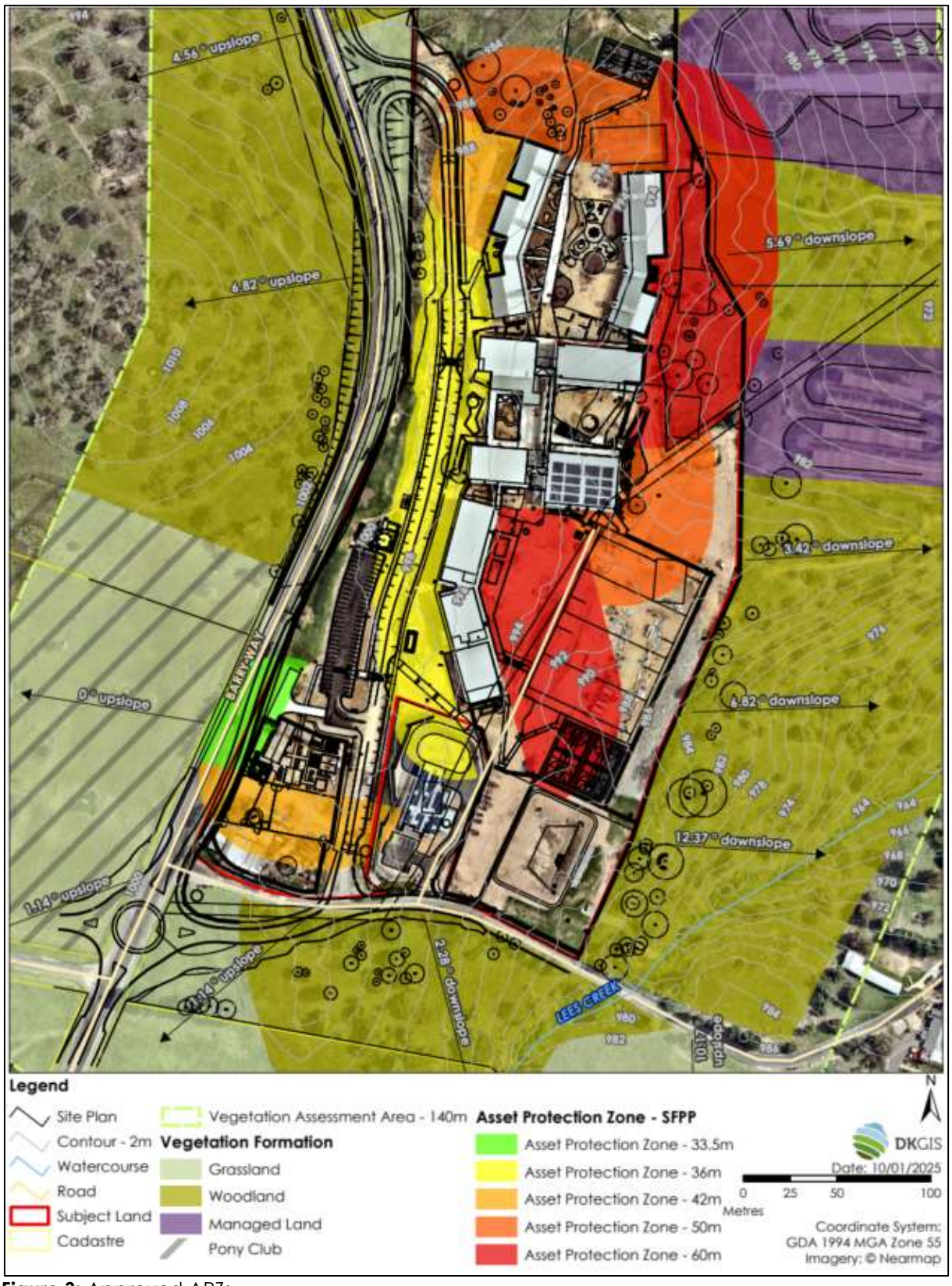


Figure 3: Approved APZs

4. APZ Management Requirements

The Site and adjoining APZ require vegetation management for the purpose of reducing bushfire fuel loads and fuel structure, such that the potential effect from a bushfire at the School's structures / assets / buildings is mitigated to an acceptable level. The APZs have been broken up into two (2) Bushfire Management Zones (refer to Figure 4):

- Management Zone 1: The Site – managed to Inner Protection Area (IPA) standards; and
- Management Zone 2: North-Eastern Adjoining APZ – managed to Inner Protection Area (IPA) standards.

The specifications for the IPA standards are provided at section 4.2 of this Plan.

For the determined APZs as per Figure 3, the off-site APZ to the south is located on the managed land of the adjoining TAFE and the off-site APZ to the south-west is located within the managed land of the adjoining Barry Way road corridor. As such, these sections of off-site APZs do not form part of this APZMP.

The APZs for the site have been determined by and are formally supported by Blackash.

4.1. Bushfire Management Zones

Management zones have been identified for the Site to prioritise and direct bushfire management actions. The zones are designed to ensure compliance with the Conditions of Consent, *Planning for Bush Fire Protection 2019* and the obligations under the *Rural Fires Act 1997*.

Given the nature of the site, two (2) zones (Figure 4) have been identified and each zone is required to be managed to IPA standards in accordance with Section 4.2 of this Plan. The management of the zones has been designed to ensure the area will perform appropriately as an APZ, whilst maximising the retention of trees and visual amenity.

Management Zone 1 – The Site

This management zone is already essentially an APZ, due to the extensive clearing and grubbing works performed during the construction of the project. A small number of trees are identified for retention to the north-east site boundary along Barry Way for ecological purposes. No tree removal or tree pruning is required within the area identified for retention. The primary APZ works required in this area include:

- Removal of fine fuels/litter leaf and debris, slashing to below 100mm, and retention of live roots/ground cover (for erosion management); and
- All weeds species to be removed.

Reference photos taken during Site inspection on the 13.10.2023:

Photo 1: Looking south-east at the cleared Site.

Photo 2: Looking north towards Barry Way at the trees identified for retention.

Reference photos taken during Site inspection on the 24.07.2024:

Photo 1: Looking north-east at the new garden and school oval

Photo 2: Looking west towards Barry Way at the trees identified for retention.

Management Zone 2 – North-Eastern Off-Site APZ

This management zone contains predominantly Grassland vegetation with a few small trees, which will require ongoing management to the IPA standards. No tree removal or tree pruning is required within the adjoining APZ. The primary APZ works required in this area include:

- Removal of fine fuels/litter leaf and debris, slashing to below 100mm, and retention of live roots/ground cover (for erosion management); and
- All weeds species to be removed.

Reference photos taken during Site inspection on the 13.10.2023:

Photo 1: Looking east at the adjoining APZ area from the site boundary.

Photo 2: Looking south-east at the adjoining APZ area from the site boundary.

Reference photos taken during Site inspection on the 24.07.2024:

Photo 1: Looking north-east at the adjoining APZ area from the site boundary.

Photo 2: Looking east at the adjoining APZ area from the site boundary.

Figure 4: Bushfire Management Zones

4.2. IPA specification

The IPA is the area closest to the asset / 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 defendable space for attending firefighting operations. 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 (in the case of this site, a well-maintained landscape).

For the development buildings on the Site, vegetation should not be located in close proximity to windows.

All vegetation within the Site and adjoining APZ is to be managed as an Inner Protection Area (IPA) in accordance with the requirements of Appendix 4 of Planning for Bushfire Protection 2019. When establishing and maintaining an IPA, the following standards apply:

Table 1: IPA Standards

Stratum	APZ Standard
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 ground • tree canopies should be separated by 2 to 5m • 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 • shrubs should not be located under trees • shrubs should not form more than 10% ground cover • 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) • leaves and vegetation debris should be removed.

4.3. APZ Maintenance Criteria

The Site and adjoining APZs are required to be managed in perpetuity to ensure ongoing protection to the School buildings from the impact of bushfires. Vegetation management to IPA standards as described above should be undertaken regularly, particularly in advance of the bushfire season. The APZ should be reviewed and certified annually by a suitably qualified bushfire consultant, prior to the commencement of the Bushfire Danger Period which is generally 1 October in each year.

4.4. Development Consent

Development Approval was issued for the development on the 10 August 2022. The Approval Document provides Conditions of Consent (D34, D35 and A22), refer Section 2 of this plan, for the implementation and ongoing vegetation management within the Site to IPA standards.

With the implementation of this APZMP into the Site's overall Landscaping Management Plan, this APZMP is prepared in accordance with the Conditions of Consent; D34, D35 and A22.

5. Landscaping Design and Management

The landscaping within the Site and adjoining APZ must be designed and implemented in accordance with the IPA standards as per Section 4.2 of this plan. Landscaping, particularly adjacent to buildings, plays a vital role in the effectiveness of the APZ and the survivability of the buildings. In combination with other measures, landscaping, if designed appropriately, is a simple means to implement an APZ and significantly improves the resilience of the site.

Appropriate landscaping involves planning, designing, planting and managing the Site and adjoining APZ. The aim is to keep the area adjacent to the buildings free of plants and other materials that can easily catch fire and then ignite the building. In order to achieve a suitable landscaped area for bushfire protection, the following factors need to be considered:

a) Bushfire impact on Buildings

Buildings are impacted by bushfires through a number of mechanisms, but most importantly when designing the landscaping; ember attack, radiant heat and direct flame contact.

- **Ember attack** – the majority of buildings burnt down during a bushfire are the result of ember attack. Ember attack occurs when small burning twigs, leaves and bark are carried by the wind, and land ahead of the fire. If these burning embers land on or near flammable materials, such as leaf litter and dead plant matter, outdoor furniture, wood piles, etc, they can develop into spot fires. These spot fires can then impact directly on buildings. Embers can also ignite a building directly if they land on or near vulnerable parts of the building.
- **Radiant heat** - is the heat created from a bushfire. Radiant heat can:
  - ignite surfaces without direct flame contact or ember attack. This is due to the heat being received from the fire;
  - dry out vegetation ahead of the bushfire so that it burns more readily;
  - crack and break windows, allowing embers to enter a building; and
  - distort and melt materials such as plastics.
- **Flame contact -** occurs when flames from the bushfire directly touch or engulf a building. Any burning vegetation can directly ignite a building if it is planted too close.

b) Defendable Space

An area adjoining a building that is managed to reduce combustible elements and is free from constructed impediments. It's a safe working environment in which firefighters can defend a building before and after the fire front has passed.

c) Location of plants, trees, gardens, etc

Poorly located vegetation that is likely to burn may expose the building to increased levels of radiant heat and flame contact. Ultimately, effective APZ, building construction, water and access can all be compromised by inappropriate or poorly maintained landscaping.

The landscaping design must carefully consider the placement of garden beds, trees and other vegetation to reduce the bushfire risk to the building. Flammable garden materials (such as trees, shrubs and fences) should not be located in close proximity to windows, doors, decks, pergolas and eaves.

There are a number of things that can be done to support this, including:

- Locate non-flammable surfaces (such as paths, driveways and paved areas) against the buildings;
- Do not plant trees that are close to the buildings, so they do not cause damage if they fall. They must not overhang the buildings and ideally should be located 1.5 times their mature height from the buildings;
- Maintain grass within the APZ to no more than 10cm in height;
- Use non-combustible, moveable containers and pots that can be relocated in the summer periods; and
- Do not store other flammable objects from around the buildings. These include, outdoor furniture, barbeques, gas bottles and wood piles.

d) Plant Flammability

Some plants are more flammable than others but all plants in a garden – living and dead – can provide fuel for a bushfire. Plant flammability is described as a combination of:

- the time taken for a plant to ignite;
- how readily it burns when the ignition source is removed;
- how much material there is to burn; and
- how long it takes for all available fuel to be consumed.

Flammability will vary depending on:

- a plant's age, health, physical structure and chemical content;
- the daily and seasonal climatic variations;
- location of the plant in relation to other vegetation and flammable objects; and
- the specific part of a plant – some parts of plants are also more flammable than others.

e) Fuel Continuity

One of the most effective ways to reduce the spread of fire within a garden is to create separation between plants, garden beds and tree canopies.

Fire spreads easily when plants are located close together as this creates continuity of fuel for the fire to progress. Grouping plants and garden beds with areas of low fuel between them can help avoid this by breaking up fuel continuity. Fuel continuity should be reduced by:

- Locate any shrubs or other flammable objects away from trees. If planted under trees, vegetation can act as a ladder fuel and carry fire into canopies;
- Locate shrubs and trees so that they do not form a continuous canopy and are separated by areas of low fuel;
- Use non-flammable surfaces (paths etc) and mown grass to provide separation and areas of low fuel between plant groupings and garden beds; and
- Pruning branches to a minimum of 2 metres above the ground. This increases the vertical separation between fuel at ground level and the canopy.

Trees can be useful during a bushfire, provided they are selected carefully, properly maintained and located at a safe distance from the buildings.

f) Ongoing Maintenance

Regular maintenance of all landscaped areas must be carried out regularly and should be included as part of overall preparation for bushfire. Regular maintenance actions should include:

- Clear ground fuel from underneath plants, on and around the buildings;
- Prune plants with low-hanging branches, providing separation of at least 2 metres above the ground;
- Replace plants that die or become diseased;
- Keep garden beds well hydrated through watering;
- Remove any flammable objects from the APZ;
- Remove any fine, dead material that might accumulate in plants; and
- Remove weeds from all garden areas and adjacent to buildings.

6. APZ Works Plan

The required APZ works should be carried out in the following sequence:

1. Delineate the adjoining APZ that is required for ongoing vegetation management;
2. Identify and remove weeds;
3. Ground fuel management (removal of fine fuels/litter leaf and debris, slashing to 100mm, and retention of live roots/ground cover for erosion management).

6.1. Tree Removal or Pruning

There are no trees required for removal or pruning within the Site or adjoining APZ to meet IPA standards.

6.2. Works Plan

A works plan is included at Appendix 1, which provides the schedule of works and general specifications that will demonstrate APZ compliance for the two Bushfire Management Zones. The works plan is consistent with the Conditions of Consent and requirements of Planning for Bushfire Protection 2019:

- The means necessary to complete the management required;
- A schedule for monitoring and maintenance to occur to ensure the APZ is regularly managed, and
- The relevant body responsible for actions.

7. Maintenance & Reporting

7.1. Maintenance

Adequate and regular maintenance of the APZs, to the prescribed IPA standards, is critical to its ongoing effectiveness. Issues that can affect the APZ performance include:

- Regrowth canopy and limbs (over time can reduce separation between canopies and from the ground);
- Regrowth trees and shrubs (e.g. from coppices); and
- Seasonal development and accumulation of surface and elevated fuels such as fallen limbs/branches, leaves and bark, regrowth grasses and low shrubs.

After the initial works to create the APZs are completed, follow up maintenance over the Site and adjoining APZ will be more readily identifiable, and can be done manually (mow, slash, brush-cut, saw limbs and branches, and manual removal).

Ongoing maintenance will be required at least twice annually as standard landscape maintenance works and additional works based on any issues identified in the monitoring assessment and reporting.

7.2. Reporting

It is recommended that an APZ inspection be performed on completion of the APZ works and prior to occupation of the Site. The APZ inspection should be conducted and documented by a qualified bushfire consultant with relevant experience in APZ and landscape management.

Annual APZ inspections should be conducted in perpetuity, prior to the annual bushfire danger period (e.g., September) each year. These reports should be kept on record for a 12-month period until superseded by the following APZ Monitoring Report.

8. References

Australian Building Codes Board Building Code of Australia Volumes 1&2.

Country Fire Authority (2011). Landscaping for Bushfire – Garden Design and Plant Selection.

Hines. F, Tolhurst. K, Wilson. A and McCarthy. G (2010). Overall fuel hazard assessment guide, 4th edition July 2010. Fire and adaptive management, report no. 82. Published by the Victorian Government Department of Sustainability and Environment Melbourne, July 2010.

Keith, David (2004). Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT. The Department of Environment and Climate Change.

NPWS (2006). Lane Cove National Park Fire Management Strategy 2006. Department of Environment and Conservation NSW, Parks and Wildlife Division, Sydney North Region.

NSW Government (1979). Environmental Planning and Assessment Act 1979. NSW Government Printer

NSW Rural Fire Service (2015). Guide for Bushfire Prone Land Mapping

NSW Rural Fire Service (2019). Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners. Australian Government Publishing Service, Canberra

NSW Rural Fire Service (2005). Standards for asset Protection Zones.

NSW Rural Fire Service (2017). Fire Trail Standards.

Soil Conservation Service (2017). NSW RFS Fire Trail Design Construction and Maintenance Manual.

Appendix 1: APZ Works Plan

Item	Action Required/Performance	Timing	Responsibility
ESTABLISHMENT			
Determine and map APZ	Map of site showing the extent of APZs required.	Prior to works commencing	Blackash
Identify off-site APZ	Formally identify the extent of the off-site APZ.	Prior to APZ works	SINSW
Delineate off-site APZ (if applicable)	Delineate the off-site APZs so that works are restricted to the extent of the APZ area (if applicable).	Prior to APZ works	SINSW
Confirm safe work area	At completion of APZ identification and/or delineation, APZ Contractor to assess the APZ areas and make sure they are safe, which includes all required OH&S procedures and documentation (SWMS).	Prior to APZ works	Contractor
Ground and Shrub Clearing	Shrubs and ground fuel to be removed / managed as per Section 4.2: • shrubs should not be located under trees; • shrubs should not form more than 10% ground cover; • Shrubs should not form continuous canopy; • grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and • Leaf and other debris removed as required.	APZ construction	Contractor
APZ Inspection	Inspection of APZ areas and issue of APZ Certificate to certify that: • Ground and shrub layers are managed in accordance with APZ requirements.	On completion of the APZ works and prior to occupation	Blackash

MONITORING			
APZ Monitoring	Ongoing monitoring to ensure fuel loads and vegetation structure meet IPA standards. Ongoing fuel management to be monitored annually within: • August -September prior to maintenance works. A report should be completed at each inspection and identify whether further maintenance is required.	Annually (August-September prior to bushfire season)	Blackash
APZ Monitoring Report	An APZ monitoring report will be issued at the completion of each monitoring event. Reports should be kept on record for a 12-month period until superseded by the following years report.	Annually (September prior to bushfire season) - following creation of the APZ	Blackash
MAINTENANCE			
APZ Maintenance	• Overstorey canopy cover of 15% or less. • Tree canopies should be separated by 2 to 5 metres. • Shrubs should form no more than 10% of ground cover. • Shrubs should not form continuous canopy. • Groundcover to be kept mown (indicatively no more than 100mm height). • Leaf and other debris removed as required.	Twice annually for first 3 years following creation of the APZ. APZ Maintenance completed each year within: • August - September; and • March - April.	Maintenance Contractor
Maintenance Report	• The maintenance contractor can sign off the maintenance and present as a maintenance report, post works.	Twice annually for first 3 years following creation of the APZ.	Maintenance Contractor

9.2.3 BLACKASH BUSHFIRE CONSULTING: Bushfire Hazard Assessment s4.55 Modification Special Fire Protection Purpose Development v1.2 - 15 October 2024

BLACKASH

BLACKASH
BUSHFIRE CONSULTING

Bushfire Hazard Assessment

s4.55 Modification

Special Fire Protection Purpose Development

Jindabyne Education Campus
163 Barry Way, Jindabyne NSW 2627

Prepared for
NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.2
15 October 2024

BLACKASH
BUSHFIRE CONSULTING

Bushfire Hazard Assessment

s4.55 Modification

Special Fire Protection Purpose Development

Jindabyne Education Campus

163 Barry Way, Jindabyne NSW 2627

Prepared for

NSW Department of Education

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.2

15 October 2024

Document Tracking:

Project Name:	S4.55 Modification: Jindabyne Central School Modified APZ
Client Details:	NSW Department of Education C/- Ms. Emily Dzinkic Senior Design Manager Hansen Yuncken Pty Ltd Via email: edzinkic@hansenyuncken.com.au
Project Address	163 Barry Way, Jindabyne NSW 2627 Lot 1 DP1294413

BlackAsh Contact Details

Lew Short	Principal
0419 203 853	lew.short@blackash.com.au

Document Control

Version	Primary Author(s)	Description	Date Completed
1.2	Scott Palin / Lew Short	Modified APZ (Figure 5)	15 October 2024

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Lew Short / Principal

Blackash Bushfire Consulting

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

Contents

Glossary of Terms

APZ	Asset protection zone
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2018*
BAL	*Bushfire attack level*
BCA	*Building Code of Australia*
BSA	Bushfire safety authority
EPA Act	*Environmental Planning & Assessment Act 1979*
FDI	Fire danger index
ha	Hectare
m	Metres
PBP 2006	*Planning for Bush Fire Protection 2006*
PBP 2019	*Planning for Bush Fire Protection 2019*
RF Act	*Rural Fires Act 1997*

SEP

1. Introduction

Blackash Bushfire Consulting (Blackash) has been engaged by the NSW Department of Education to provide a bushfire assessment in support of a Section 4.55 Modification (s4.55) for the updated surrounding land use at the new Education Campus at Jindabyne (New Primary and High School) at 163 Barry Way, Jindabyne (Figure 1) which is legally known as Lot 1 DP1294413 (the site).

The modification relates to two separate components of the approved Asset protection Zones (APZ) for the development, which include:

- The APZs for the individual buildings have been realigned to be offset from the building footprints, as opposed to the original bushfire assessment report that had the APZs offset from the site boundary. The APZ distances have not changed. The only change is that the APZ map has been refined so that the APZs are now offset from the 'asset', being the developments building footprints; and
- The land parcel to the south-west of the site being revised from 'Grassland' vegetation to formalised 'managed land'. As a result of the revised managed land application, the associated Asset protection Zone (APZ) related to the previous Grassland vegetation to the southwest has been removed.

The APZ realignment and removal of the south-western APZ is the subject of this s4.55 Modification Report.

This s4.55 modification is a relatively short report that utilises the previously prepared Blackash assessment documents:

- Bushfire Hazard Assessment dated 30/09/2021; and
- s4.55 Modification Report (Mod-01) addressing the addition of an agricultural unit to the school grounds dated 30 October 2022.

The above two Blackash reports should be referred to in conjunction with this s4.55 Modification Report for the site assessment and consideration of the application requirements for a Bushfire Safety Authority in accordance with the Rural Fires Regulations (RF Reg).

The APZ refinement and modification to the surrounding land use and associated removal of APZ to the south-west has been completed having regard to the existing NSW Rural Fire Service (RFS) Bushfire Safety Authority (BSA) supporting the approved development, and the specific Conditions of Consent A20 – A23, B32, and D35.

The RFS General Terms of Approval (GTA) were issued under Division 4.8 of the Environmental Planning and Assessment Act 1979 (EPA Act), and a BSA under section 100B of the Rural Fires Act 1997 (RF Act), was issued subject to a number of conditions. The conditions (see Appendix 2) are consistent with this s4.55 Modification Report and the modification does not impact the development's ability to comply with the conditions under the GTA.

Table 1: Bushfire Report Summary

Development Type	Integrated Development Special Fire Protection Purpose s4.55 modification
Subtype	School
Bushfire Safety Authority required	Yes – issued Friday 10 December 2021 S4.55 modification is seeking a BSA
Referral to NSW Rural Fire Service	Yes
Deemed to Satisfy or Performance	Deemed to satisfy
Performance aspects	Nil

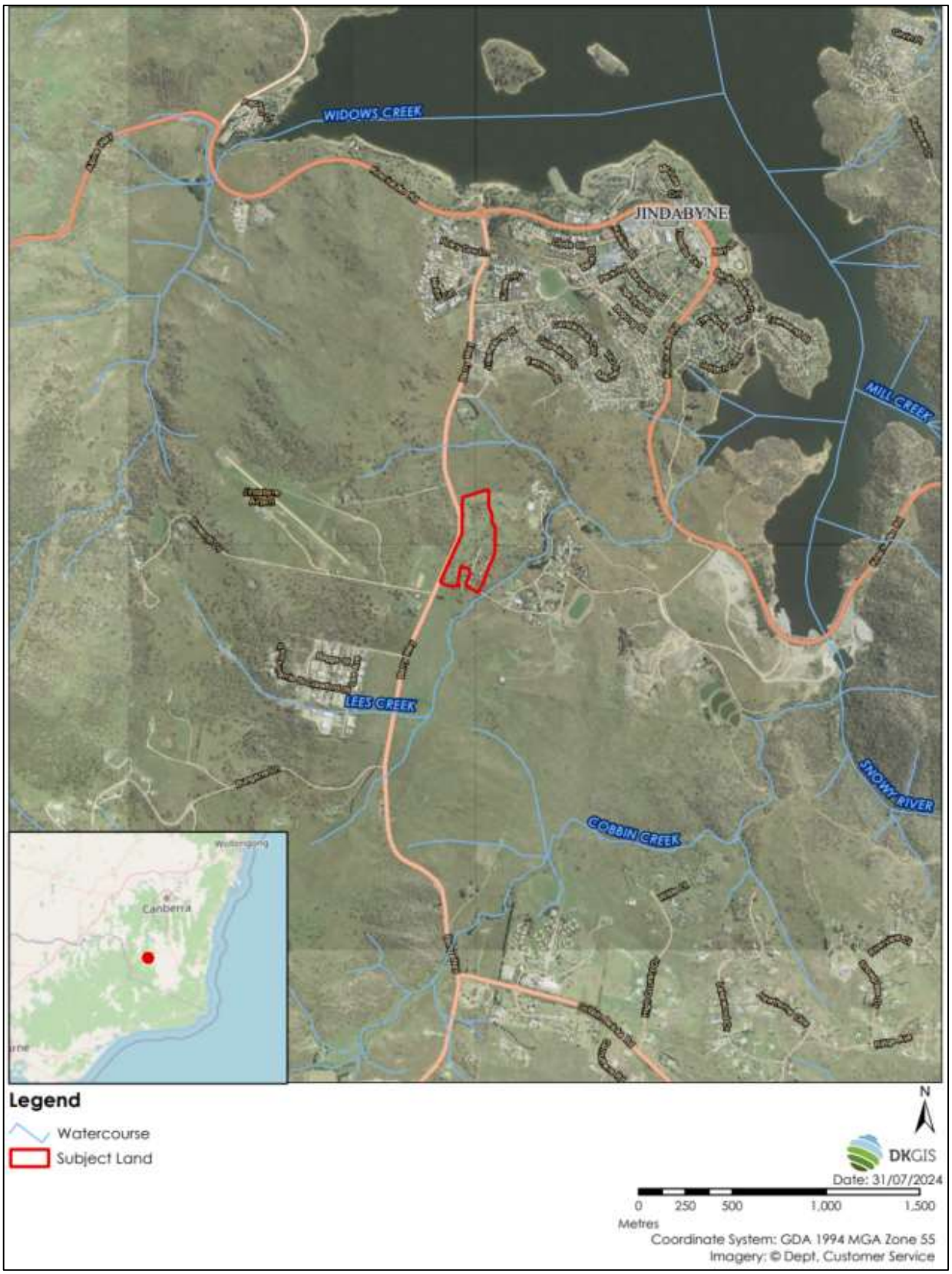


Figure 1: Jindabyne Education Campus Location

2. Proposal

The Education Campus is located at 207 Barry Way, Jindabyne within the area managed by NSW Sport and Recreation (Figure 1). The site is within the area designated by the Snowy Special Activation Precinct (Snowy SAP).

The modification relates to two separate components of the approved Asset protection Zones (APZ) for the development, which include:

- The APZs for the individual buildings have been realigned to be offset from the building footprints, as opposed to the original bushfire assessment report that had the APZs offset from the site boundary. The APZ distances have not changed. The only change is that the APZ map has been refined so that the APZs are now offset from the 'asset', being the developments building footprints; and
- The land parcel to the south-west of the site being revised from 'Grassland' vegetation to formalised 'managed land'. As a result of the revised managed land application, the associated Asset protection Zone (APZ) related to the previous Grassland vegetation to the southwest has been removed.

For the modification relating to the land parcel to the south-west of the site being revised from Grassland vegetation to formalised 'managed land', Blackash has performed two separate site inspections of the subject land. It was evident during both site inspections that subject land to the south-west was under active management by the Jindabyne Pony Club (refer Figure 2).

Planning for bushfire protection 2019 (PBP 2019) addresses managed Grassland vegetation on page 111, which states:

> *'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.'*

Following the two site inspections performed on the 13th of October 2023 and 24th of July 2024, Blackash confirm that the grassland vegetation in the identified lot is being regularly mowed at or below 10cm and therefore regarded as managed land in accordance with PBP 2019.

As a result of the revised managed land application, the associated Asset protection Zone (APZ) related to the previous Grassland vegetation to the southwest has been removed. The removal of the south-western APZ is reflected in the updated APZ Map included at Figure 5.

Figure 2: Jindabyne Pony Club Location (Source; Google Maps)

3. Bushfire Prone Land

The 'bushfire prone land' map is included at Figure 3 and the site is designated as being bushfire prone.

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (BFPL) is land which can support a bushfire or is likely to be subject to bushfire attack (radiant heat, embers or flame). Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

While the site was not designated as being Bushfire Prone in the original assessment, the NSW RFS letter of 1 April 2021 states:

> *Although the subject site is not currently mapped as bush fire prone land, the vegetation on and surrounding the site constitutes a bushfire hazard.*

The original assessment considered the site and surrounding areas as though it was designated as being bushfire prone. The updated map does not have an impact on the assessment of bushfire risk for the s4.55 modification. For the purposes of Section 10.3 of the EPA Act and the legislative requirements for developing bushfire prone lands are applicable.

The land surrounding the site is predominantly grassland, with sections of scattered trees associated with the woodland type vegetation – refer Figure 4.

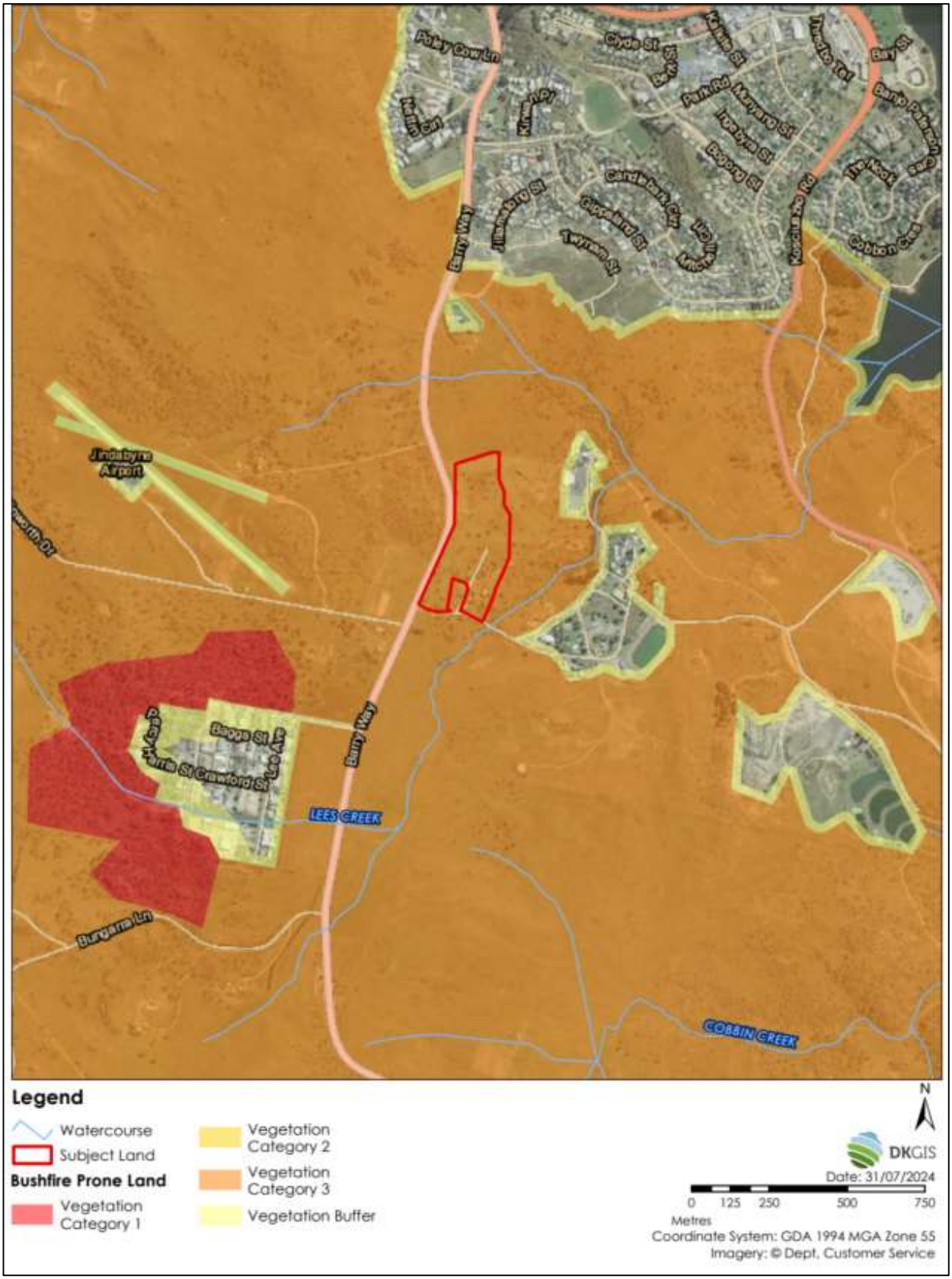


Figure 3: Bushfire Prone Land Map

4. Bushfire Threat Assessment

4.1. Bushfire Hazard

An assessment of the Bushfire prone land is necessary to determine the application of bushfire protection measures such as APZ locations, risk and Bushfire Attack Levels (BAL).

The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site, and which determine the planning and building response of the bushfire planning framework and PBP 2019.

The bushfire hazard affecting the investigation area was assessed during site inspections and using recent aerial photographs for at least a distance of 140m from the perimeters of the investigation area (in line with PBP 2019).

This assessment identifies the potential bushfire threat from outside the site. The method used for this assessment is outlined in PBP 2019 and relies on consideration of vegetation and slope and is outlined below along with results.

4.2. Methodology

PBP 2019 provides a methodology to determine the size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP. This assessment is based on both a desktop assessment and numerous site inspections of the site assessment utilising the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2019);
- Council Bushfire Prone Land Map;
- Aerial mapping;
- Detailed GIS analysis; and
- Site inspections.

The methodology used in this assessment is in accordance with PBP 2019 and is outlined in the following sections.

4.3. Fire Danger

For SFPP development, PBP has designated the appropriate fire areas and corresponding Forest Fire Danger Rating (**FDI**). The FDI within PBP 2019 is based on a historical fire weather assessment which assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds.

The 1:50 year fire weather scenario for most of the State was determined as FDI 80. However, a number of areas including the Greater Sydney, Greater Hunter, Illawarra, Far South Coast and Southern Ranges Fire Areas have higher FDIs which are set at 100 and does not take into account climate change.

The FDI for the Snowy Monaro is FFDI 80. However, PBP uses a DTS FFDI of 100 in Table A1.12.1. This approach has been used in this assessment.

4.4. Vegetation Assessment

PBP requires a classification of the vegetation on and surrounding the site out to a distance of 140 metres from the boundaries of the property in accordance with the system for classification of vegetation contained in PBP 2018.

The predominant vegetation is classified by structure or formation using the system adopted by *Ocean Shores to Desert Dunes* (Keith, 2004) and by the general description using PBP 2019. Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The vegetation is shown in Figure 4, which has been used as the basis to determine APZ and radiant heat loads within the site.

Figure 4 shows woodland vegetation to the north, north-west and east of the site. A narrow band of remnant trees is within a gully to the south of the site. Grassland is mapped to the south-west and south-east of the site. The grassland to the south-west is within the lot that is under active management by the Jindabyne Ponyclub and is managed land – refer to site inspection photos 1 – 6 below.

A narrow band of grassland is between the site western boundary and Barry Way. This area is regularly mowed as part of Council's maintenance regime and is regarded as managed land.

Reference photos taken during Site inspection on the 13.10.2023:

Photo 1: Looking south-west at the managed grassland vegetation

Photo 2: Looking west at the managed grassland vegetation

Reference photos taken during Site inspection on the 24.07.2024:

Photo 3: Looking south at the managed grassland vegetation

Photo 4: Looking south-west at the managed grassland vegetation

Photo 5: Looking west at the managed grassland vegetation

Photo 6: Looking north-west at the managed grassland vegetation

4.5. Slopes Influencing Bushfire Behavior

The RF Reg requires an assessment of the slope of the land on and surrounding the property out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint.

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP and is shown in Figure 4. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100 m transect measured outwards from the development boundary or the existing/ proposed buildings.

- Slopes to the west are upslope;
- Slopes to the east are in the 5 – 10 degree downslope range;
- Slopes to the south are upslope. A narrow run of downslope falls toward the gully; and
- Slopes to the north are 0 – 5 degrees downslope.

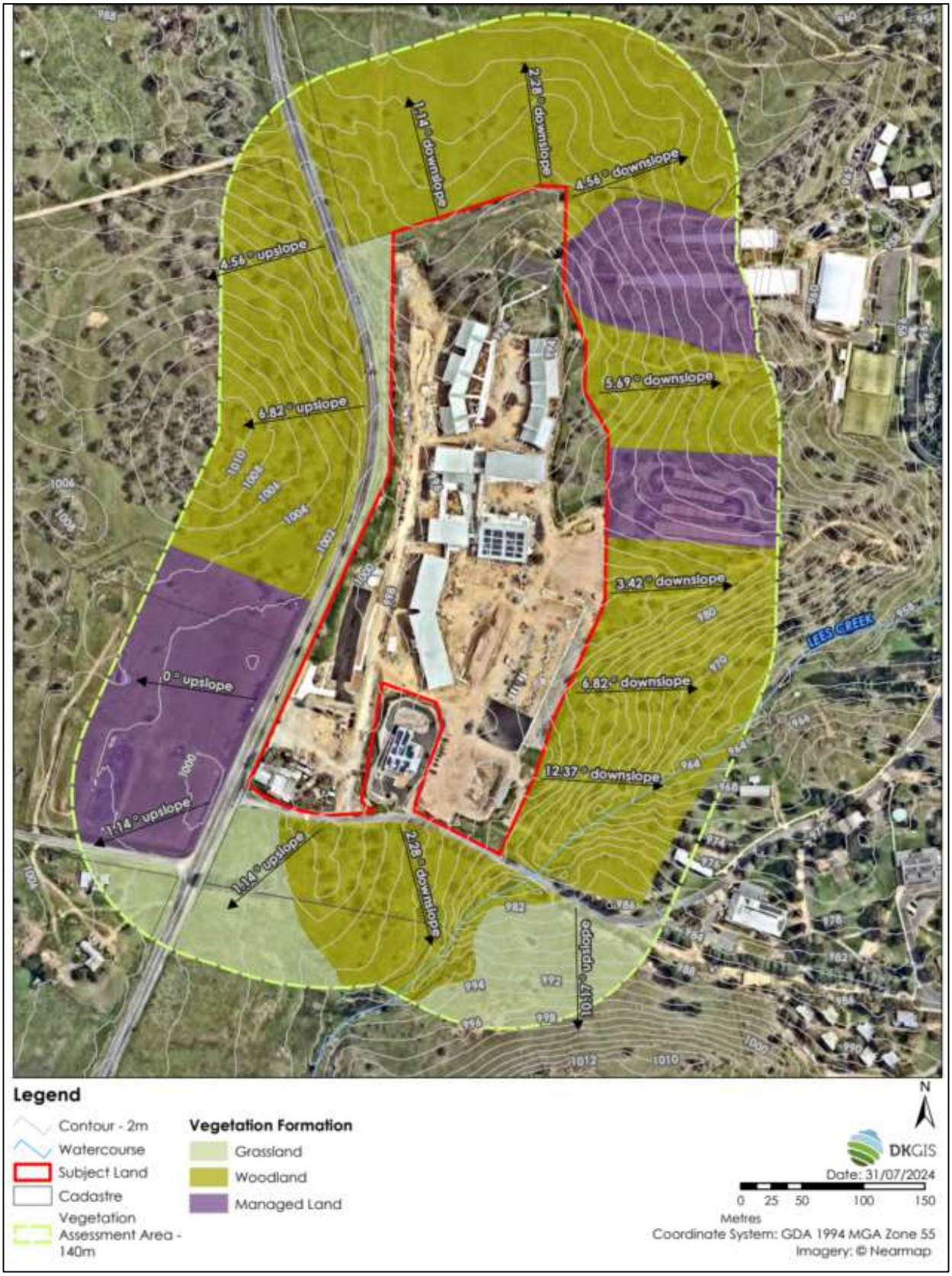


Figure 4: Vegetation and Slope Assessment

4.6. APZ and Construction Requirements

The site assessment identifies the potential bushfire threat from outside of the site area and provides an indication of required asset protection zones to meet the deemed to satisfy distances of PBP 2019. The buildings achieve BAL 12.5 (refer Figure 5).

All areas within the site and the section of off-site APZ to the north-east will be managed as an Inner Protection Area (IPA) in accordance with Figure 5.

N.B The APZs for the individual buildings have been realigned to be offset from the building footprints, as opposed to the original bushfire assessment report that had the APZs offset from the site boundary. The APZ distances have not changed. The only change is that the APZ map has been refined so that the APZs are now offset from the 'asset', being the developments building footprints.

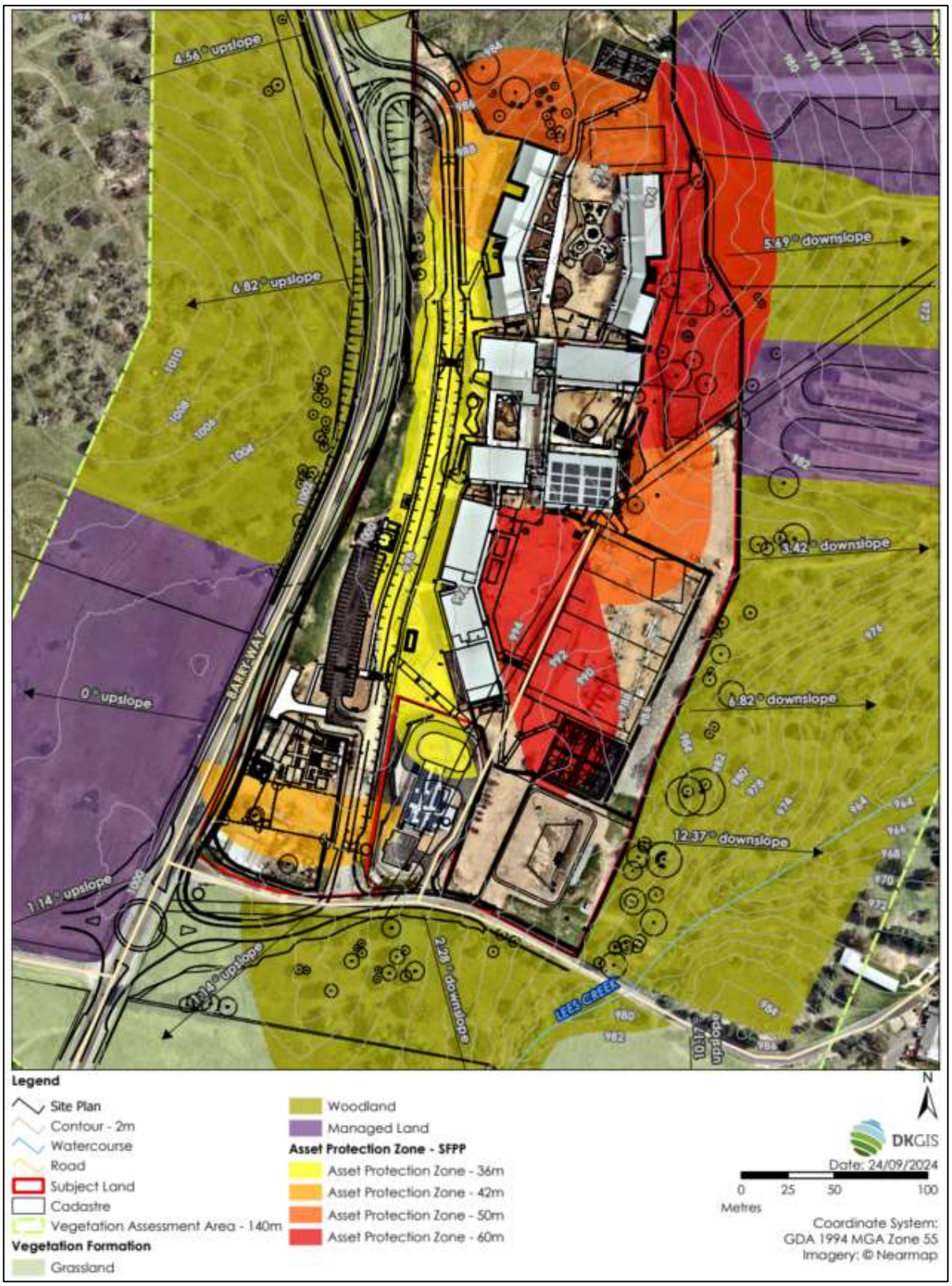


Figure 5: Asset Protection Zone (APZ)

5. Assessment Against the Aim and Objective of PBP

The RF Reg requires an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of PBP. All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. Table 2 shows the compliance with PBP.

Table 2: Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.	Yes	The s4.55 modification meets the requirements of PBP 2019 for the management of grassland vegetation to be regarded as 'managed land'.
Objectives	**Meets Criteria**	**Comment**
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	Built in accordance with AS3959.
Provide for defendable space to be located around buildings.	Yes	Defendable space and APZs are provided on all sides of the proposed development.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.	Yes	An asset protection zone is provided within the site and the section of off-site APZ to the north-east (Figure 5).
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to public roads, and access and egress for emergency vehicles and evacuation is adequate. A detailed evacuation plan will be completed prior to occupation.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.	Yes	An APZ Management Plan will be provided prior to completion of the buildings. A management plan is to be prepared that describes the maintenance measures required to maintain the APZ.
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	Utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).

6. Recommendations

The following recommendations are made for the bushfire protection measures for the site:

1. Buildings within the site are built to BAL 12.5 in accordance with the *Australian Standard for Construction of Buildings in Bushfire Prone Areas (2018)*.
   ***N.B. Blackash has issued a Bushfire Compliance Certificate dated 04 October 2024,* that confirms that the new buildings have been constructed in accordance with AS3959:2018 for BAL 12.5.**
2. Prior to the occupation of the new buildings, the school shall update the *Bushfire Emergency Management and Evacuation Plan* that is locally relevant and tailored with key stakeholders to a range of scenarios.
3. APZs are provided in accordance with Figure 5 of this s4.55 Modification Report.

7. Conclusion

The s4.55 Modification Report is in response to the Planning Secretary's Environmental Assessment Requirements (SEAR) Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EPA Act), and the Environmental Planning and Assessment Regulation 2021 (SSD-15788005).

The proposed s4.55 modification *complies* with *Planning for Bush Fire Protection 2019* and ought to be supported by the NSW RFS. This report has been completed in accordance with PBP 2019 and demonstrates that the proposal can be supported by the NSW RFS.

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Lew Short | Principal
BlackAsh Bushfire Consulting
B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)
Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373

Appendix 1: References

Australian Building Codes Board *Building Code of Australia Volumes 1&2*

Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bushfire-prone areas*

International fire engineering guidelines (2005) ABCB for the Australian Government, State and Territories of Australia 2005

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change

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

NSW Rural Fire Service (2011) Practice Note 1/11 Telecommunication Towers in Bushfire Prone Areas

NSW Rural Fire Service (RFS). 2006. *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Australian Government Publishing Service, Canberra

NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer.

Appendix 2: RFS Bushfire Safety Authority

NSW GOVERNMENT | NSW RURAL FIRE SERVICE

Snowy Monaro Regional Council
PO Box 714
COOMA NSW 2630

Your reference: (CNR-29818) 10.2021.313.1
Our reference: DA20211024004579-Original-1

ATTENTION: Sarah Brown

Date: Friday 10 December 2021

Dear Sir/Madam,

Integrated Development Application
s100B – SFPP – School
207 BARRY WAY JINDABYNE NSW 2627, 101//DP1019527

I refer to your correspondence dated 22/10/2021 seeking general terms of approval for the above Integrated Development Application.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted. General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act 1979*, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act 1997*, are now issued subject to the following conditions:

General Conditions

1. The development proposal is to generally comply with the layout identified on the drawing; prepared by Pedavoli Architects titled "Overall Site Plan" and dated 27/09/2021, except where modified by the following conditions.

Asset Protection Zones
Intent of measures: To provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants. To achieve this, the following conditions shall apply:

2. At the commencement of building works, and then in perpetuity, the property around the proposed educational facility building shall be managed, as follows;
   - The area; identified as the "Educational Precinct", noted to be the "Developable Area", and more specifically identified by violet shading in the plan titled "Figure 7 Asset Protection Zones", prepared by Blackash Bushfire Consulting and noted in their Bushfire Hazard Assessment report dated 30/09/2021, shall be managed as an APZ in accordance with the requirements of Appendix 4 of Planning for Bushfire Protection 2019, and

1

Postal address
NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address
NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

- The various areas located (generally) to the west, east and south, from the internal development site, shall be managed as APZs in accordance with the plan titled "Figure 7 Asset Protection Zones", prepared by Blackash Bushfire Consulting and noted in their Bushfire Hazard Assessment report dated 30/09/2021. Management shall be in accordance with the requirements of Appendix 4 of Planning for Bushfire Protection 2019.

Construction Standards
Intent of measures: To minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities. To achieve this, the following conditions shall apply:

3. New construction shall comply with section 3 and section 5 (BAL 12.5) Australian Standard AS3959-2018 'Construction of buildings in bushfire-prone areas' or the relevant requirements of the NASH Standard - Steel Framed Construction in Bushfire Areas (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of 'Planning for Bush Fire Protection 2019'.

Access - Internal Roads
Intent of measures: To provide safe operational access for emergency services personnel in suppressing a bush fire while residents are accessing or egressing an area. To achieve this, the following conditions shall apply:

4. Access roads for special fire protection purpose (SFPP) developments shall comply with the following; general requirements, of Table 6.8b of 'Planning for Bush Fire Protection 2019', and the more specific requirements for non-perimeter roads:
General requirements

a. SFPP access roads are two-wheel drive, all-weather roads;
b. access is provided to all structures;
c. traffic management devices are constructed to not prohibit access by emergency services vehicles;
d. access roads must provide suitable turning areas in accordance with Appendix 3; and
e. 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.
f. The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.
g. hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
h. hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005;
i. there is suitable access for a Category 1 fire appliance within 4m of the static water supply where no reticulated supply is available.

Non-perimeter roads;

a. minimum 5.5m carriageway width kerb to kerb;
b. parking is provided outside of the carriageway width;
c. hydrants are located clear of parking areas;
d. there are through roads, and these are linked to the internal road system at an interval of no greater than 500m;
e. curves of roads have a minimum inner radius of 6m;
f. the maximum grade road is 15 degrees and an average grade of not more than 10 degrees;
g. the road cross fall does not exceed 3 degrees; and
h. a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

Water and Utility Services
Intent of measures: To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. To achieve this, the following conditions shall apply:

5. The provision of water services shall comply with the following in accordance with Table 6.8c of Planning for Bush Fire Protection 2019:

a. reticulated water with a hydrant system is to be provided to the development, where available; or
b. a 10,000 litres (minimum) static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.
c. fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
d. hydrants are not located within any road carriageway; and
e. reticulated water supply uses a ring main system for areas with perimeter roads.
f. fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.
g. all above-ground water service pipes external to the building are metal, including and up to any taps.
h. where static water supplies are provided;
    1. a connection for firefighting purposes is located within the IPA or non hazard side and away from the structure;
    2. a 65mm Storz outlet with a ball valve is fitted to the outlet;
    3. ball valve and pipes are adequate for water flow and are metal;
    4. supply pipes from tank to ball valve have the same bore size to ensure flow volume;
    5. underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;
    6. a hardened ground surface for truck access is supplied within 4m of the access hole;
    7. above-ground tanks are manufactured from concrete or metal;
    8. raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959);
    9. unobstructed access is provided at all times;
    10. tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and
    11. underground tanks are clearly marked,

6. The provision of electrical services shall comply with the following in accordance with Table 6.8c of Planning for Bush Fire Protection 2019:

a. where practicable, electrical transmission lines are underground;
b. where overhead, electrical transmission lines are proposed as follow:
i. lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and
ii. no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.

7. The provision of any gas services shall comply with the following in accordance with Table 6.8c of Planning for Bush Fire Protection 2019:

a. reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;
b. all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;
c. connections to and from gas cylinders are metal;
d. if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion;
e. polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and
f. above-ground gas service pipes external to the building are metal, including and up to any outlets.

Landscaping Assessment

Intent of measures: To provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants. To achieve this, the following conditions shall apply:

8. Landscaping shall be selected and maintained in accordance with the requirements of PBP 2019. The following are identified as acceptable solutions in concert;

- landscaping is in accordance with Appendix 4 (of PBP 2019); and
- any fencing is constructed in accordance with section 7.6 (of PBP 2019).

Emergency and Evacuation Planning Assessment
Intent of measures: To provide suitable emergency and evacuation arrangements for occupants of SFPP developments. To achieve this, the following conditions shall apply:

9. A Bush Fire Emergency Management and Evacuation Plan is to prepared that is consistent with the following:
   - The NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*;
   - The *NSW RFS Schools Program Guide;*
   - The Australian Standard AS 3745:2010 *Planning for emergencies in facilities.*

The Bush Fire Emergency Management and Evacuation Plan shall include planning for the early relocation of occupants.

Note: A copy of the Bush Fire Emergency Management and Evacuation Plan shall be provided to the Local Emergency Management Committee for its information prior to occupation of the development.

Detailed plans of all emergency assembly areas, including on site and off-site arrangements as stated in AS 3745:2010, are to be clearly displayed and an annual emergency evacuation is conducted.

General Advice – Consent Authority to Note
- The above conditions, included in this Bushfire Safety Authority, relate to the development being a "Special Fire Protection Purpose" and located within a bushfire prone land area that is currently mapped as grassland (Vegetation Category 3).

For any queries regarding this correspondence, please contact Bradford Sellings on 1300 NSW RFS.

Yours sincerely,

Martha Dotter
Supervisor Development Assessment & Plan
Built & Natural Environment

Appendix 3: APZ Requirements

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 defendable 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.

Extract from Appendix 4 of PBP 2019 (p. 107)

25 November 2024

Mr. Cameron Thomson
Senior Statutory Planning Officer
School Infrastructure NSW
Level 8, 8 Central Ave, Eveleigh, NSW 2015
By email: cameron.thomson23@det.nsw.edu.au

Dear Mr. Thompson,

APZ to the southwest of Jindabyne Education Campus

Part of the acceptable solution asset protection Zone (APZ) to the south west of Jindabyne Education Campus for the Agricultural Plot extends over Barry Way with a small section of APZ within the Pony Club land (Figure 1) at 12 Tinworth Drive Jindabyne which is legally known as Lot 188/-/DP721919 (Pony Club).

In my email of 12 November 2024, Blackash had reiterated the position that the land within the Pony Club met the requirement for an APZ and was managed land. This was rejected by the RFS. The mapping that Blackash had provided was based on the acceptable solutions within *Planning for Bushfire Protection 2019* (PBP) as shown at Figure 1 to minimise reliance on a performance-based approach. The acceptable solutions APZ extends into the Pony Club land of 4.3m for about 20m and 1.8m for about 20m (see Figure 1).

As part of the review process, it has been clarified that one of the buildings that Blackash had identified and had provided an APZ from is animal yards (see Figure 2 - with a close up of the animal pens at Figure 3). The animal pens are not a Class of building in accordance with the National Construction Code (NCC) and have no requirements for bushfire protection. As such, there is no APZ requirement extending from the animal pens. This removes the APZ from the animal pen from Pony Club land.

As a BPAD Level 3 certified practitioner, I have completed modelling for the required separation in the form of an APZ to achieve the required 10kW of radiant heat. The acceptable solution APZ is 36m (see Figure 1). The modelled APZ at Figure 4 requires separation of 33.5m. The difference with the modelling reduces the APZ by 2.5m (36m – 33.5m = 2.5m) which pulls the APZ back from the Pony Club land as shown in Figure 5.

As such, no APZ or easement within the Pony Club is required.

Your sincerely,

Lew Short | Director
Blackash Bushfire Consulting
Fire Protection Association of Australia BPAD Level 3 – 16373

BLACKASH
BUSHFIRE CONSULTING

Figure 1 Acceptable solution APZ showing extent of APZ on Pony Club land

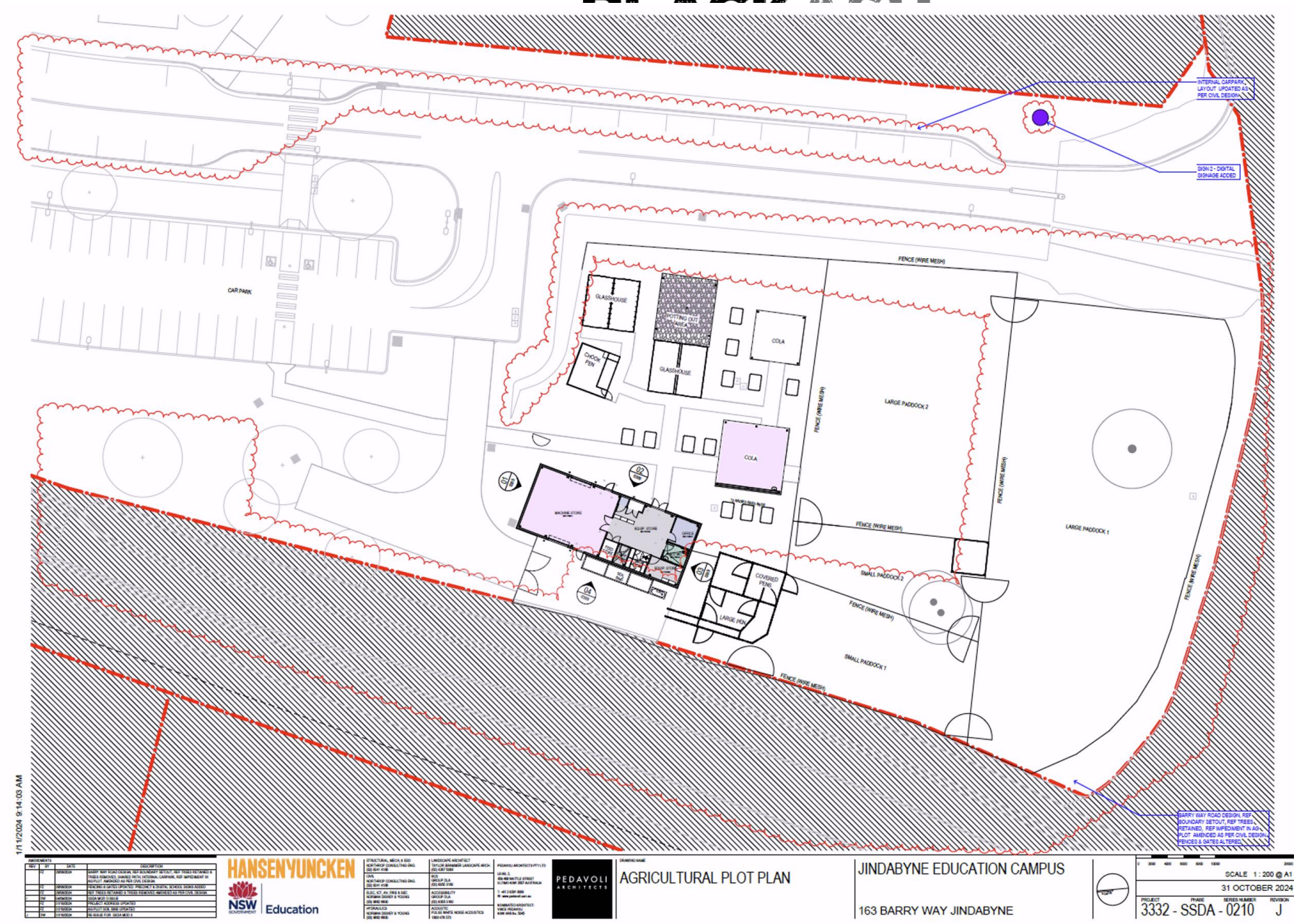


Figure 2 Agriculture Plot Site Plan

Figure 3 Ag Plot Animal Pens

PO BOX 715 WAHROONGA NSW 2076 AUSTRALIA
M 0419 203 853 | E lew.short@blackash.com.au
W blackash.com.au

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 21/11/2024 **Assessment Date:** 21/11/2024

Site Street Address:	Barry's Way Jindabyne, Jindabyne
Assessor:	Lew Short; Blackash
Local Government Area:	Snowy Monaro
Alpine Area:	No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: Pony Club

Vegetation Information

Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	6	**Overall Fuel Load(t/ha):**	6
Vegetation Height(m):	0	Only Applicable to Shrub/Scrub and Vesta	

Site Information

Site Slope:	0 Degrees	**Site Slope Type:**	Upslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	33.5

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K):**	1200

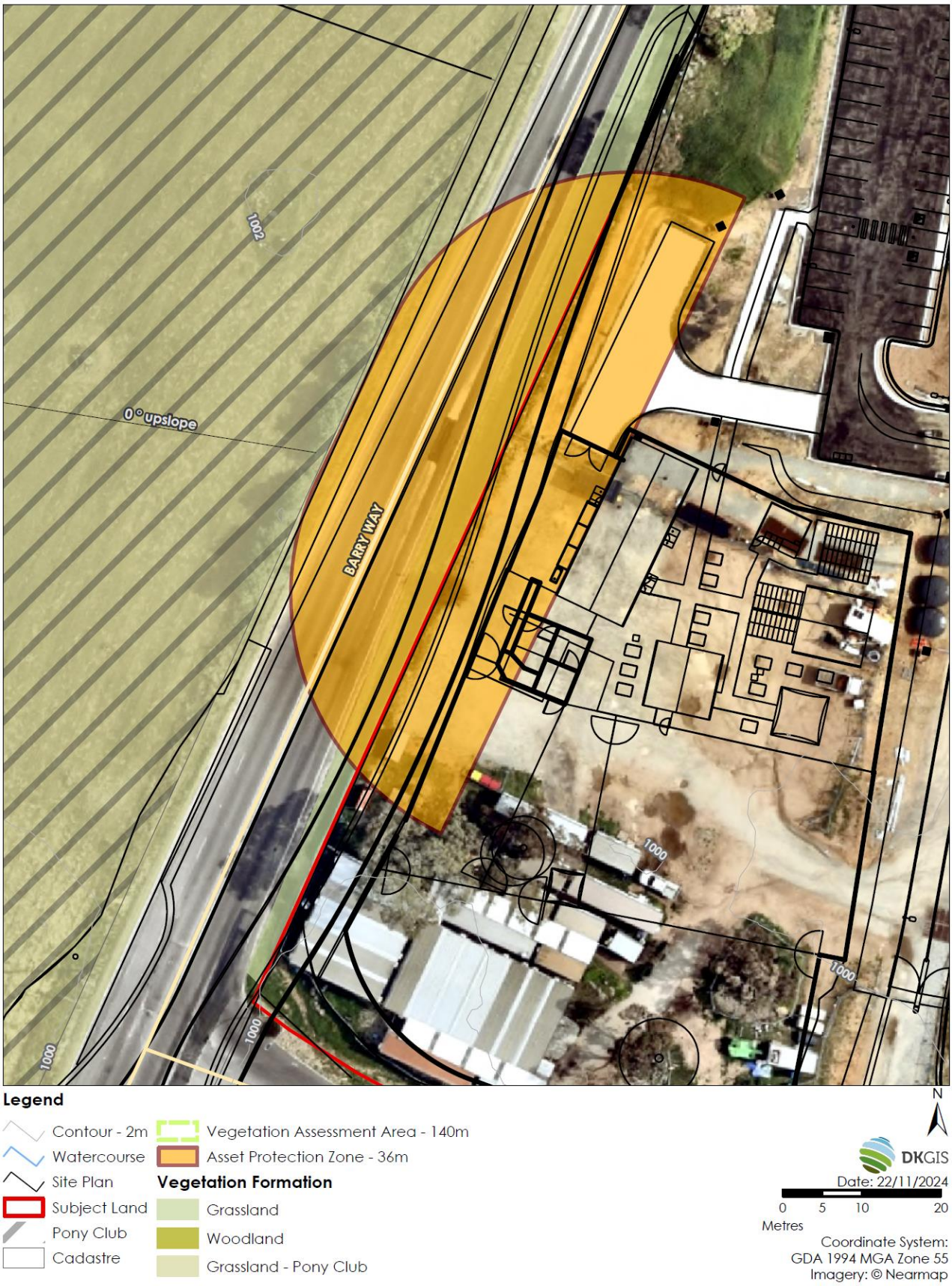
Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	110

Program Outputs

Level of Construction:	BAL 12.5	**Peak Elevation of Receiver(m):**	3.93
Radiant Heat(kW/m2):	9.84	**Flame Angle (degrees):**	82
Flame Length(m):	7.94	**Maximum View Factor:**	0.109
Rate Of Spread (km/h):	14.3	**Inner Protection Area(m):**	34
Transmissivity:	0.807	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	44330		

Figure 4 Modelling for Machinery and Equipment Store to achieve 10kW from Pony Club land



Legend

- Contour - 2m
- Watercourse
- Site Plan
- Subject Land
- Pony Club
- Cadastre
- Vegetation Assessment Area - 140m
- Asset Protection Zone - 36m

Vegetation Formation

- Grassland
- Woodland
- Grassland - Pony Club

N

DKGIS
Date: 22/11/2024

0 5 10 20
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © Nearmap

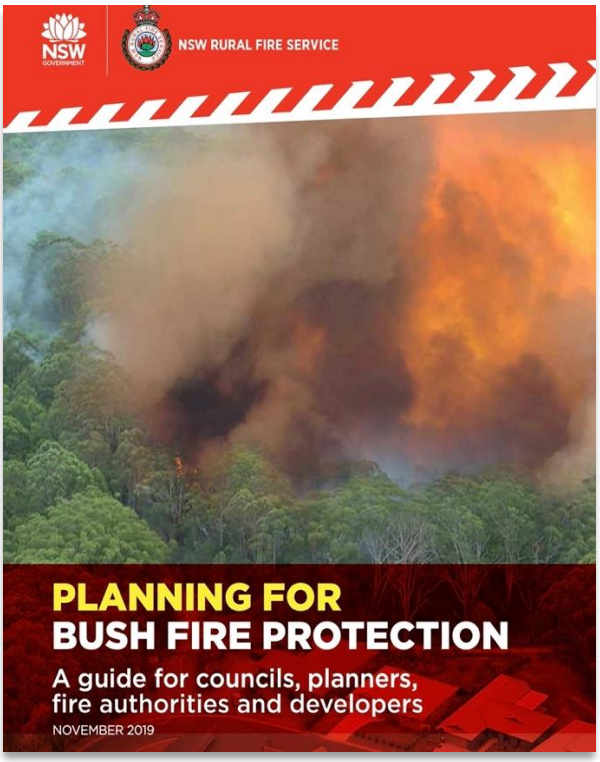
Figure 5 Modelled APZ to west of Machinery and Equipment Store

PO BOX 715 WAHROONGA NSW 2076 AUSTRALIA
M 0419 203 853 | E lew.short@blackash.com.au
W blackash.com.au

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

9.2.5 Standards for Asset Protection Zones
NSW Rural Website www.rfs.nsw.gov.au

9.2.6 NSW RFS PLANNING FOR BUSHFIRE PROTECTION 2019
Asset Protection Zone (APZ) Requirements Planning for Bush Fire Protection 2019 NSW Rural Fire Service
https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0005/130667/Planning-for-Bush-Fire-Protection-2019.pdf



9.2.7 Mecone: Environmental Impact Statement, Jindabyne Education Campus (SSD 15788005)
A copy can be downloaded at the link:
https://www.schoolinfrastructure.nsw.gov.au/content/dam/infrastructure/projects/j/jindabyne-education-campus/2022/november/10-of-november/A2_JindabyneEC_EIS.pdf

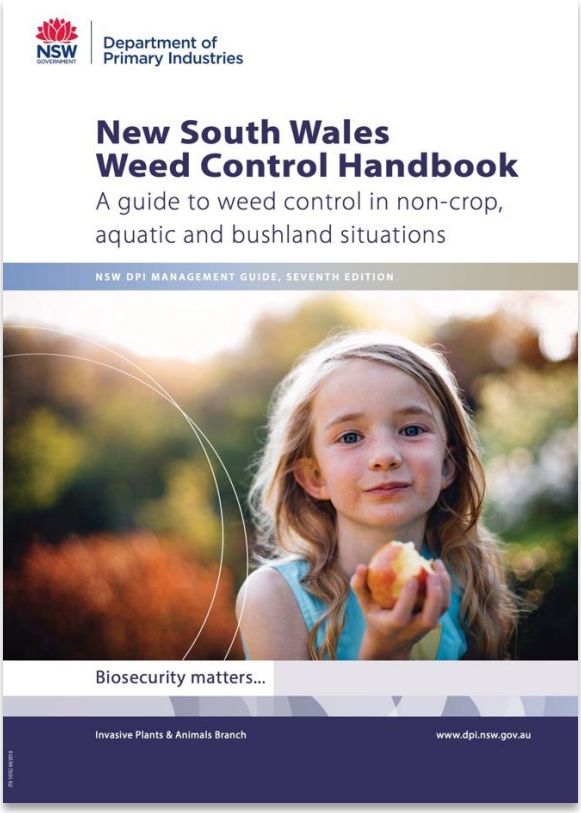
9.3 Environmental References for Weed and Pest Identification and Control

9.3.1 Weeds of the Monaro – Booklet

https://www.snowymonaro.nsw.gov.au/files/assets/public/v/2/environment-and-waste/biosecurity/weeds-of-the-monaro-booklet_web.pdf

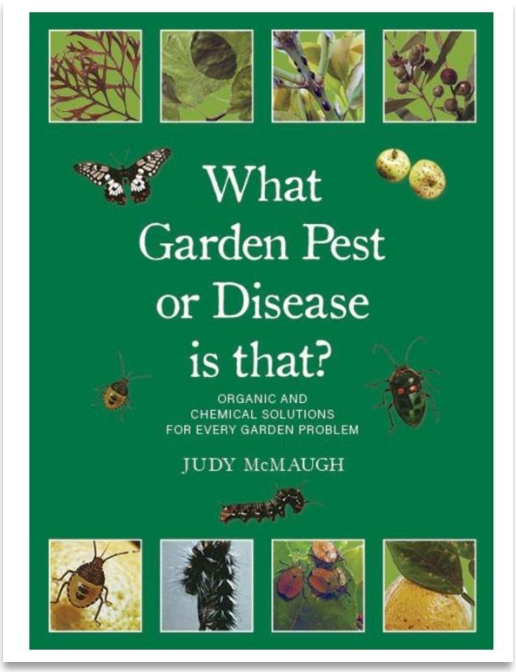
9.3.2 Control of Weeds: For control of noxious and environmental weeds on the site comply entirely with the NSW weed control handbook, a guide to weed control in non-crop, aquatic and bushlands situations NSW DPI management guide, 7th edition.

A copy of the handbook can be downloaded at the link: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/123317/weed-control-handbook.pdf



9.3.3 Sustainable Solutions and Identification for Weeds and Garden Pests

'*What Garden Pest or Disease Is That?*': *Organic and Chemical Solutions* for Every Garden Problem by Judy Mc Maugh; Published 2000 New Holland.

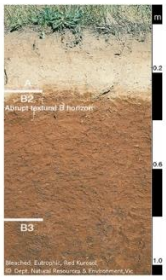


9.4 Local Soil Identification and Health

Soils Near Me NSW App for Soil Mapping: https://www.environment.nsw.gov.au/topics/land-and-soil/information/soils-near-me-nsw

Australian Soil Classification

Kurosols



Kurosols are soils with a strong increase in clay content between topsoil and subsoil, and with strongly acidic subsoils. This inherent acidity can also result in other chemical issues, such as high magnesium, sodium and aluminium concentrations, that can inhibit plant growth.

Kurosols generally have very low agricultural potential with high acidity (pH less than 5.5) and low chemical fertility. Kurosols commonly have low water-holding capacity and are often sodic.

Soils for Landscape Development: Selection, Specification and Validation by Simon Leake an Elke Haege CSIRO Published CSIRO 2014